

Varazdin Development and Entrepreneurship Agency and University North
in cooperation with
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Faculty of Management University of Warsaw
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Polytechnic of Medimurje in Cakovec



Economic and Social Development

96th International Scientific Conference on Economic and Social Development –
"Era of Global Crises"

Book of Proceedings

Editors:

Milija Bogavac, Zivanka Miladinovic - Bogavac, Zeljka Marcinko Trkulja

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COOPERATION FOR RENEWABLE ENERGY DEVELOPMENT IN CENTRAL ASIA

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ABSTRACT

The study examines the deployment of non-hydropower renewable energy (hereinafter, renewable energy, RE) in Central Asian countries (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan) with a focus on cooperation among the regional and outside actors. Currently, the importance of RE development is recognised by all the countries in Central Asia, yet the progress with RE diffusion varies by country and remains modest at best. National RE policies in the region can be characterised as idiosyncratic, which is caused by the specificities of the countries' political regimes and institutional environments. As the energy security of the Central Asian countries is projected to exacerbate due to sundry causes (such as the irreversible effects of climate change, and rising energy demand stipulated by demographic and economic factors, to name but a few), the diffusion of RE and cooperation to that end can help alleviate the disturbances in the national energy profiles.

Keywords: *non-hydropower renewable energy, Central Asia, cooperation*

1. INTRODUCTION

Diffusion of RE empowers modern-day energy transition, a process characterised by a shift to low-carbon energy sources. In the past, energy transition was often accelerated by an external shock, with the oil shocks of the 1970s being an illustrating example of that (Meckling et al. 2022). Since the early 2000s, the energy transition agenda was increasingly bolstered by science-grounded long-term projections about the inevitability of grave consequences of climate change (Brock et al. 2020). While the aspiration for carbon neutrality has become a common denominator of energy policymaking since the Paris Agreement (Zhang et al. 2022), the approaches to energy transition vary greatly (Bhattarai et al. 2022, Meckling et al. 2022, Kleanthis et al. 2022). A host of aspects determines the pace and scope of the energy transition of a nation. As a form of socio-technical transition, Andrews-Speed (2016) argues, energy transition is shaped by a nation's institutional environment. From a political economy perspective, democracies tend to be more inclined to engage in low-carbon transformation (Singha et al. 2023). Besides, the energy transition is affected by economic rationale. In developing economies, where the Central Asian countries belong, renewable energy adoption is supported by economic growth and rising income (Nguen et al. 2021). Because the diffusion of renewable in Central Asia has begun only recently and effectively embraced only Kazakhstan and to some extent Uzbekistan, scholarly accounts on energy transition in the region are mainly qualitative with Kazakhstan being the subject of an overwhelming number of academic work (Shadrina 2020ab, Laldjebaev et al. 2021, Poberezhskaya and Danilova 2021, Poberezhskaya and Bychkova 2022), and quantitative research revealing inconclusive results (Radovanović et al. 2021). Given the modest role of renewable energy in Central Asia, the necessity of its diffusion in the region is not an obvious argument. Meanwhile, the existing problems in the energy systems of Central Asian countries increasingly affect the prospects for their sustainable development. By the same token, because cooperation at large among the five Central Asian countries has been notoriously problematic, there is perceptible scepticism about the realistscity of energy cooperation.

Central Asian economies suffer substantial and wide-ranging damage caused by chronic energy deficits, electricity blackouts, and power losses (Mehta et al. 2022, Yakubov and Grigoryants 2022). The overall situation is characterised as energy insecurity (Shadrina 2019, IEA 2022d). The energy systems of the countries in question are different by their size, and structure, and increasingly so by the institutional arrangements (comparatively more market-driven in Kazakhstan as opposed to utterly state-supervised in Turkmenistan). In the past, the energy systems of all Central Asian countries were interlinked across and integrated with those of other Soviet republics by the Central Asia Power System (CAPS). Turkmenistan and Tajikistan opted to discontinue their connectivity to the CAPS in 2003 and 2009, respectively. Additionally, while the electrical power grids of Uzbekistan, Kyrgyzstan and Kazakhstan remain connected, the moral and physical outdatedness of this Soviet-era-built infrastructure leaves the economies in question vulnerable to seasonal and emergency demand peaks in Central Asia (IEA 2022e). Regional cooperation in Central Asia was commonly discussed in a narrow format, from the perspective of reanimation of the CAPS to assist a sufficient and stable electricity supply (Shadrina 2019). While this aspect of cooperation is still relevant, this study focuses on RE and, consequently, discusses new formats of regional cooperation. The rest of the paper is organised as follows. The overview of the state of RE deployment in Central Asia is followed by a discussion of three questions, subsequently: 1) Why is it important to develop RE in Central Asia?; 2) Why is cooperation essential for the diffusion of RE in Central Asia?; and 3) In what forms should cooperation be pursued? The final section summarises the paper's main arguments.

2. DEPLOYMENT OF RENEWABLE ENERGY IN CENTRAL ASIA

Central Asian countries are diverse in terms of the size of their population and GDP, the structure of their economies and their energy profiles (Shadrina 2020ab). The start of the post-Soviet transformation was rough for all the economies in the region. They have been following differing transition paths and secured divergent results (Table 25.1.).

Table 1: Central Asian Economies, 2021 vs 1991

	Population, mn			GDP, bn 2015 US\$			GDP per capita, 2015 US\$		
	1991	2021	2021/ 1991, %	1991	2021	2021/ 1991, %	1991	2021	2021/ 1991, %
Kazakhstan	16.45	19.00	15.50	84.84	214.06	152.31	5,156.95	11,264.91	118.44
Kyrgyz Republic	4.46	6.69	50.00	4.86	7.52	54.73	1,089.91	1,122.97	3.03
Tajikistan	5.4	9.75	80.56	6.59	12.48	89.38	1,219.31	1,279.67	4.95
Turkmenistan	3.79	5.94	56.73	12.54	45.71*	264.51	3,309.57	7,692.58*	132.43
Uzbekistan	20.95	34.92	66.68	31.95	116.19	263.66	1,525.00	3,327.78	118.22

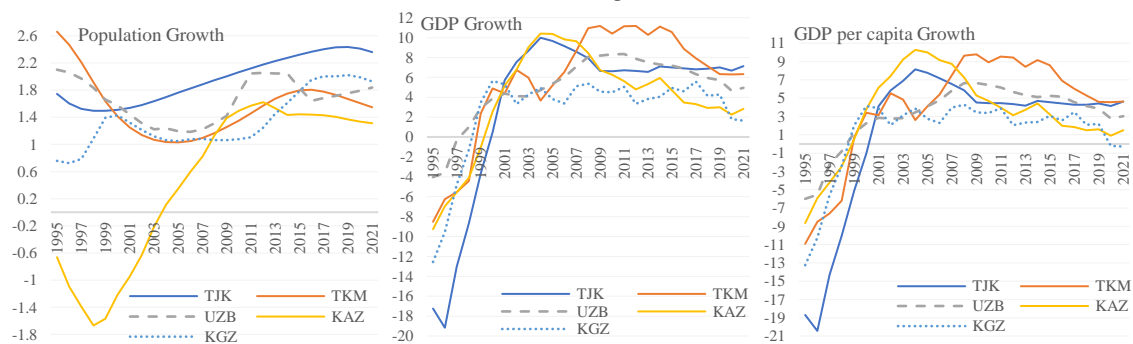
*Note: * - the latest available data, 2019.*

Source: the author, based on World Development Indicators,

<https://databank.worldbank.org/reports.aspx?source=world-development-indicators>.

Already the largest economy in the region in 1991, resource-rich Kazakhstan has multiplied its GDP per capita over the three decades of its independent development, becoming the most prosperous Central Asian economy. Turkmenistan and Uzbekistan have been growing faster than the rest of the region and demonstrated higher GDP per capita growth despite higher population growth (Fig. 25.1). Turkmenistan, like Kazakhstan, is hydrocarbon rent-dependent and its economic expansion was driven by the surge in energy resource output and energy exports (gas in case of Turkmenistan and oil in case of Kazakhstan). By contrast, hydrocarbon-poor Kyrgyzstan, whose population grew comparable to Turkmenistan's pace, has remained the smallest and less vibrant economy in the region. Also fossil fuel-poor Tajikistan showed the highest in the region population growth which explains the country's modest per capita metrics.

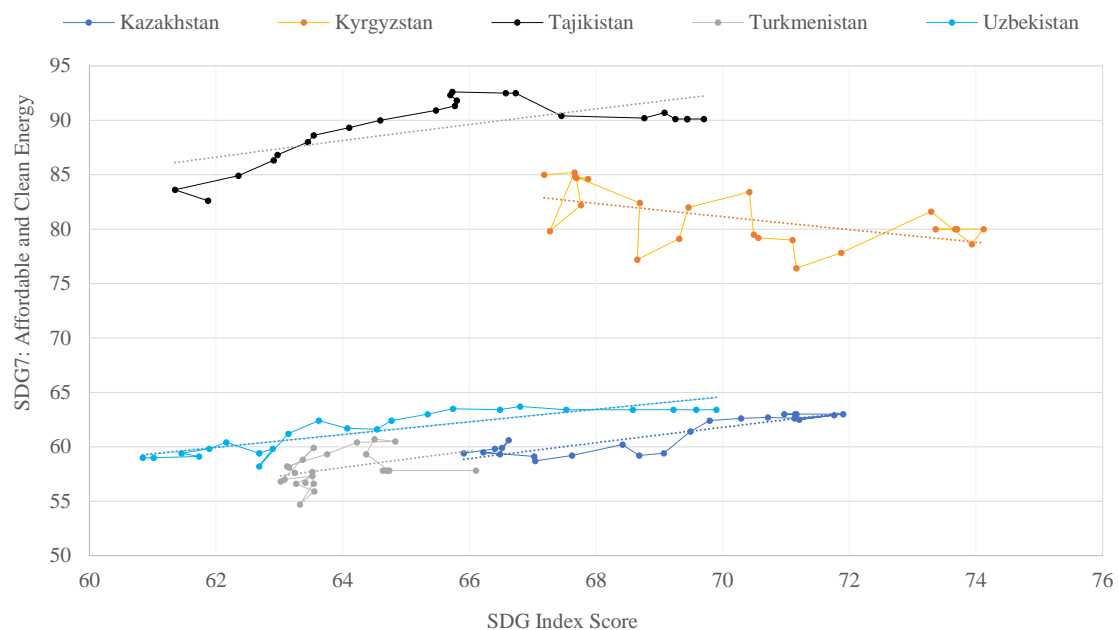
Figure 1: Population, GDP and GDP per capita Growth, 1991-2021, five-year moving average, %



Source: the author, based on World Development Indicators, <https://databank.worldbank.org/reports.aspx?source=world-development-indicators>.

Taking into consideration the sustainability of development, hydropower-abundant Tajikistan and Kyrgyzstan have higher Sustainable Development Goal Index (SDG Index), albeit Kyrgyzstan has revealed a noticeable downward trend in the SDG7 component called “Affordable and Clean Energy” (Fig. 25.2.). Apparently, these two nations are increasingly experiencing problems caused by infrastructure inadequacy and moral and physical outdatedness causing a shortage of energy or seasonal supply disruptions, during which the countries resort to solutions involving dirty energy sources (such as coal and oil). Expectedly, fossil fuel-reliant Central Asian economies are ranked lower, although Kazakhstan and especially Uzbekistan demonstrate remarkable improvements in SDG Index.

Figure 2: Sustainable Development Goal (SDG) Performance, 2000 – 2022.



Source: the author, based on Sustainable Development Report 2022, <https://dashboards.sdindex.org/explorer>.

Non-hydropower RE potential exists in all Central Asian countries (Table 25.2.). However, only Kazakhstan and Uzbekistan have already practically deployed RE, while Turkmenistan has engaged in the development of RE projects (Bahrami et al. 2019, Shadrina 2020ab, IRENA 2022, Santos 2022, Liu and Liu 2023).

Table 2: Technical Potential for Installed Renewable Electricity Capacity, MW.

	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
Wind	354,000	1,500	2,000	10,000	1,600
Solar PV	3,760,000	267,000	195,000	655,000	593,000

Source: the author, compiled based on UNDP Renewable Energy Snapshot for respective Central Asian countries, https://www.eurasia.undp.org/content/rbec/en/home/library/environment_energy/renewable-energy-snapshots.html.

Kazakhstan has pioneered the field, having commenced green generation in 2014 (Table 25.3.). Currently, Kazakhstan is the indisputable regional leader and one of the 30 world's top investors in RE (Laldjebaev et al. 2021, Poberezhskaya & Bychkova 2022, Darke et al. 2022).

Table 3: Deployment of RE in Kazakhstan.

Parameter	2014	2015	2016	2017	2018	2019	2020	2021
Installed capacity, MW, including:	177.5	251.5	295.7	342.3	531.0	1050.1	1634.7	2010.3
wind	52.8	71.8	98.2	112.4	121.5	283.8	486.3	684.0
growth, y-o-y, %		35.98	36.77	14.46	8.10	133.58	71.35	40.65
solar	5.0	57.1	57.3	58.8	209.0	541.7	911.6	1037.6
growth, y-o-y, %		(10 times)	0.35	2.62	255.44	159.19	68.29	13.82
Output, mn kWh, including:	578.2	703.0	927.9	1102.0	1352.0	2400.7	3245.1	4220.3
wind	17.4	131.8	262	339	401.9	717.4	1076.7	1776.4
growth, y-o-y, %		(7 times)	98.79	29.39	18.55	78.50	50.08	64.99
solar	2.62	47.0	86.8	114.3	142.3	563.1	1349.7	1641.1
growth, y-o-y, %		(17 times)	84.69	31.62	24.50	295.71	139.69	21.59
RE electricity in total output, %	0.62	0.72	0.98	1.08	1.27	2.3	3.0	3.69
RE electricity output growth, y-o-y, % (*)	8.90	21.59	31.99	18.76	22.69	77.57	74.0	30.0

Note: () according to Kazakhstan's Ministry of Energy.*

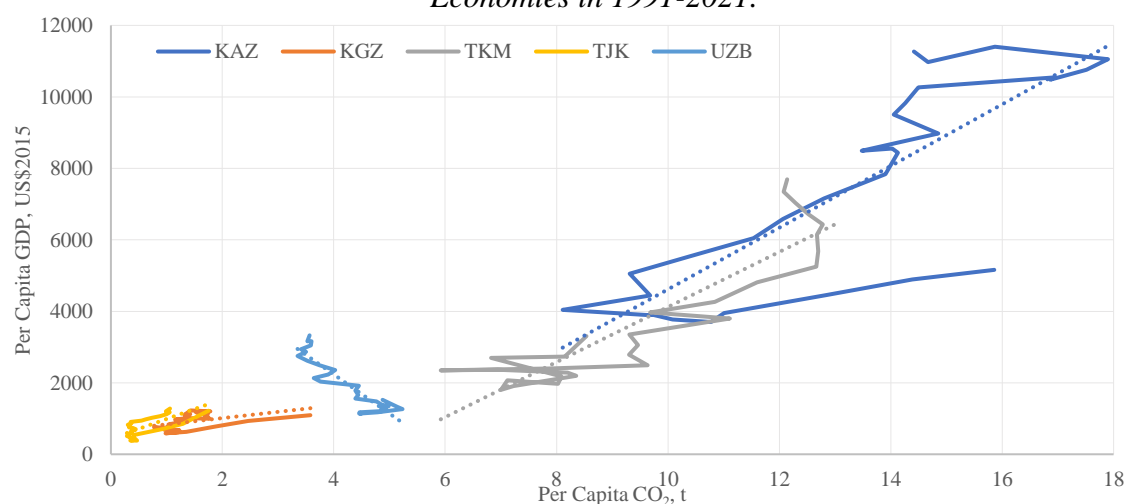
Source: author, based on annual reports of Kazakhstan's Ministry of Energy, <https://www.gov.kz/memleket/entities/energo/documents/1?lang=ru&title=%D0%92%D0%98%D0%AD>.

In pair with wider socio-economic transformations triggered by the political power transit in late 2016, Uzbekistan has been vigorously striving to solve energy problems reckoning the unutilised potential of RE sources. In 2020, Uzbekistan had only 4 MW of solar capacity. In 2021, the country commissioned its first photovoltaic solar power station of 100 MW capacity and added a second one of 131 MW in 2022 (Nabieva 2022). As of 2022, the nation had more than 2 GW of solar and 1.5 GW of wind power projects under development. By 2026, Uzbekistan targets to complete 4 GW of solar and 4 GW of wind power projects, and by 2030 add another 3 GW of solar and 1 GW of wind power (IEA 2022d). Uzbekistan is increasingly proactive to catch up with Kazakhstan's achievements in attracting international green financing and innovations. Only in 2022, notoriously cautious of domesticating international trends Turkmenistan approved several large-scale RE projects in cooperation with foreign stakeholders, such as a 10 MW hybrid wind-solar park (with 3 MW of solar) near the lake Altyn Asyr and a 100 MW solar park in the Central Karakum Desert (Santos 2022). Kyrgyzstan and Tajikistan do not have large-scale RE generation (IEA 2022bc, IRENA 2022). A handful of local RE projects are implemented with the support of international organisations (such as the World Bank, the Asian Development Bank, the European Bank of Reconstruction and Development, and the USAID, among others). Despite numerous studies on water–energy and climate change–energy nexus casting doubt on the feasibility of mid- and long-term projections for Central Asian countries' further reliance on hydropower generation for their domestic needs and exporting (Brock et al. 2020, Qin et al. 2022, Zakeri et al. 2022), the governments of Kyrgyzstan and especially Tajikistan continue to reckon hydropower a sustainable source of energy in their programmatic and regulatory documents (IEA 2022bc).

3. WHY CENTRAL ASIAN ECONOMIES NEED RENEWABLES

Out of five Central Asian countries, only Kazakhstan and Turkmenistan are fossil fuel rich and can be characterised as energy self-sufficient (IEA 2022a). Uzbekistan is often categorised as an economy potent to securing necessary energy resources domestically, however, such a categorisation appears to be increasingly inaccurate. For instance, Uzbekistan experiences a substantial shortage of energy accompanied by blackouts and energy rationing in the winter season (IEA 2022d). The situation is even more acute in Kyrgyzstan and Tajikistan, which are customarily (but not so groundedly) credited for their hydropower-secured sustainability (Mehta et al. 2022, IEA 2022bc). The root of the problem of energy deficit varies by country due to the differences in their energy profiles. Coal dominates Kazakhstan's energy mix, natural gas is the prime energy source in Turkmenistan and Uzbekistan, and hydropower is vital for Kyrgyzstan and Tajikistan (Shadrina 2020ab). The critical challenges are, however, shared: increasing domestic demand in expanding domestic economies (especially in Uzbekistan), high seasonality of hydropower generation (in Kyrgyzstan and Tajikistan), depreciation of the electrical power grids and low efficiency of energy infrastructure (all Central Asian economies, with Tajikistan and Kyrgyzstan being in even more susceptible situation), to name but a few. In addition to the technological, social and economic unsustainability of the energy systems in Central Asian countries (Shadrina 2020ab), their persistent reliance on fossil fuels exacerbates their environmental risks. Not the largest cities by the world's standards, Bishkek and Tashkent (the capitals of Kyrgyzstan and Uzbekistan, respectively) are ranked 3rd and 10th among the cities with the most polluted air in December 2022 (IQAir 2022). The CO₂ emissions are expectedly higher (but declining) in a more economically prosperous Kazakhstan (Fig. 25.3). Despite Kazakhstan's actual efforts in green energy development (Poberezhskaya and Bychkova 2022), the country remains the largest GHG emitter in Central Asia. Kyrgyzstan and Tajikistan are experiencing an increase in emissions due to growing energy consumption caused by economic growth and energy source substitution (hydropower for coal or oil) during the winter energy crises. Uzbekistan appears to be the only economy revealing an inverse relationship between GDP per capita growth and CO₂ emissions.

Figure 3: Income Per Capita (2015US\$) and CO₂ Emissions Per Capita (t) in Central Asian Economies in 1991-2021.



Source: the author, based on World Development Indicators (GDP per capita) and Our World in Data (CO₂ emissions).

Hence, not all Central Asian nations have hydrocarbon reserves and fossil fuels are anyway notorious for their environmental footprint (which is increasingly regulated, affecting the domestic economy's structure and foreign trade and investment).

Hydropower resources had long been treated as a universal solution for the nations possessing them and the region at large. However, contemporary advancements in climate change research advocate that hydropower potential will see a substantial decrease triggering an aggravation of the energy security of nations reliant on this asset and, hence, exacerbating the situation in downstream countries importing electricity. This, in turn, will impair water and food security, and even elevate the risks of armed conflicts in Central Asia (Botta et al. 2022).

4. WHY CENTRAL ASIAN COUNTRIES NEED COOPERATION FOR RENEWABLES DIFFUSION

Compared to hydrocarbon resources, renewable resources are more evenly distributed, enhancing to some extent the nations' self-reliance (Overland et al. 2022). At the same time, unlike the fossil fuels-centred technological regimes that are arranged with reliance on long-distance trading, renewables-based generation (with its features of intermittency, technological- and capital-intensity, etc.) necessitates cooperation in the region and beyond. Previously, the discussion about energy cooperation in Central Asia was centred around the CAPS and was underpinned by the water-energy nexus (Qin et al. 2022). Non-hydropower RE development requires cooperation across a wider range of dimensions, such as technology and innovations, investment and green financing, human capital development, digitalisation of RE and data analysis, trade in critical raw materials, and treatment of RE equipment waste, among many others. Some of the aspects of cooperation (divided into domestic, regional and international dimensions) are discussed in the subsequent sections.

5. HOW RENEWABLE ENERGY COOPERATION CAN BE PURSUED

5.1. Domestic Perspectives

It is typically assumed that the pursuing energy transition developing economies are faced with a tough choice between prioritising economic growth (implying industrialisation) or sustainability (implying low-carbon economy) (Babayomi et al. 2022). For Central Asian economies the choice is not so dramatic, as they are already (for the most part) industrialised and possess (comparatively) high human capital. At the same time, Central Asian countries may miss a certain portion of the privileges that typical RE latecomers obtain for they begin energy transition by making use of up-to-date technologies and innovative solutions (Mathur and Spencer 2019). Central Asian economies have a set of factors complicating their energy transition; an inherited carbon lock-in is in place. To enable RE diffusion, Central Asian states need to simultaneously address the inefficiency and obsolescence of the incumbent energy systems and create an effective policy toolbox to unlock RE potential and enhance energy transition. Surprising as it may sound, the key component to the enhanced RE cooperation in Central Asia is the readiness of domestic political regimes to transform into, if not altogether liberal, somewhat more flexible and transparent forms. Let us elucidate the point by a way of examining a particular case of energy subsidies, which are customarily mentioned among the hurdles to RE development in Central Asia. All Central Asian economies continue this practice, albeit to a varying degree. In Uzbekistan, for example, subsidisation of energy is equivalent to 7.6% of the country's GDP, in Turkmenistan – 7.5%, and in Kazakhstan, it is 3.6% (Kazenergy 2021). In the past, Turkmenistan practised one of the most excessive subsidisation programmes. Since the early 1990s and up until the end of 2016, Turkmenistan had free natural gas, electricity and water for all citizens. With the externalities factored in, the subsidisation of fossil fuels amounted to nearly 20% of the country's GDP (GIZ n.d.). In 2017, the program was downscaled and in 2019, it was terminated due to Turkmenistan's worsening budget deficit. The Central Asian economies are not unique in their energy subsidisation. Free or heavily subsidised utilities are commonly practised by energy resource-rich economies with a state pursuing rent-seeking.

In such economies, the fiscal system is centred on resource rent, which is the main source of government spending on the so-called social contract. Such a fiscal system helps the government maintain its patronymic status, curtailing citizens' demand for transparency of public finances and accountability of the government. Countries with (semi)authoritarian political systems attempt to avoid any (let alone comprehensive) transformations involving the synchronisation of reforms across a range of political, economic, and social realms, opting instead for a partial adjustment in isolated fields. Such incremental changes often succeed, producing outcomes semi-optimal for some time. Yet, sometimes they fail badly, necessitating the government to withdraw and even triggering more profound changes. Such was the case of Qandy Qañtar (Bloody January), a wave of mass protests that began in Kazakhstan on 2 January 2022 after a sharp increase in liquefied gas prices following the lifting of a government-enforced price cap. The events have caused a substantial reshuffle in the national political elite and even led to certain reforms in the political system, ending among other things, nearly the sacred status of Kazakhstan's first president (Kudaibergenova and Laruelle 2022). Energy transitions impose adjustment costs on incumbent businesses and consumers. Whilst developed economies apply a variety of instruments from a range of supply- or demand-side policies (Meckling et al. 2022), developing nations are often (self-)restricted in the choice of policy tools. As state-owned entities predominate in Central Asian economies, supply-side tools (such as fuel economy standards, and renewable energy deployment standards) effectively become the burden of the state and, hence, are easier to implement. Demand-side policy frameworks shifting the burden of the energy transition onto households are altogether unsuitable for the state trying to live up to its paternalistic role mode (Spechler et al. 2017). In Central Asia, RE undertakings are often initiated upon a presidential decree, organised with the state's direct involvement (with the most typical component being a kind of approval procedure) and implemented with the participation of a state-owned company (Mouraviev 2021, Poberezhskaya and Danilova 2021, Poberezhskaya and Bychkova 2022). Meanwhile, RE development with its decentralised energy distribution necessitates the departure from the rigidity instilled in the domestic economy through various forms of state control. RE diffusion demands the continuation of reforms in the national energy, and more specifically, electricity sectors. Completion of energy market reforms is the precondition for RE development. Whereas it is important to involve diverse stakeholders, the Central Asian national governments are often the only actors in the process of energy policy development, decision-making and implementation of RE projects. In carbon-rent-dependent Kazakhstan, where the government prioritises the revenues of fossil fuel-based sectors (Poberezhskaya and Bychkova 2022), centralised decision-making policy structure is headed by president, parliament and government, whilst the specialised ministry (of energy) "oversees policy implementation and represents the country during international negotiations" (Poberezhskaya and Danilova 2022). Unlike Kazakhstan and Uzbekistan, where a mix of domestic and foreign state-owned and privately-owned companies is engaged in the development of renewable energy (IEA 2022ade), Turkmenistan opts for permitting exclusively state-linked entities. That is, in 2022 Türkmenenergo State Electric Power Corporation was allowed to conclude a contract with Turkish company Çalık Enerji Sanaýı ve Tijaret A.Ş. for the construction of a 10 MW hybrid wind-solar park (with 3 MW of solar) near the recently completed artificial lake Altyn Asyr. Also in 2022, another agreement was reached between Türkmenenergo and a UAE-government-owned renewable energy company Masdar for the construction of a 100 MW solar park around Turkmen Lake in the Central Karakum Desert (Santos 2022). As per the deliberated wind projects, among the likely contractors are the Chinese companies under the auspices of the Belt and Road Initiative (BRI) (Liu and Liu 2023). It is not surprising for such an institutional setting that corruption accompanies RE development in Central Asia (Spechler et al. 2017, Lillis 2021, Moise and Sorbello 2022, Kudaibergenova and Laruelle 2022, ROTOBO

2022). For the rest of the Central Asian economies, the experience of Kazakhstan can be a good reference case. To enhance energy transit and climate change policy, Kazakhstan adopted the most comprehensive range of programmatic and regulative documents (Mouraviev 2021). In 2013, Kazakhstan became the first country in the entire Commonwealth of Independent States (CIS) to enact the Emissions Trading System (ETS) (Nugumanova et al. 2017). In more recent reforms, Kazakhstan moved from feed-in tariffs to an auction-based framework to allow competitive market pricing. The Financial Settlement Center of Renewable Energy, a 100% subsidiary of the national grid operator Kazakhstan Electricity Grid Operating Company (KEGOC), acts as the sole buyer of renewable electricity. When concluding purchase agreements with the Center, investors commit to buying electricity for 15 years at auction prices that are indexed annually. Overall, Kazakhstan's RE auctions have helped achieve significant reductions in levelized energy costs (Wishart and Abidi 2021). In 2018, the Astana International Financial Center (AIFC) was launched and the Astana International Exchange (AIX) was established to become a platform for RE-related financial transactions (Kazenergy 2021). Following AIX's adoption of the Green Bond Principles and the Climate Bonds Standards, the first green bond was issued (and was fully subscribed to) on AIX in August 2020 by JSC Entrepreneurship Development Fund Damu (Damu Fund) in cooperation with the UN Development Programme (UNDP). Kazakhstan's second green bond issuance took place in November 2020 on the Almaty Stock Exchange (KASE) in cooperation with the Asian Development Bank (ADB) and with the support of Tengri Capital Partners. In Kazakhstan, the energy transition has been capitalised as a "national, state-controlled economic resource" because the country's accession to the global climate movement is considered "a new opportunity to modernize and diversify not only the energy sector but also the ... entire economy" (Esekina 2016), albeit Mouraviev (2021) argues that Kazakhstan is pursuing RE agenda not for the sake of ensuring energy security but rather to follow a "fashionable trend". Kazakhstan has been promoting sustainability discourse whilst continuing a carbon-intensive development. To expand trade and investment ties, Kazakhstan needs to demonstrate an extent of institutional compatibility, and here certain affinity in the form of officially adopted values and norms for sustainable development is a rational calculation. Such kind of "spillover effect" was identified by Poberezhskaya (2017) for the case of the effect that the EU's accelerating climate change policy had on Russia's domestic RE development channelled through trade and investment. In the case of Kazakhstan, Poberezhskaya and Bychkova (2022) observe, the country demonstrates "clear discursive alignment with international actors and practices that serve as examples of successful sustainable development and economic diversification". Nevertheless, they argue, in Kazakhstan's "discourse of 'green economy', the 'economy' part takes clear priority over the 'green' one. Thus, the aim of sustainable development is to strengthen Kazakhstan's political and economic stance..." (2022: 904). Having progressed much further in setting the institutional environment for RE development, Kazakhstan appears to be the fittest to attract international capital (Darke et al. 2022, Ramazanov 2022). The fellow states have been slow in putting in place the missing regulatory elements, explicitly conditioning their climate change policy (more specifically, the intended nationally determined contribution (INDC) pledges) by external financing (Shadrina 2020ab, Wisheart and Abidi 2021). Recently, some influential players (such as the EU) have adopted a counter condition: the prospect of investments will be determined by the comprehensiveness and adequacy of the regulatory provisions for energy transit in a recipient nation (Aminjonov 2020). Thus, the authentic diffusion of RE in Central Asia can be expected if it is preceded (or accompanied) by a substantial transformation of the incumbent politico-economic institutions. Following the international standards for RE policymaking and learning from the successful practices of fellow states in the region (like Kazakhstan) should become guiding principles for Central Asian nations.

5.2. Regional Perspectives

Despite the failure of the early integration initiative called the Central Asian Union, the momentum for cooperation in Central Asia seems to have started gathering (Woods and Baker 2022). In 2022, the leaders of Central Asian countries signed the Treaty on Friendship, Good Neighbourliness and Cooperation to Promote Development in Central Asia in the 21st Century and the Roadmap for Regional Cooperation Until 2024. The latter document, among other fields, covers cooperation on climate change, green energy, water sharing and energy infrastructure investments (Gretsky 2022). Interestingly, as recently as in 2017, Kazakhstan named low carbon development as “a powerful factor of international support” for Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, at the same time describing its own ambitions in the realm as a way to “integrate into global investment processes and stimulate a profound structural modernization of [national] economy” (Koshanov 2017). However, following the smooth power transition in December 2016 (with no fundamental transformations in the national political regime), Uzbekistan has managed to reinvigorate its domestic economy and engage in international cooperation (Schmitz 2020) so much as it has become Kazakhstan’s competitor in a range of fields (Uzbekistan... 2019), including the development of RE (IEA 2022e). The two are striving to attract foreign capital, innovations and expertise for green projects arranging to this end international investment and business forums, conferences, exhibitions, and the like (Global... 2022). Importantly, Kazakhstan and Uzbekistan have intensified bilateral cooperation (Kazakhstan... 2022), supporting thereby increasing interest in intraregional energy cooperation (Gotev 2022, Khasanov 2022, Djamalov 2022). Also, Kazakhstan is probing cooperation in nascent regional green financing. Kazakhstan’s actors in green financing like the Green Finance Center of the Astana International Financial Center (AIFC) are targeted at the development of green finance instruments (such as green bonds, concessional lending, subsidies for green projects, etc.) in the neighbouring countries. In 2022, the AIFC opened Green Finance Center Bishkek in Kyrgyzstan, which becomes an encouraging example of intraregional cooperation. While Kazakhstan inspires RE diffusion and stirs energy cooperation in new realms (such as green financing), Uzbekistan is aspiring to resume its role as a regional hub of the reintegrated national energy systems.

5.3. International Perspectives

RE development in Central Asia is supported by various international and regional organisations like the IMF, the World Bank, the United Nations Development Program (UNDP), the Asian Development Bank (ADB), the European Bank of Reconstruction and Development (EBRD), Eurasian Bank, Central Asia Regional Economic Cooperation Program (CAREC), to name but a few. Among the most active countries in the region are Saudi Arabia, China, Germany, France, and the USA (Tleuken et al. 2022). Kazakhstan, which has been portraying itself as a bridge between the Christian and Islamic cultures, is among the supporters of the idea of a form of regional unification around the Turkic identity long promoted by Türkiye and institutionally framed as the Organization of Turkic States. This undertaking became particularly appealing to the Central Asian nations amidst the Russian-Ukraine War. Pragmatically speaking, shared Islamic traditions create an additional channel for green financing via Islamic banking. The Central Asian countries’ major stance in their foreign policies, ranging from nearly absolute reclusiveness (Turkmenistan) to selective nonalignment (Uzbekistan) and pragmatic multi-vector-ness (Kazakhstan) (Cooley and Heathershaw 2017, Izquierdo-Brichs and Serra-Massansalvador 2021), influences the nations’ discourses on RE. Attempting to advance its versatile interests, Kazakhstan has been the first in the region to realise the importance of politically correct, i.e., aligned with the contemporary norms of the global community, components in the national discourse on energy transit (and broader, climate change).

Kazakhstan has traditionally represented itself as a reliable energy partner; this position has additionally strengthened amidst the energy crisis unleashed by Russia's war in Ukraine. Turkmenistan has been effectively cut off from the European markets following the divisions with Russian Gazprom in 2016 and, hence, was forced to lock in with one buyer model of gas exports to China, as exports to Iran stopped in 2017 due to differences in pricing. Self-imposed restrictions on trade and investment contacts with external actors prevent Turkmenistan from full capitalisation on hydrocarbons and ample RE resources. In Uzbekistan, surging domestic energy demand (especially during the winter) makes the country's gas export (via the Central Asia – China Pipeline) pledges to China ungrounded. Uzbekistan should revisit its energy strategy eliminating projections for gas export. While securing domestic demand becomes important, Uzbekistan should more proactively deploy its RE potential. As is discussed earlier, the energy transition path depends on the domestic political economy. For example, rent-dependent strong states with costly social contracts often exhibit carbon lock-in. Likewise, the global energy transition has implications for a country's domestic political economy (Eicke and Goldthau 2021). Previously, fossil fuel-rich Central Asian nations have been sharing concerns over the risk of stranded assets. Yet, a more recent trend of so-called private regulation (driven by the greening preferences of end-consumers) stands to impact the industrial competitiveness of late-decarbonising sectors and economies at large. The EU's design for pricing carbon when entering the Single Market through a carbon border adjustment mechanism (CBAM) is an example of negative incentives for the energy transition. For Kazakhstan, which relies heavily on trade in fossil fuels, this is a critical shift which should be considered when shaping the country's domestic ETS and energy policies at large. The decarbonisation principles stand to (re)shape the political alliances and economic cooperation blocks through trade and investment, expelling low-carbon laggards from the incumbent formats. The energy transition is an innovation-driven non-incremental process. While solar and wind have become common RE sources, the forerunners have been experimenting with new sources of energy; hydrogen is one among them. In Central Asia, it is Uzbekistan and Kazakhstan which have indicated their ambitions to explore the prospects for hydrogen production, usage and exporting. In pursuance of these targets, Uzbekistan has been in cooperation with Saudi Arabia's ACWA Power, the US' Air Products and Germany's Siemens Energy (Wishart and Abidi 2021). Kazakhstan is in cooperation with German-Swedish private company Svevind to implement a 45GW of solar and wind farms powering 30GW of electrolyzers to produce three million tonnes of green hydrogen annually, which, if successful, would transform Kazakhstan into one of the largest actors in the hydrogen business (Kazenergy 2021, Wishart and Abidi 2021). In Turkmenistan, the plentiful natural gas reserves provide the country with a viable opportunity for blue hydrogen production (by capturing the carbon dioxide emissions from the steam methane reformation process) and exports to Europe. Hydrogen may allow Central Asian nations to capitalise on their abundant RE potential and geographical location to become one of the hubs for hydrogen production and export near large and energy-hungry markets, such as Afghanistan, Pakistan, and India, to name but a few. Yet, owing to the very chemical and physical properties of hydrogen, there are numerous technical and economic drawbacks in the process of production, transportation and storage (Kazenergy 2021). RE diffusion requires a vast range of minerals called critical raw materials (CRM). The CRMs are distributed unevenly. For example, in 2019, Congo and China were accountable for 70% global production of cobalt (IEA 2021). China, the most endowed by CRMs country, by the means of overseas investments has additionally expanded its control over CRMs reserves in Australia, Chile, Congo and Indonesia. As amidst the ongoing trade, semiconductors and IT secrets wars China is no longer considered a reliable partner, other geographical locations of CRMs become especially significant. Central Asian countries are posited fairly well in terms of the size of their reserves and production (Table 25.4.).

Cooperation for CRMs production can, thus, become an additional link between Central Asian countries and developed economies. Production of CRMs may allow Central Asian countries to localise the manufacturing of a certain type of RE equipment or its components for domestic use and exporting.

Table 4: Critical Raw Materials Endowment in Central Asia

Type of Critical Material	Primary Use in Clean Energy Technologies	Central Asian Countries' Reserves	% of global reserves	Central Asian Countries' Production	% of global production/ rank
manganese	wind, EVs	Kazakhstan, Tajikistan	38.6	Kazakhstan	3.16/ 9
chromium	CSP & wind	Kazakhstan	30.1	Kazakhstan	12.73/ 2
zinc	wind, solar & CSP	esp. Kazakhstan, Tajikistan	12.6	Kazakhstan, Tajikistan, Uzbekistan	5.71/ 6
aluminium	electricity networks	esp. Tajikistan, Kazakhstan	5.8	Bauxite (Kazakhstan) Aluminium (Kazakhstan, Tajikistan)	1.87/8 0.57/ 22
copper	solar, CSP & wind, EVs, battery storage	esp. Kazakhstan, Uzbekistan, Kyrgyzstan	5.3	Kazakhstan, Uzbekistan, Tajikistan, Kyrgyzstan	4.29/7
cobalt	EVs	esp. Kazakhstan	5.3		
silver	solar	esp. Tajikistan, Kazakhstan, Uzbekistan	1.2	Kazakhstan, Uzbekistan, Tajikistan, Kyrgyzstan	4.98/ 7
nickel	wind, EVs	Nickel (esp. Kazakhstan)	1.2	Aluminium (Kazakhstan, Tajikistan)	0.57/ 22
lithium	EVs, battery storage	esp. Kazakhstan, Kyrgyzstan	0.4		
graphite	EVs, battery storage	esp. Uzbekistan, Kazakhstan	0.3		

Notes: CSP - concentrated solar power; EVs – electric vehicles.

Source: author, based on IEA (2021), Vakulchuk and Overland (2021) and Kizekova (2022).

International cooperation is indispensable for RE diffusion in Central Asia in technological and, to a great extent, financial respects. A range of global, international, regional, and sectoral shifts make Central Asian countries and external actors mutually more attractive and likely partners.

6. CONCLUSION

Thus, Central Asian nations are engaging in RE diffusion. Are they on track to meeting their pledges? Currently, Kazakhstan produces 80% of its electricity at coal-fired thermal plants, but the country plans to have 30% of its electricity generated by renewable sources by 2030. Albeit the study has repeatedly acclaimed Kazakhstan's leadership, there is certain scepticism regarding the feasibility of the country's RE transition unless more political determination and swifter market transformations are pursued. By the same token, Uzbekistan projects to have 21% of its electricity generated by solar and wind sources by 2030. However, Uzbekistan's attitude towards respecting its obligations in RE development and treating foreign investors in the renewables sector is often criticised as inappropriate and counterproductive (Amijonov 2020). Furthermore (and although this study does not discuss hydropower energy), Tajikistan and Kyrgyzstan keep reiterating that hydropower will remain their major power source disregarding that the rapid melting of the glaciers affects the hydrological regime of watercourses causing even some of the recently constructed small and mini hydropower plants not operating (Aminjonov 2020). Technical and environmental effects of climate change need to be re-examined to ensure the validity of the countries' projections of their hydropower potential. Finally, Turkmenistan demonstrates a "lack of national determination towards concrete sustainability targets", albeit, according to Satymov et al. (2021: 13608)'s analysis, the country has the potential to "switch to 100% renewable energy by 2050, with prospects to have 76% solar photovoltaics and 8.5% wind power capacities".

Thus, RE diffusion seems to be a rather challenging task for all Central Asian nations. The progress can be helped by cooperation among the regional and between the regional and external players. Central Asian states' interests have traditionally been gravitating to (or split between) Russia and China. Russia's weakening position (especially in the aftermath of the Russia-Ukraine War) and China's somewhat shaken influence (a result of the trade war with the US and the economic drain inferred by the Chinese government's zero-tolerance anti-pandemic efforts) make more room for Turkey's political, economic and cultural headways in the region. Speaking about external actors at large, such as the EU, and the USA, however, have to adopt a more uniform stance towards the region as a whole. In their communication with Central Asian countries, external actors should avoid playing one nation against the other and embrace a common stance underpinned by their support for democratic transformations in the region. The intraregional divisions in Central Asia are substantial and range from water to ethnic and transboundary territorial conflicts (Botta et al. 2022). Instead of advancing the bilateral formats of cooperation with the individual states, the non-regional actors should adopt a view that embracing the region in its entirety would add momentum to intraregional cooperation. Especially, as the necessity of the latter is being yet again recognised by the Central Asian nations themselves in the aftermath of Russia's invasion of Ukraine.

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RUSE OF WAR IN INTERNATIONAL LAW AND PRACTICE

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ABSTRACT

After defining ruses of war as deceptions and other trickeries used in war to gain military advantage over the enemy, which do not contain elements of dishonesty or treachery, and therefore are not prohibited by international law, the article reviews a number of the most famous types of ruses of war, such as camouflage, fake objects, ambush, trap, fake attack, simulating withdrawal, use of code etc. In addition to general considerations, a number of concrete examples from contemporary practice are given. Then a short review was given of the relevant rules of international law, including the provision from Art. 37/2 of Additional Protocol I (1977) which after specifying that „ruses of war are not prohibited” defines them as “acts which are intended to mislead an adversary or to induce him to act recklessly but which infringe no rule of international law applicable in armed conflict and which are not perfidious because they do not invite the confidence of an adversary with respect to protection under that law”. The author concludes that there is no doubt that ruses of war are allowed, but he notes that in practice it can be disputed whether the respective specific act is dishonorable (insidious) or whether it violates the rules of the international law of armed conflicts. In other words, whether one deals with permissible ruses of war or with perfidy, which is prohibited and constitutes a war crime. The answer must be sought taking into account all relevant facts, such as the circumstances in which the act was undertaken, the actual goal of undertaking that act, the persons and objects against which the act was directed, whether undertaking the respective act means a violation of some international legal obligation, etc.

Keywords: Law of Armed Conflicts, Ruse of War, International law, War

1. INTRODUCTION

Although war is sometimes perceived as a slaughter without mercy or regard for anyone, since the time of the first states there have been certain rules of warfare (*jus in bello*, *jus belli gerendi*). They are occasionally violated, but from century to century they have been persisting and developing more and more, just as international criminal law and international judicial institutions for prosecuting and punishing persons responsible for serious violations of these rules have been developing. That fact alone testifies to the importance of those international legal norms. Throughout history, some rules in question differed somewhat in certain cultures and in various periods, but many of them were essentially the same everywhere. Thus, there was always and among all nations a distinction between ruses of war as permissible and perfidy as insidious and therefore forbidden ways of misleading the opponent.

2. RUSES OF WAR

Ruses of war are those deceptions and other trickeries used in war to gain military advantage over the enemy, which do not contain elements of dishonesty, perfidy and treachery, and therefore are not prohibited by international law. The history of warfare is full of examples of various ruses of war (Krivokapić 2017, 705-717). We will mention only a few such characteristic tactics.

2.1. Camouflage

One of the simplest, but nevertheless very effective ruses of war is masking i. e. camouflage. It boils down to actions that make combatants and assets blend in with the environment with the

aim of giving the adversary a false impression of their position or movement. These actions have two main goals. The first one is defensive and is aimed at hiding and thus protecting personnel, assets, and facilities so that the enemy does not discover and destroy them. The second one is offensive because camouflage is used to create conditions for a surprise attack on the opponent. A characteristic example is the hiding of forces in the phase of preparation for an attack so that the adversary would not see them too early and realize that he is running into an ambush, that he is about to be attacked, etc. (Gažević 1973, 320-330; Solis 2010, 420-431). One type of offensive camouflage can also be said when means are hidden in an appropriate manner (by covering with earth, leaves, etc.) that are intended to destroy the enemy's manpower and equipment, such as e.g. mines, traps and the like. Although it was practiced in the distant past, camouflage was particularly developed during World War I, when the development of weapons and military techniques led to hand-to-hand combat increasingly giving way to actions that inflict heavy losses on the enemy from a distance, especially by actions of artillery and aviation. In a narrower sense, camouflage is reduced to various forms of masking that, depending on the case, are applied by individuals, units, and institutions, in a way that suits the needs and conditions. Examples are the use of improvised means (branches, leaves, grass, etc.), wearing camouflage clothing, painting tanks, ships, and other assets with camouflage paint and the like (Gažević 1973, 320-330). In a broader sense, camouflage also includes various other forms of concealment, deception, and the like, such as releasing a smoke screen; placing models of tanks, anti-tank obstacles, artillery pieces, trains, and other fake objects; erecting false positions, command posts, fortifications, roads, bridges, etc. It also includes deletion or hiding tracks (eg those made by tank caterpillars); darkening of windows on buildings, headlights on vehicles, etc. Since today the enemy is not only detected by visual search of the terrain, but also by using heat, electromagnetic and other sensors, one can talk about camouflage also in the situation when the one who wants to remain undetected also conceals the sources of heat and other radiation. Camouflage is a permissible way of warfare, as long as it does not contain elements of insidiousness or it does not contradict the norms of the international law of armed conflicts.

2.2. Fake objects

Although it is possible to use false objects in other ways (eg for camouflage) this ruse of war has a special significance when applied on a wider basis, as part of a plan. Often these are various mock-ups and similar fake objects to hide one's own troops, weapons, etc. (eg adding fake elements to a warship, so it looks like a merchant ship) or in order to make the opponent believe that there are armored and other units in the given area, which are not actually there. Fake objects gained special importance from the beginning of the 20th century, when there was a need to protect units from the deadly fire of new weapons, such as rapid-fire artillery, mortars, machine guns, airplanes, etc. Already in World War I, false artillery positions, bunkers, machine gun nests, observation posts, etc. were made by all warring parties. More recently, fake objects (models of tanks, armored personnel carriers, artillery pieces, radars, pontoon bridges, etc.) were very successfully used by the army of the FR Yugoslavia during the NATO aggression (1999). A team of American experts who came to Kosovo immediately after the end of the conflict to check the effectiveness of the bombing concluded that the Serbs, with skillful camouflage and the use of many false objects, saved manpower and equipment by causing NATO forces to target false targets, many of them several times. Among other things, they stated in their report that the Serbs masked one bridge and built a false bridge 300 meters upstream from polyethylene film that they stretched across the river, and that NATO "destroyed" that false bridge as many as 7 times; that mock-ups of artillery pieces were made of long black trees mounted on truck chassis; that the fake air defense launchers were made from the metalized cardboard used to make milk cartons; etc.

They also concluded that out of 1,025 attacks on tanks, transporters, and other moving targets that were considered successful, only 58 can be considered successful, which is a success rate of barely 5.66%.

2.3. An ambush

This stratagem of war consists of hiding forces and means near the direction from which the enemy is expected to approach, keeping a low profile there, and, when the adversary comes, suddenly attacking him. Thus, with minimal risk of own forces, losses in manpower and equipment are inflicted on the enemy, his supply lines are cut off, etc. The important advantages of an ambush are a surprise, which neutralizes the superiority of the other side in terms of manpower and technology, and the fact that the one who sets the ambush chooses the most convenient place for him. Ambushes also have a strong psychological effect because if they are set up often and skillfully, they destroy the morale of the enemy. That is why they are particularly suitable for guerilla warfare. Usually, the ambush is set up by smaller units, but e.g. in the Battle of Lake Trasimeno in 217. BC Hannibal ambushed and destroyed the entire Roman army - of more than 30,000 legionnaires, about 15,000 were killed and about 6,000 captured. Famous is also the ambush in the Teutoburg Forest in 9 AD, in which the Germans under the leadership of Arminius destroyed three Roman legions numbering about 20,000 people. Although in the layman's imagination it is most often associated with operations on land (especially in the forest, jungle, etc.), the ambush is applied both at sea and in the air. Regarding the sea, an example is the so-called decoy ship. It is done to a ship that has been modified or specially constructed so that it looks like easy prey, but actually serves to lure the enemy to approach, only to be suddenly attacked by hidden men and weapons. Although such ships were used much earlier (for example, in a fight against Berber pirates, the British used in 1675 a warship with hidden 46 cannons, which was disguised as a merchant ship), this type of war deception was developed especially in World War I for anti-submarine warfare. These were merchant or fishing ships with cleverly disguised armament, which usually consisted of 2-3 cannons and 1-2 heavy machine guns. The British called them *a decoy vessel*, *Q-boat* (after Queenstown, their port of registration), or *mystery ship*, while the Germans were very precise using the term *a trap for submarines (U -Boot-Fall)*. Cruising through areas with intense maritime traffic, especially those declared no-go zones, these vessels with innocent appearance enticed opposing submarines to surface and attack them. Since the submarines of the time used weapons from their decks for these attacks, these ships opened fire before the submarine's crew could begin the attack. In World War I, the British used 366 such ships, which destroyed 14 German submarines (7-10% of all sunk German submarines) and damaged another 60. However, after the war, it was concluded that considering the manpower and resources involved, their own losses (61 decoy ships were lost) and the fact that greater effects were achieved with minefields, the importance of decoy ships was overestimated. Because submarines attacked by staying underwater (with torpedoes), decoy ships were not successful in World War II. (Chatterton 1922; McMullen 2001). From the point of view of international law, decoy ships are a form of warfare, which means they are not prohibited. After all, they are essentially no different from ambushes on land, which are permitted by the law of war and humanitarian law. One of the most famous air ambushes is the one set up by the Americans during World War II. After learning through captured and deciphered Japanese messages the time and flight path of the Japanese admiral, Commander-in-chief of the Combined Fleet, Isoroku Yamamoto and that he would be protected by 6 fighters, they set an ambush by sending 18 fighters to meet him. In order to ensure their attack was a full surprise, they flew in complete radio silence. In an aerial battle on April 18, 1943, near the Solomon Islands, they shot down the plane carrying Yamamoto, who was killed on that occasion.

2.4. Trap

Traps are also known by their name of French origin as *trou de loup*, although this term is generally somewhat broader, as it also refers to traps set for animals. Besides, sometimes the term *booby trap* is also used in the sense of "trap for stupid people" (from the Spanish *bobo* - stupid, naive), although, strictly speaking, it refers not only to traps in the narrower sense but rather to various military traps including surprise mines. In the narrower sense, a trap is a covered and disguised pit in the ground, created with the aim of the enemy falling into it and thus being destroyed, disabled, or captured. The simplest among them are holes 3-5 m deep and about 2 m wide, which are covered with branches and masked with soil, grass, leaves, and the like. The upper part is made so that a small animal can pass over it safely, but a person who steps on it falls inside. Although he remains alive, he cannot get out of the pit by himself or fight from it, so he is easily captured without a fight. In practice, "weaponized" pits are especially often used, those that kill or permanently disable their victims. It is usually a well-disguised conical hole, 2-3 m deep, up to 2 m wide at the top, and 0.5-1 m at the bottom, with several spears or pointed stakes placed at the bottom. Such traps have been used throughout the whole of history. In recent times, they were used especially massively and successfully by the Viet Cong guerrillas in the Vietnam War (1964-1975) by sticking a dozen sharpened bamboo or metal stakes (*punji sticks*) into the bottom of well-masked holes. They also used many other means, i.e. methods, which could conditionally be called traps in a broader sense. Thus, on the paths in the jungle, on the approaches to the fords on the river, on the doors of rural houses, etc., they mounted hidden structures that on the person who would activate the mechanism (hang a vine, open the door, etc.) were launching a log, a platform, or a ball with spikes. One of the simplest but very effective methods, called *the bamboo whip*, consisted of stringing a bamboo tree with sharp stakes and then tightening it like a slingshot so that when someone hooks the cable, the tree is freed, straightened, and like a catapult. launches at the victim. Such and similar traps are believed to be responsible for the death of about 6,400 (11% of the total of about 58,300 killed) and the wounding of about 45,000 (15% of the total of 304,000 injured) American soldiers. When they were made only of bamboo, wood, and lianas, these traps could not be detected with a metal detector, while, on the other hand, they were difficult to spot due to camouflage, low visibility in jungles, loss of concentration due to high heat and humidity, etc. So that their own fighters would not fall into the traps, the Vietnamese developed a system of signals in the form of twigs arranged in a special way on the ground, broken branches on trees, and the like, which warned those who could read them of danger (The toughest Vietnamese traps 2017; Gaskill 2018; Irvine 2020; Rottman 2020). There are also anti-tank traps - large and deep pits, the cover of which is camouflaged and made to support people and lighter vehicles, but not tanks, under whose weight they collapse. Sometimes, for maximum effect, a contact anti-tank mine is placed at the bottom of the pit. From the point of view of modern international law, some of the described traps must be considered prohibited for at least three reasons: 1) they involve insidious means and methods that act unexpectedly when the victim thinks they are safe, 2) they are often of a nondiscriminatory character, meaning their victim can easily be civilians, and 3) they are too inhumane because they cause unnecessary injury and suffering. However, everything depends on the specific case. For example, it is one thing if a hole is prepared and masked in order to fall into it and thus trap the opponent (this is a ruse of war), and another if blades contaminated with bacteria or poisons are placed at the bottom of such a pit. It must also be taken into account where (at which location) the trap is set, whether it poses a danger to the civilian population, what is the practice of dealing with the person who fell into the trap - whether they are captured, with medical assistance or killed on the spot, that is, maybe even deliberately left to die in agony in the hole for a long time. In our time, the relevant universal treaties prohibit the use of anti-personnel mines, surprise mines,

and similar devices,¹ and it can even be argued that these solutions have become part of universal international customary law. The mentioned traps and traps belong to those similar devices or "other means" as they are called in Protocol II on the Prohibition or Restriction of the Use of Mines, Stun Mines or Other Means (1980, revised 1996). There are a number of dilemmas regarding whether the use of said traps was prohibited in the past, including during the Vietnam War. Today, it is easy to say that such a ban has stemmed from the general principles of humanitarian law, but the fact is that at that time it was not explicitly formulated, that these means and methods differed little in principle from surprise mines (booby-traps) and various antipersonnel and other mines that were used by the Americans, and that no one was convicted for the use of those traps. Although it goes beyond the legal framework, one of the questions is how the Vietnamese were supposed to fight against an enemy that was not only incomparably superior militarily and technically but also massively used the so-called carpet bombing, napalm bombs, agent orange, and other horrible means that caused terrible suffering and huge numbers of casualties, especially among civilians. Even if they were not expressly prohibited at the time, those means and methods of warfare obviously contradicted the most important principles of war and humanitarian law, and yet they were systematically used, with no one being held accountable for that either.

2.5. False attack

One of the tricks that have been used ever since is the fake attack. It is most often carried out to cover up the place and time of the real attack (the so-called diversion). Thus, for example, as part of major operations, a few days before the attack, they undertake extensive artillery and bombardment operations on various parts of the front in order to confuse the enemy about the direction of the main attack. Then, immediately before the attack, intensive artillery or aviation preparation is concentrated only on the sector where the main strike is planned. A false attack is also used to trick the enemy into revealing their positions and deployment of forces. It usually involves one side randomly firing at the enemy's positions, in order to provoke him to fire back and thereby reveal his spot. As soon as the enemy responds, his forces are showered with concentrated fire. An interesting case was recorded before the end of the war in Afghanistan, as part of the Russian operation Magistral, which the Soviets conducted from November 1987, to January 1988. The first step in this was a fake parachute landing - 20 mannequins with parachutes were dropped from a transport plane. The Mujahideen from the surrounding hills responded with hilarious fire, trying to kill as many "paratroopers" as possible while they were still in the air. However, a reconnaissance plane was flying high above the transport plane, recording everything, which made it possible to precisely determine the enemy's positions based on where the fire was coming from. This was followed by a murderous attack by Soviet artillery and aviation based on the coordinates thus obtained.

2.6. Simulating withdrawal

Among the oldest ruses of war is simulating a retreat. It's a simple tactic that involves a smaller unit launching an attack, then, supposedly discouraged by the failure, begin a rapid retreat, thereby inducing the enemy to pursue it with the aim of luring it to a pre-selected location. It is actually a kind of ambush, where the opponent is not waiting for him to come across at some point, but is actively led to fall into it. False escape was especially often and successfully used by Genghis Khan. His vanguards attacked the cities, and then retreated to the place where the rested main body of their forces was waiting in ambush.

¹ Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessive Injurious or to Have Indiscriminate Effects (1980), Protocol II on Prohibitions or Restrictions on the Use of Mines, Booby-Traps or Other Devices (1980, revised 1996), Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction (1997).

This luring, which sometimes lasted for several days, ended with the slaughter of the pursuers who were tired of the chase, on someone else's territory, surprised and surrounded, and represented easy prey.

2.7. Use of cipher and code

Strictly speaking, cipher and code are not the same. A cipher (a secret letter written with numbers, apparently unrelated letters, and other signs, so that the message can only be understood by applying a special instruction, the so-called "key") is only one of many types of codes. Namely, the code refers not only to a secret script but to any system of rules for converting one form of information (word, letter, number, sound, image, etc.) into another, which, with the knowledge of the code, can be understood (decoded). Examples are the use of fire and smoke signals, sending messages from ship to ship using signal flags, etc. In the World War II, the Germans relied on the "Enigma", an electromechanical machine for encrypting radio messages, which automatically encrypted the typed text and transmitted it by radio waves to the recipient, who, with the help of the same machine, read it. Thanks to the built-in solution, the codes were automatically constantly changed, so even the same letters were encrypted in different ways, and in addition, Germans changed the "key" every day. This made it practically impossible to break the code - some models of "Enigma" allowed a choice between 2×10^{145} ways of scrambling messages. Nevertheless, the British succeeded in breaking the "Enigma" code of the German air and ground forces in mid-1941, and in August 1943 they did the same with the one used by the German navy (Kozaczuk 1984; Sebag-Montefiore 2000; Hinsley, Stripp 2001; Copeland 2006; Turing D. 2018). A simple and effective way of encrypting communications via radio link was used by the Americans in the World War II, by giving their Native American soldiers exchange confidential messages in their native language by radio link. The Navajo Indians were used the most because their language did not have its own script, there were no written instructions for learning that language, and, outside the circle of the tribe members themselves, only about 30 people knew it. Even if he intercepted that communication, the enemy couldn't crack the code because it didn't actually exist. In short: 1) the opponent did not know that it was an Indian language and not some code, 2) even if he somehow understood that it was an Indian language, he could not understand the language of which tribe it was, and 3) he did not have his own experts in that language. This trickery was used by the Americans later, in the Korean and Vietnam wars.

2.8. Other examples of ruses of war

It is impossible to enumerate all forms of ruses of war. Some of them are the result of complex planning and preparations, while others were created thanks to the vigilance of the respective commander, and in some cases even as a result of the resourcefulness of an ordinary soldier.

When it comes to cunning applied by an individual or a small unit, it is often a question of familiar tactics learned during military training, such as: placing dry branches in the forest at the approaches to the camp or guard post, in order to hear the characteristic crunch if someone steps on them; use of luminous bullets for correction of fire; convincing the enemy that he is surrounded and should surrender since all resistance is futile - when this is not the case at all; removing, moving and replacing traffic signs at intersections; changing the silhouette of a warship (eg by adding a fake chimney) so that the enemy does not recognize it or to mistake it for another ship; etc. Sometimes it is a question of special knowledge and experience acquired outside the army (eg in hunting) or the imagination of an individual soldier. So, for example, Serbian trumpeter Ahmed Ademović contributed a lot to the Serbian victory in the Battle of Kumanovo, fought on 23-24. 10. 1912. as part of the First Balkan War. At the moment when the Turkish army was on the attack, he sneaked into its rear on his own initiative and from there played the Turkish retreat signal.

As soon as the Turks, hearing the signal order, began to retreat, he returned unnoticed to the Serbian lines and from there played the Serbian signal for the attack. A powerful counterattack followed in which the confused Turkish army was routed. Another example is from the Soviet-Finnish war (1939-1940). Finn Simo Häyhä killed with a sniper rifle 505 Soviet soldiers in 110 days. To be so effective, he was helped by the experience he gained as a hunter, his unusually small stature (1.52 m) which made it easier to hide, and a series of ruses of war he resorted to - he wore white camouflage clothing that hid him in the snow, he poured with water and iced the space in front of the gun barrel so that when the shot was fired, the snow would not rise up and reveal its position, he held the snow in his mouth (so that the steam from breathing would not give it away), etc. However, the most important are those ruses of war that are designed and implemented on a wider basis and usually involve a series of complicated steps. These include: disseminating disinformation, transmitting false orders to enemy units so that they appear to come from their higher command, creating and conveniently (so that they do not suspect anything) delivering to the enemy false plans, maps, and similar documents, etc.

2.9. Modern examples of ruses of war

A number of successful ruses of war from modern history have already been pointed out on the previous pages. Here we will mention some other important and interesting cases. Great examples of all-out ruses of war are two operations of the Allies in World War II. First, in 1943, through Operation Mincemeat the British deceived the German high command, convincing it that the Allies would not invade Sicily, but the Balkans and Sardinia. For this purpose, near the coast of Spain, the body of a man in the uniform of a British high-ranking officer, with documents and a briefcase handcuffed to his hand, was released from a submarine. Everything indicated that it was an officer who was carrying important plans for the Allies, but he was killed in the plane crash and kept afloat thanks to a life jacket. The character of Captain/Acting William Martin was invented and supplied with appropriate documentation. Even more, to be sure that German intelligence will be fooled, the body of a man who died of pneumonia was used (so that during a possible autopsy, the water would be found in his lungs, as if he had drowned). To make the story even more believable, the body was not thrown out so that it would immediately fall into the hands of the Germans, but so that it would be found by the Spanish, and it was known that they would immediately inform Berlin (though neutral, Spain was an open sympathizer of Hitler). Indeed, the Germans took the bait and sent reinforcements elsewhere which made it easier for the Allies to land in Sicily and then penetrate from that side (Macintyre 2010). The most complex and comprehensive plan to mislead the adversary was Operation Bodyguard, which successfully was carried out in 1943-1944. by the British and Americans, with the aim of deceiving the Germans regarding the location of the opening of the second front in Europe. It consisted of 6 large and 36 smaller operations and included the distribution of false information (through double agents and in other ways), the creation of false objects (model tanks and airplanes, paratrooper dummies, etc.), various types of diversions (bombing false targets), simulating troop maneuvers, landings, etc. In order to spread the German troops over as wide an area as possible. as far as possible from Normandy, which was chosen as the site of the invasion, well-thought-out procedures were carried out that suggested that the Allies would land near Calais, in the Balkans or Crete, or that they will try to break through Norway. The name Bodyguard came about when British Prime Minister Winston Churchill remarked at a conference in Tehran in 1943 that: "In wartime, truth is so precious that she should always be attended by a bodyguard of lies" (Barbier 2007; Smith 2014, 550-568). On the other hand, in the Second World War, the Germans issued special instructions to their soldiers with a series of useful ruses of war, advising them:

- to always mine the trenches before leaving them;
- to fence off a certain area with wire and highlight a sign warning of mines, and then mine

the road next to that wire fence, making fake tracks of boots, engines, etc. on it. thus causing the opponent to enter a real minefield himself;

- that, if they are in the territory controlled by the opponent, they destroy or change traffic and other signs, point them in the wrong direction, etc., in order to cause confusion for the opponent or lure him into an ambush;
- that when they approach a populated place from cover, they fire several shots to find out if there is an enemy in that place and, according to the direction from which the return fire is coming, discover his positions;
- to set up and mask gasoline canisters not far from their positions so that, if the enemy tries to attack at night, they can light the fuel and thus light up the area for easier spotting of the enemy;
- that when they come across the enemy's telephone cables, they cut them and drag one end to the place where they will prepare an ambush for the enemy midshipman who, following the cable, will come into their hands;
- that when they don't have enough manpower, they create a false one between their two real fixed points of defense, with the fact that at night they occasionally send light signals from it so that they can be seen by enemy observers, all with the aim of concentrating forces at selected positions, with convincing the adversary that the entire line of defense is equally well protected;
- to leave flags with a swastika on destroyed tanks and other equipment that are far enough from their positions, thereby setting a false target to enemy aviation;
- to pretend to be dead in hopeless situations, in order to avoid destruction or capture, with the fact that in such cases they were especially suggested to lie down as close as possible to the bodies of dead enemies, to find and put on the head a helmet pierced by a bullet, or shrapnel, to remain in that position until dark or until the danger has passed; etc.

The Soviets also used a lot of ruses of war in WW II, with the fact the operations Monastery and Berestino are particularly interesting. The first one lasted from 1941 to 1944. The Soviet intelligence officer Alexander Demyanov, who had a noble origin, crossed the front line in the Moscow region in 1941 and surrendered to the Germans, declaring that he belonged to an anti-Soviet resistance movement that wanted to cooperate with the German command. After being thoroughly vetted, he was sent to spy training and then transferred to Soviet-controlled territory. From there, he sent reports, actually disinformation, to the Germans via a radio station. To strengthen his position in the eyes of the Germans and create an explanation for his alleged access to classified information, the Soviets appointed him as a liaison officer to Chief of Staff of Marshal Boris M. Shaposhnikov. The continuation of this was Operation Berezino, which lasted from the summer of 1944 to May 1945. Through the already mentioned A. Demyanov, the Germans received false information in August 1944 about an alleged German unit of around 2,000 soldiers, which remained and was actively fighting in the Soviet rear, but had lost contact with the command and was facing a shortage of food and ammunition. In order to make the story believable, the Soviets staged an alleged night fight between it and their troops in the place where the mentioned unit was allegedly not hiding, so that the pilots of two German planes could see it. Deceived, the German command decided to help the brave fellow soldiers and started sending people (couriers, radio operators, commandos), food, weapons, and money. During the Operation, a large amount of disinformation was delivered to the Germans (among other things, about plans for alleged Soviet penetrations in certain directions, which is why the Germans transferred significant forces there and thus weakened the defense in other sectors). Also, around 50 German saboteurs and 8 German agents were captured, several million Soviet rubles were confiscated, etc. The Germans never found out that they had been deceived. Ruses of war usually consist of certain actions.

However, sometimes it is also about special devices that are designed and produced specifically for that purpose. An example is anti-helicopter mines, designed to destroy helicopters. In the Vietnam War, the Americans relied heavily on helicopters - they used almost 12,000 of these aircraft, of which more than 5,000 were destroyed. Although they served other purposes as well (eg for transport of wounded), helicopters were especially used for offensive actions, providing fire support, transferring troops, etc., which is why the Americans called the conflict in Vietnam the "Helicopter War" (Lepore 1994, 29-36; Correl 2004; *Helicopters*). Therefore, the Vietcong fighters came up with the idea of placing anti-personnel mines on which they mounted small propellers (wings) in places suitable for landing helicopters. The vortex of air created by the aircraft's rotor blades during the landing moved the propellers on the mine, as a result of which the fuse opened, which automatically led to the explosion. Particularly effective were the modified Soviet anti-personnel mines with a directed effect MON-100, whose 400 balls with a diameter of 10 mm in the form of a narrow beam were capable to hit the helicopter at distances of up to 160 m. Anti-helicopter mines performed their function even when they were not actually destroying enemy aircraft. Since there are not many places suitable for landing helicopters in the jungle, the Vietnamese guerrillas made it impossible for helicopters to land by mining such locations. This forced their enemy to bombard the ground with bombs and rockets before landing, in order to clear it of possible mines. In this way, they induced the Americans to spend missiles without hesitation to destroy mines worth only a few dollars, which, after all, may not have been there at all, and, on the other hand, they forced the enemy to reveal their position. Hearing the detonations, Viet Cong fighters usually rushed to the landing site from all sides so that the American soldiers were suddenly surrounded. Then when it was a better solution, alerted to the presence of American helicopters, the Vietnamese guerrillas left the area in a timely manner through a system of underground corridors. During the Turkish invasion of Cyprus in 1974, Greek Cypriots used a simple but very successful ruse of war. Having learned from their reconnaissance planes that a group of Greek warships had headed toward Cyprus, the Turkish military command ordered that these ships be stopped at all costs. However, during the night, Greek ships changed their course and returned back, which the Turks did not know. In the morning of the next day, the Greek Cypriots, aware that they were being listened to by the Turkish forces, sent a fake radio message in which they "thanked" an alleged group of Greek warships near the city of Paphos for coming quickly to help. Catching the message, the Turks took the bait and immediately sent a group of 48 planes. Incorrectly informed by their command that there were no Turkish ships in the given area, those planes attacked the ships they saw below them. However, it was three Turkish destroyers. From the effect of the so-called friendly fire, one of them was sunk and the remaining two were heavily damaged, and it seems that the destroyers shot down two or three planes while defending themselves. The first news was that about 80 Turkish sailors were killed and about 100 missing. According to Greek sources, 78 crew members died from the sunken destroyer alone, while Turkey admitted only the loss of the ship and the death of 54 crew members. Various ruses of war have been used in the armed conflict between Russia and Ukraine, which has been going on since 2 February 2022. As early as March 2022, Ukrainian forces shot down a jet-powered drone, which did not have any weapons or cameras, or other surveillance devices. Since it was designed to be easily visible (it was orange in color) and to move quickly (which gave the impression that it was a fighter plane), everything led to the conclusion that the purpose of that apparatus was to provoke fire from the ground in order to thus discover and destroy anti-aircraft positions. In other words, by all accounts, it was some kind of decoy drone. In the same armed conflict, knowing that a relatively large number of foreign mercenaries came to the aid of the Ukrainian forces, the Russian forces resorted to a simple but effective ruse of war. By monitoring mobile telephony, they located the place from which frequent conversations with foreign countries are conducted (mercenaries called their relatives, friends, etc.).

Having determined in this way the location of the Ukrainian center for the reception and training of mercenaries (the Yavorovo center in western Ukraine), they fired rockets at it and destroyed it. According to the Russian side, at least 180 foreign mercenaries were killed and a large amount of weapons were destroyed. On the other hand, which has received not only strong political, economic, and other support from the USA and other Western countries but also a huge amount of weapons and ammunition, once declared that it had received a superweapon from the USA with which it would carry out upheaval at the front. In question were American high-mobility multi-barrel rocket launchers Himars (*M 142 High Mobility Artillery Rocket System, HIMARS M142*) with a range of up to 80 km. The system, operated by a crew of three in a combat kit, has 6 missiles, which fly low, fast and are very accurate (guided by GPS). The Ukrainian army has really achieved certain successes with the use of these weapons. What is particularly interesting here is that it sometimes resorted to the cunning of war by first attacking the opponent with "ordinary" artillery, with a shorter range, and when the Russian side would respond from positions that it believed were beyond the range of Ukrainian fire, those positions were immediately bombarded with missiles. Hymars, which range was significantly longer range than ordinary artillery shells.

3. RUSE OF WAR ACCORDING TO INTERNATIONAL LAW

Throughout history, the ruses of war have never been banned. On the contrary, especially when they were ingenious and well executed, they caused the recognition and admiration of everyone, often even the enemies. Article 24 of well-known Hague Regulations (1899) specified: "Ruses of war and the employment of measures necessary for obtaining information about the enemy and the country are considered permissible." The same provision was repeated in Article 24 of Hague Regulations (1907). If at the beginning of the 20th century it could be disputed whether the aforementioned rule is part of universal international customary law, by the time of the outbreak of the Second World War, such a dilemma was completely removed, which, after all, was confirmed by the Nuremberg Tribunal. In his 1946 judgment, he specified: "The rules of land warfare expressed in the Convention undoubtedly represented an advance over existing International Law at the time of their adoption ... but by 1939 these rules ... were recognized by all civilized nations and were regarded as being declaratory of the laws and customs of war" (International Military Tribunal, 1947, 248-249). In Art. 37/2 of the Additional Protocol I (1977) to the Geneva Conventions on the Protection of War Victims (1949) it is specified: "Ruses of war are not prohibited. Such ruses are acts which are intended to mislead an adversary or to induce him to act recklessly but which infringe no rule of international law applicable in armed conflict and which are not perfidious because they do not invite the confidence of an adversary with respect to protection under that law. The following are examples of such ruses: the use of camouflage, decoys, mock operations and misinformation". Therefore, as long as it is not a dishonorable act, which violates the rules of war and humanitarian law, nothing stands in the way of the parties in the conflict to deceive the opponent in various ways in order to gain a military advantage. What can be disputed in practice is the question of evaluating the respective act, i.e. taking a stand on whether it might be dishonorable or insidious or, viewed from another angle, whether it violates the rules of the international law of armed conflict. This is, on the one hand, a consequence of the fact that the institute of the ruse of war is in fact only a legal standard that does not have a clear content in itself. Thus, in order to determine what is dishonorable and vile, one must first know what is honorable and moral, and this is determined by everyone himself, based on his own value system. In many cases, people belonging to different cultures will come to the same conclusion, but this does not always have to be the case. In confirmation of this, it is sufficient to state only that, for example, in Europe, in the age of knights and musketeers, it was considered dishonorable to attack an opponent if he was not warned beforehand by shouting *en garde* (on guard) or simply defend yourself!

However, at the same time, a Japanese samurai would attack without such a warning and would consider even receiving such a warning an insult because as a samurai, he is obliged to be ready to react at any moment. Most probably he would consider that by warning him to defend himself the adversary belittles him. On the other hand, the problem would be solved if it were possible to precisely list all ruses of war, but for obvious reasons, this is neither possible nor will it ever be possible. In such a situation, in order to determine whether in a specific case it is a matter of ruse of war cunning or of perfidy, one should take into account not only the specific norms of international law but also all relevant facts, such as the circumstances in which a certain act was undertaken, the exact goal of undertaking that act, the persons and objects against which the mentioned act was directed, whether undertaking the respective act means violating some important international obligation, etc. In this regard, it must be admitted that despite the fact that everything may seem relatively simple at first glance, much may remain unclear or disputed, even from the point of view of an objective observer. This is especially pronounced in our time when wars are taking different forms, when new weapons are appearing that operate on the basis of new principles, and when space and cyberspace are increasingly being used for war operations in various ways.

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AN ANALYSIS OF THE ORIGIN OF HUMAN

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ABSTRACT

The paper attempts to answer the question that is at the heart of the Neanderthal genome project: Are modern humans fundamentally different from all archaic human species? Neanderthals were certainly intelligent: they recognizably shaped human tools and lived in established communities, which only suggests that they were "human" enough. We hope that a direct comparison of the human and Neanderthal genomes will reveal whether our talents for invention, language, and abstract thought—the basis of our perceived uniqueness among species—are truly unique to us. It may be that Neanderthals lacked essential modern human traits. When analyzing this very sophisticated problem, we will use certain tools of the Matlab application and methods that can determine the matches of the genome, the Phylogenetic genomic sequence of the Neanderthal, that closest known relative of modern man, and by comparing it with the genome of modern man. At the end, it tries to answer the question: how similar are we?

Keywords: *Phylogenetic Tree, mhDNA, UPGMA Distance Methods, Jukes-Cantor Methods, Neighbor-Joining Methods*

1. INTRODUCTION

We are a young species. Recent genetic and fossil evidence suggests that modern humans appeared in East Africa ~200,000 years ago, a fraction of the estimated 6 million years since the divergence of the human and chimpanzee lineages (Cavalli-Sforza and Feldman 2003; McDougall et al. 2005). In this short time, modern humans have spread across the globe, far surpassing all other primates and ancient human species in sheer numbers, geographic range, technological sophistication, and environmental impact. Our success is due in part to complex biological traits, including increased brain size, bipedalism, and changes in craniofacial and limb morphology, which began to appear in the human lineage long before the emergence of modern humans. These traits facilitated the evolution of unique human behavioral traits such as language and were ultimately caused by changes in the DNA (DeoxyriboNucleicAcid) sequence that occurred in the human lineage after the separation of man and chimpanzee. Identifying these changes has become a major focus of human genetics and genomics.

Genetic information can be preserved for a very long time thanks to the combination of intact DNA molecules and enables:

- Discovery of genetic modifications in their context
- Accurate determination of genome types

Areas of highly sequenced regions can be analyzed by hybridization based on the mapping process and allow:

- Precise counting of copies of genetic variations
- Analysis of homologous genes
- That there is no ambiguity in the obtained mapping results

Direct visualization of the DNA structure and genomic events is obtained thanks to the detection of a single molecule through:

- Analytical discrimination
- Detection of low frequency mosaics of variations,
- Compatibility with heterogeneous samples
- Study of DNA dynamics (DNA replication and recovery)

The analysis of the phylogenetic tree of DNA molecules is a very sophisticated process and determines the coincidence of genes and represents the basic evolutionary hypothesis of groups of organisms - known as the family tree of Humonids. It was created by comparing the DNA sequences of humans, chimpanzees, gorillas and orangutans. Each junction point in the tree represents a moment when the tree is estimated to branch. The Phylogenetic Tree application allows as to view, edit, format, and explore phylogenetic tree data. With this app we can prune, reorder, rename branches, and explore distances. Alternate tree topologies are important to consider when analyzing homologous sequences between species. A neighbor-joining tree can be built using the Matlab seqneighjoin function. Neighbor-joining trees use the pairwise distance calculated above to construct the tree. This method performs clustering using the minimum evolution method.

2. PHYLOGENETIC TREE

The phylogenetic tree is constructed so that certain species are found at the ends of the lines, which are called branches. On the example of the phylogenetic trees from the picture below, the relationships between the five species marked with A, B, C, D and E are presented. The places, the points where the branches diverge (they branch into two) are called internal nodes. The line leading to the point of branching is called the root. Two branches always start from each node. At each branching point there is the youngest common ancestor of the species that descend from it. Thus, at the point of branching from which species A and B originate, their youngest common ancestor is located, Figure 1.

Figure following on the next page

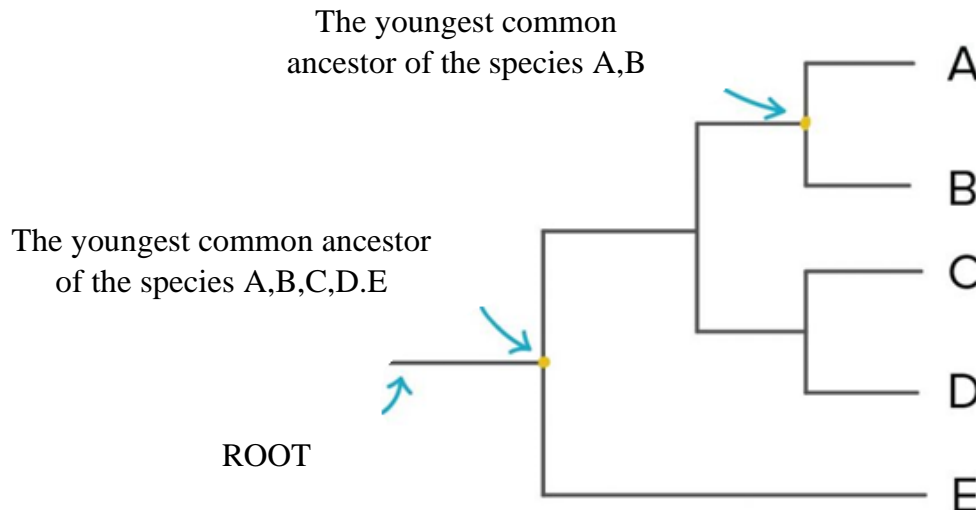


Figure 1: Phylogenetic tree example

At each branching point there is the youngest common ancestor of all the species that came from that root. For example, at the point of branching from which species A and B originate, there is a younger common ancestor of these two species. In a simple way, the youngest common ancestor of all five represented species (A, B, C, D, E) can be found. The diagram shows how for each species on the tree, a related species can be found, that is, the one with a common ancestor (located at the branching point above the root). Each horizontal line on the tree, the root, represents a series of ancestors leading to the species at its end. For example, the line leading to species E represents the ancestors of the species that diverged from the other species on the tree. A very simple method is used to determine the youngest common ancestor of two species. We start at the ends of the branches of two species and "go backwards" along the phylogenetic tree until we reach the branching point. For example, we want to determine how related species A, B, C, and D are to each other. Since species A and B have a younger common ancestor (they branch earlier), as we go backwards along the tree we reach the branching point for species B and C (only after the branching for species A and B). Based on this, it can be said that species A and B are more closely related to each other than species B and C. In this case, we will use Matlab to build a phylogenetic tree of humanoid species. In the Matlab command window, we type: ('<http://www.ncbi.nlm.nih.gov/>'), and the link takes us to the page of the National Center for Biotechnology Information database, where we can find the necessary data. From the database of the National Center for Biotechnology Information, Figure 2.

Figure following on the next page

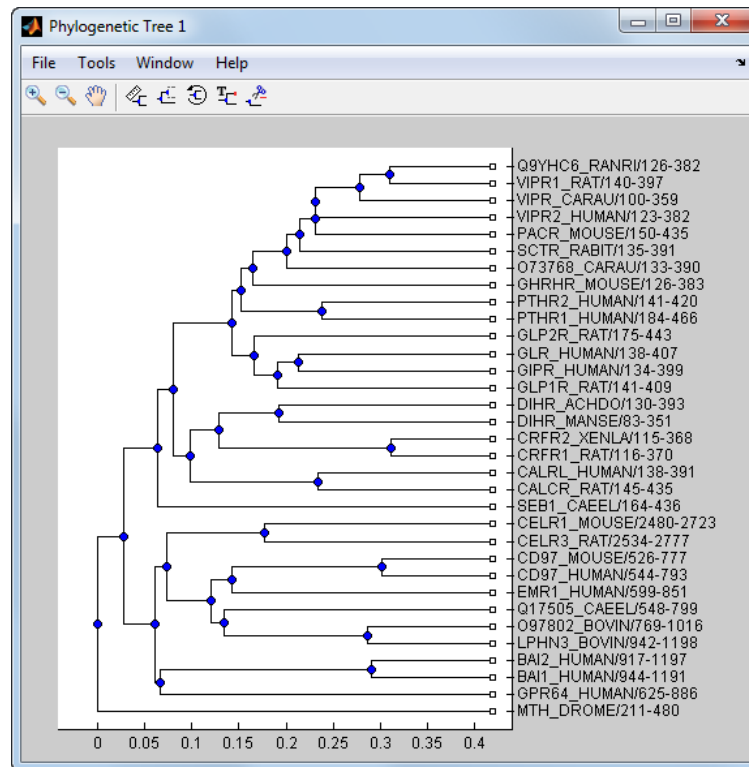


Figure 2: Phylogenetic tree of humanoid species

We will look for the human genome database - X90314 and get H.sapiens mitochondrial DNA for D loop 360 genomic sequences:

1	ttctttcatg gggaagcaga ttgggtacc acccaagtat tgacttacc atcaacaacc
61	gctatgtatt tcgtacatta ctgccagcca ccatgaatat tgcacgttac cataaatact
121	tgaccacctg tagtacataa aaacccaatc cacatcaaaa cccctcccc atgettacaa
181	gcaagtacag caatcaacc tcaactatca cacatcaact gcaactcaa agccaccct
241	caccactag gataccaaca aacctacca ccttaacag tacatagtac ataaagccat
301	ttaccgtaca tagcacatta cagtcacatc cctctcgtc cccatggatg accccctca

Loading data of all sequences and viewing the phylogenetic tree for the species we are interested in, and these are primates, we get them as data into the Matlab environment and create a genome tree, Figure 3.

Variables - primates		
primates		
1x12 struct with 2 fields		
Fields	Header	Sequence
1	'German_Neanderthal'	GTCTTTTCATGGGGAGCAGATTGGGTACCAACCAAGTATTGACTCACCCATCAGCAACCGCTATGTATCTCGTACATTACTGTTAGTTACCA...
2	'Russian_Neanderthal'	CCAAGTATTGACTCACCCATCAACAACCGCATGTATTTCTGACATTACTGCCAGCCACCATGAATATTGTACAGTACCATAATTACTTGACTA...
3	'European_Human'	TTCTTTTCATGGGGAGCAGATTGGGTACCAACCAAGTATTGACTTACCCATCAACAACCGCTATGTATTTCTGACATTACTGCCAGCCACCAT...
4	'Mountain_Gorilla_Rwanda'	TTCTTTTCATGGGGAGCAGAAATTGGGTGCCACCAAGTATTAGTTAACCCACCAATAATTGTATGTATGTCGTGCTACTGCGCAGCCACCAT...
5	'Chimp_Trogodytes'	GTACCACCTAAGTATTGGCTATTCTATTACAACCGCTATGTATTTCTGACATTACTGCCAGCCACCATGAATATTGTACAGTACTATAACCACTG...
6	'Puti_Orangutan'	TTGGGTGCCACCCAGTACTGACCCATTCTAACGGCTATGTATTTCTGATACCTCTGCTAGCCAACATGAATATCACCAACACACAACATC...
7	'Jari_Orangutan'	GGTGCAGCCCAATACTGACCCATTCTAACGGCTATGTATTTCTGATACCTCTGCTAGCCAACATGAATATCACCAACACACAACATC...
8	'Western_Lowland_Gorilla'	TTCTTTTCATGGGGAGCAAAATTGGGTACCAACCAAGTATTAGTTAACCCATCAATAATTATCATGTATATCGTGCATCACTGCCAGACACCAT...
9	'Eastern_Lowland_Gorilla'	TTCTTTTCATGGGGAGCAGAAATTGGGTGCCACCTAAGTATTAGTTAACCCACCAATAATTGTATGTATTTCTGTCATTACTGCCAGCCACCATG...
10	'Chimp_Schweinfurthii'	GTACCACCTAAGTATTGGCTATTCTATTACAACCGCTATGTATTTCTGATACATTACTGCCAGCCACCATGAATATTGTACAGTACTATAACTACTC...
11	'Chimp_Vellerosus'	CCACCTAAGTACTGGCTATTCTATTACAACCGCTATGTATTTCTGATACATTACTGCCAGCCACCATGAATATTGTACAGTACTATAACTACTCAA...
12	'Chimp_Verus'	GTACCACCTAAGTACTGGCTATTCTATTACAACCGGTATGTACTCTGATACATTACTGCCAGTCACCATGAATATTGTACAGTACTATAATCACC...

Figure 3: Represents the complete genome tree of the mitochondrial D-loop for 12 primates. Retrieved from NCBI on 10/18/2023.

After Matlab functions for loading sequential data from the primates.mat library, creating a phylogenetic tree and displaying it, we get, Figure 4:

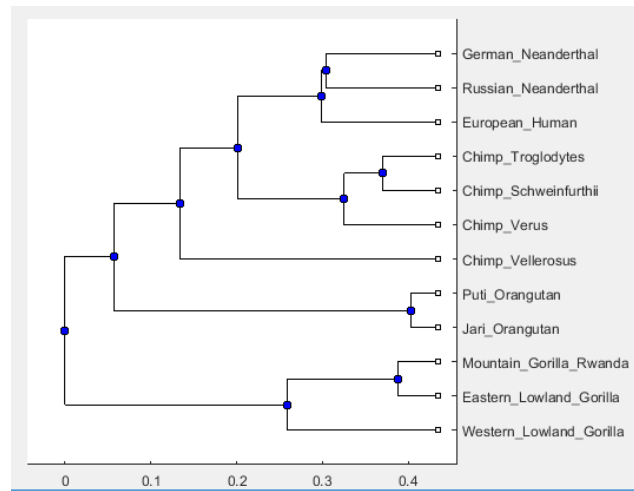


Figure 4: Phylogenetic tree of primates

By selecting a subset of the data from the phylogenetic tree and displaying the phylogenetic tree only for the Neanderthal, Human and Chimp branches, we get, Figure 5:

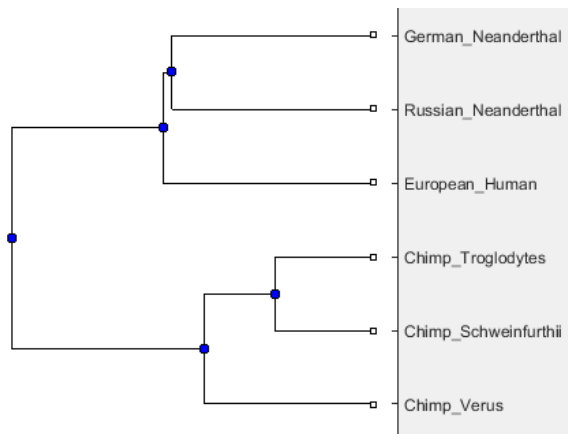


Figure 5: Phylogenetic tree with Neanderthal, Human and Chimp branches

We will view the aligned sequences in the Sequence Alignment application with the seqalignviewer(ma) Matlab function, Figure 6::

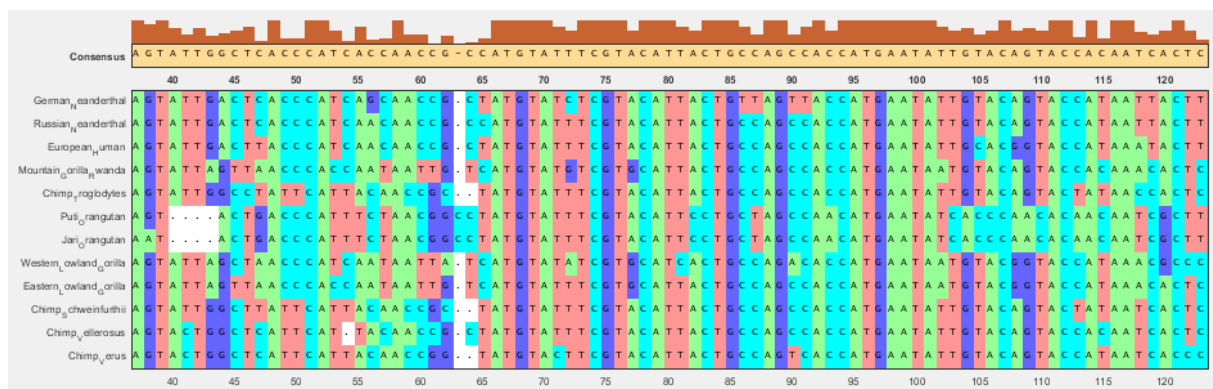


Figure 6: Aligned sequences from Humanoid primates

Algorithms for aligning multiple sequences do not always give an optimal result. By visually inspecting the alignment, we can identify areas that could be manually adjusted to improve the alignment. Now we can identify the area where we could improve the alignment in range 40 – 110 as some of possible alignment area. The comparison list goes to the 415th element, Figure 7:

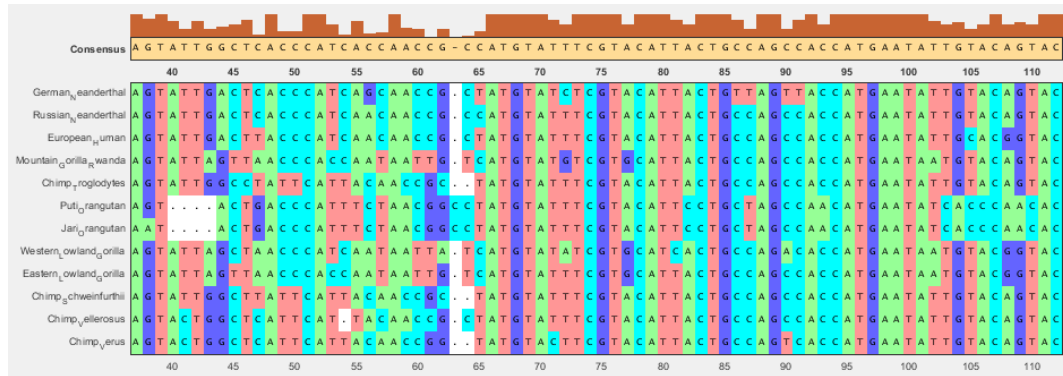


Figure 7: Aligned sequences area from diapason 40 – 110

2.1. Construction of the UPGMA phylogenetic tree using distance methods

We will calculate pairwise distances using the 'Jukes-Cantor' formula and a phylogenetic tree with the 'UPGMA' distance method. Since the strings are not prealigned, the seqpdist function performs pairwise alignment before calculating the distance. The distance-based phylogenetic method is fast and remains the most popular in molecular phylogenetics, especially in the era of big data when researchers often build phylogenetic trees with hundreds or even thousands of leaves. A distance-based method has two components: an evolutionary distance matrix that is usually derived from a substitution model, and a tree-building algorithm that constructs a tree from the distance matrix. Evolutionary distances differ not only by substitution models, but also by whether they are estimated independently (based on only the information between two aligned sequences) or simultaneously (based on information from all pairwise comparisons). Simultaneous estimated distances perform much better in molecular phylogenetics than independently estimated distances. Commonly used tree-building algorithms involve neighbor-joining, which groups groups into two species by comparing two measures: how close they are to each other (which is used in a simpler method known as UPGMA – (Unweighted Pair Group Method with Arithmetic Mean) and how far they are collectively from all other species. By using a logarithmic function, a formula is introduced for deriving evolutionary distances that include hidden changes.

$$dAB = -(3/4) \ln[1 - (4/3)pAB]$$

where dAB is the evolutionary distance between sequences A and B, and pAB is the observed sequence distance measured by the proportion of substitutions along the entire length of the alignment. For example, if the order of sequences A and B is twenty nucleotides long and six pairs are different, the sequences differ by 30%, or have an observed distance of 0.3. To correct for multiple substitutions using the Jukes–Cantor model, the corrected evolutionary distance was based on:

$$dAB = -3/4 \ln[1 - (4/3 \times 0.3)] = 0.38$$

The Jukes–Cantor model can handle only reasonably closely related sequences.

According to the above equations, the normalized distance increases as the actual observed distance increases. For distantly related sequences, the correction may become too large to be reliable. If two DNA sequences have 25% similarity, pAB is 0.75. This leads to the log value being infinitely large, Figure 8:

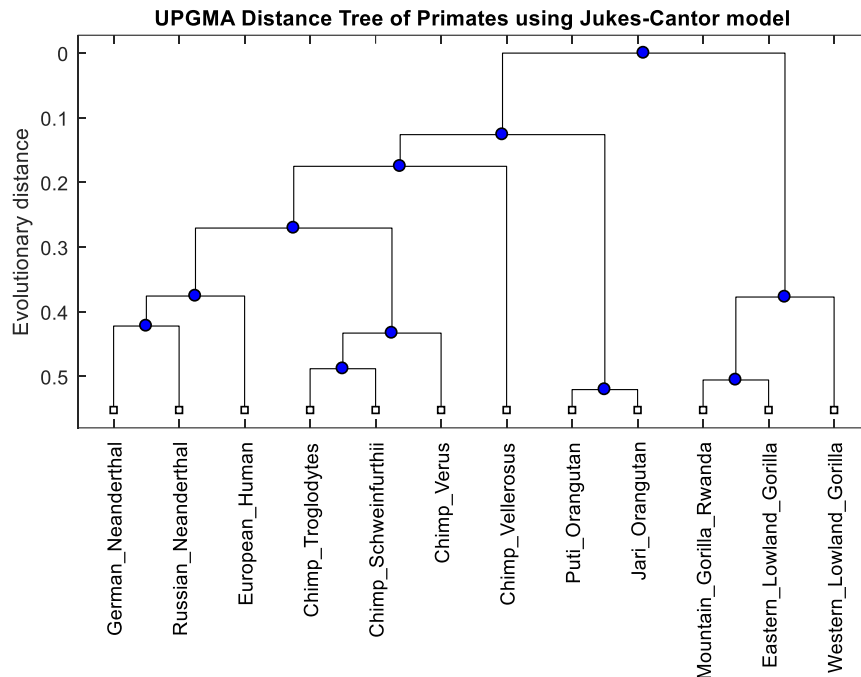


Figure 8: Phylogenetic tree object with 12 leaves

2.2. Neighbor-Joining Phylogenetic Tree using Distance Methods

A new method called the neighbor-joining method is proposed for the reconstruction of phylogenetic trees from evolutionary distance data. The principle of this method is to find pairs of operational taxonomic units, neighbors (OTU - Operational Taxonomic Units) that minimize the total length of branches in each phase of neighbor grouping starting from the star tree. Branch lengths as well as sparse tree topology can be quickly obtained using this method. This method performs clustering using the minimal evolution method. Suppose we have the following tree, Figure 9:

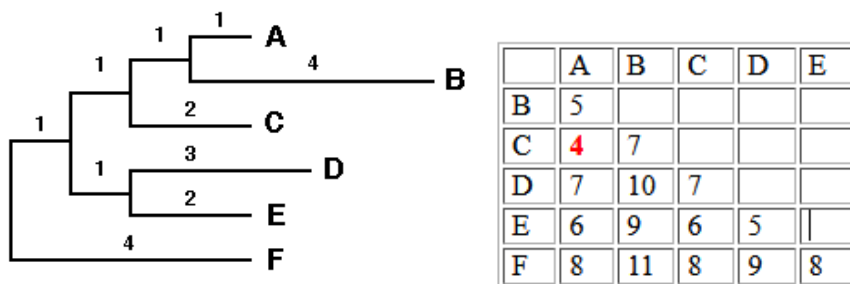


Figure 9: The raw data of the tree represented by the following distance matrix:

As we can see, we have in total 6 OTUs, $N=6$. Now we calculate the net divergence $r(i)$ for each OTU from all other OTUs and calculate a new distance matrix using for each pair of OTUs the formula:

$$M(ij)=d(ij) - [r(i) + r(j)]/(N-2) \text{ or in the case of the pair A,B}$$

Now we choose as neighbors those two OTUs for which M_{ij} is the smallest and we calculate the branch length from the internal node U to the external OTUs A and B.

$$S(AU) = d(AB) / 2 + [r(A) - r(B)] / 2(N-2)$$

Now we define new distances from U to each other terminal node and create a new matrix and raw data, Figure 10:

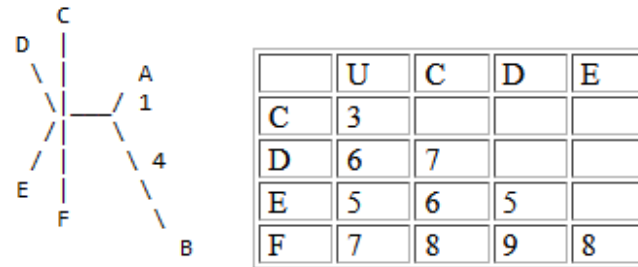


Figure 10: The raw data of the tree represented by the new distance matrix:

A neighbor joining tree for primates.mat now we can built using the Matlab function `seqneighjoin`. Joining trees use the pairwise distance calculated above to construct the tree, Figure 11:

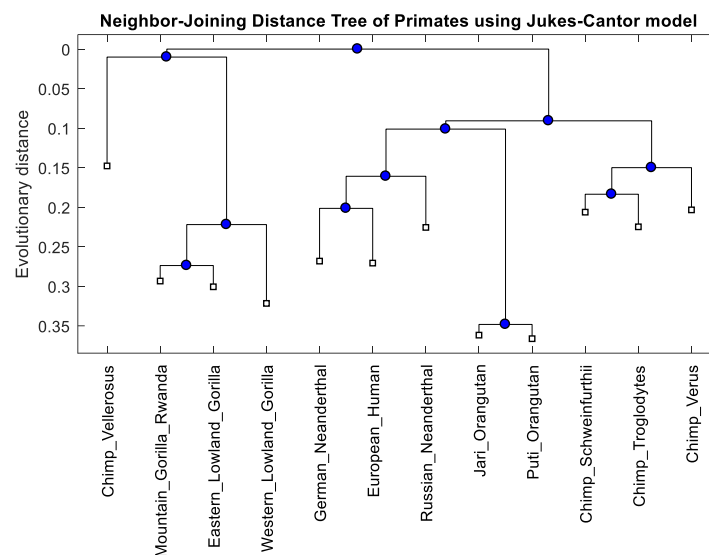


Figure 11: Neighbor Joining phylogenetic tree object with 12 leaves

2.3. Comparison of tree topologies

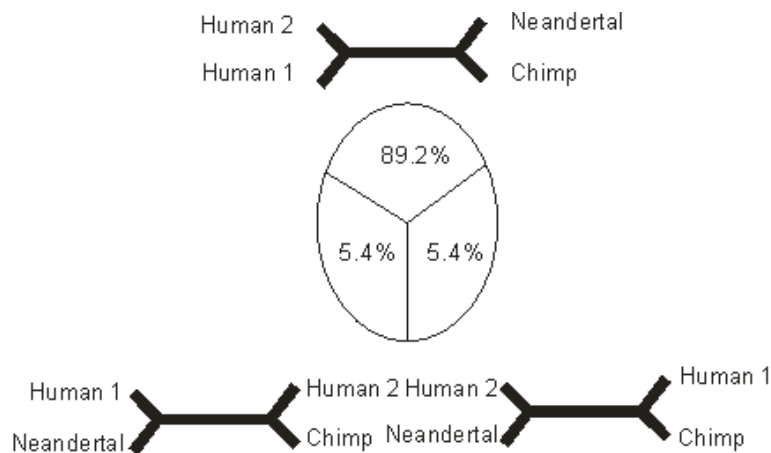
We can notice that different methods of phylogenetic reconstruction result in different tree topologies. The neighbor tree groups Chimpanzees Vellerosus in the class with Gorillas, while the UPGMA tree groups it close to Chimpanzees and Orangutans. The function `getcanonical` can be used to compare these isomorphic trees.

```
sametree = isequal(getcanonical(UPGMAtree), getcanonical(NJtree))
sametree = logical 0
```

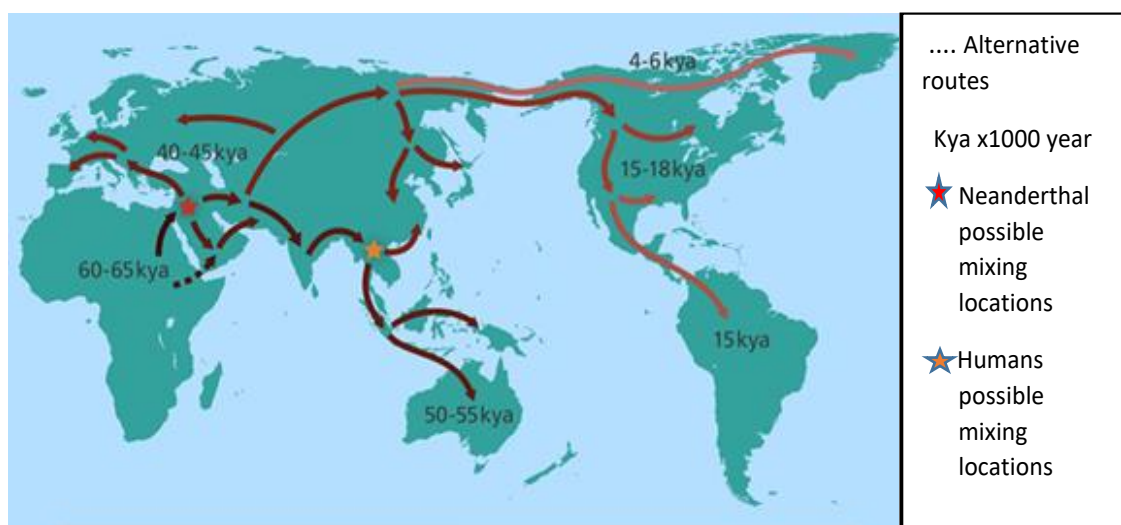
!!! They partially match

3. CONCLUSION

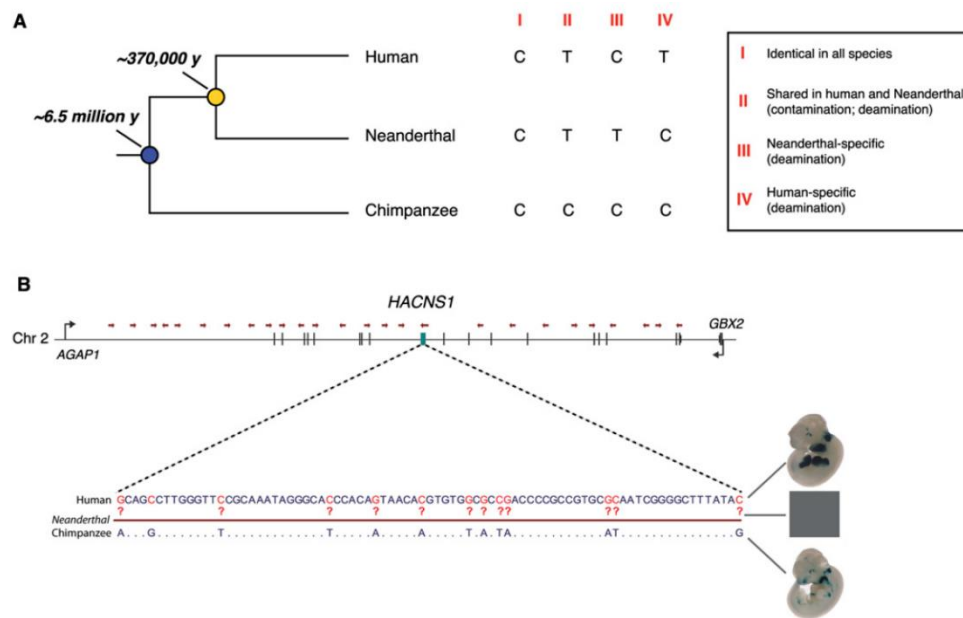
The paper attempts to answer the question that is at the heart of the Neanderthal genome project: Are modern humans fundamentally different from all archaic human species? Neanderthals were certainly intelligent: they recognizably shaped human tools and lived in established communities, which only suggests that they were "human" enough. We hope that a direct comparison of the human and Neanderthal genomes will reveal whether our talents for invention, language, and abstract thought- the basis of our perceived uniqueness among species- are truly unique to us. It may be that Neanderthals lacked essential modern human traits.



Historically speaking, as the conclusion of this paper, two key models have been presented that explain the evolution of Homo sapiens. These are the models "from Africa" and the "Multiregional" model. The model "from Africa" is currently the most widespread model. It is suggested that Homo sapiens developed in Africa before migrating around the world. On the other hand, the "Multiregional" model proposes that the evolution of Homo sapiens took place in numerous places over a long period of time. The overlapping of different populations finally led to the individual Homo sapiens species we have today. This assumption is supported by the current genomic evidence of the migration of modern humans using the "out of Africa" model. This is still a very active area of research, however, the current genomic evidence supports the thesis of the migration of modern humans using the "out of Africa" model, not the "Multiregional" model. The migration map looks like this:



In summary, our results indicate that whole-genome analysis of mtDNA will provide important information for studies of human evolution, signaling the emergence of the field of mitochondrial population genomics. However, it should be kept in mind that mtDNA is only one hodogram and the information is therefore limited because it only reflects the genetic history of women. As a conclusion, the evolutionary relationship between modern man, Neanderthal and chimpanzee can be shown in the picture:



Different genetic makeups are needed for comparative studies and a balanced view. For nuclear DNA, study regions will need to span at least 100kb of data to include a similar number of informative sites as the 16.5kb mtDNA genome. While determining 100 kb for 100–200 chromosomes may seem like a daunting project, DNA analysis technology continues to develop and such a study will be performed soon, providing us with an even more detailed understanding of our genetic history. However, there is still a long way to go, and we should not be surprised to discover that we are not as different from our extinct relatives as we believe.

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CHANGES IN THE DINAR EXCHANGE RATE IN THE LIBYAN ECONOMY AND THEIR IMPLICATIONS FOR INFLATIONARY PRESSURES

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ABSTRACT

This research paper focuses on knowing the impact of changes in the Libyan dinar exchange rate on the inflation rate, and exchange rates are of pivotal importance in the economies of countries, whether developed or developing ones, and the low exchange rate of the local currency against other foreign currencies is a legal ruin for the number of units of The foreign currency that represents the unit of the Libyan dinar. The study also relied on analyzing the perceptions that occurred for the local currency and what it represents in the foreign currency, which is (the dollar), and the other side is the inflationary currency. Policy stability in these countries. Which positively affects the stability of domestic inflation rates within the country, which is affected by the stability of its exchange rate.

Keywords: *Libyan dinar, exchange rate policy, exchange rate change, inflation rate, exchange rate differences, depreciation of the Libyan dinar, Libyan economy*

1. INTRODUCTION

Exchange rates are among the privileges of the monetary authority (the Central Bank), and it is a tool that links the open economy of any country and the rest of the world in its various transactions, and it has a prominent and important role in the Libyan economy. The paper analyzes the strategy of changes in export prices and changes in the foreign exchange balance in Libya. This paper explains how the development occurred at the local and international levels and the effect of changes in the Libyan dinar exchange rate on the inflation process in Libya. It is known from the cognitive point of view that most economic activities are affected by the rise and fall of the price because of changes in the exchange rate of the local currency. Not only does this have a direct impact on the exchange rate changes in the short term, but it also negatively affects the economic sectors that deal with the import of goods from abroad. Devaluation of the local currency against foreign currencies is a legal devaluation of a series of foreign exchange units representing the national monetary unit in which foreign exchange pricing policy plays an important role in foreign exchange and this role is reflected in the rise in prices of goods and services - the Libyan economy. This monetary policy increases the costs and prices of goods for producers and consumers. Changes in the Libyan dinar exchange rates according to the decline during the period of this study. Years have affected some economic variables in the Libyan economy. This was particularly reflected in changes in the prices of domestic goods or services imported from abroad and led to a wave of inflation that destroyed the Libyan economy. From here and from the point of view of the research problem, a basic research question arises, the answer that we seek in this paper, and whether the changes in the Libyan dinar contributed to the rise in the prices of goods and services and inflation in the Libyan economy.

2. THE CONCEPT OF INFLATION IN THE LIBYAN ECONOMY

Inflation has become an economic problem affecting both developed and developing countries. Excessive or continuous price increases devour wages and profits and open them to the desire to work, killing the incentive to invest. It prevents stability in developed countries and hinders development processes in developing countries.

Inflation is an economic phenomenon linked to many relationships between factors and forces that affect the movement of economic variables, the most important of which are the movement of price levels, economic growth, and international relations, as well as the evolution of variable development in different economies (Ramadan, 2001, p. 267). It is noted that there is a consensus among economists on the definition of inflation as a continuous increase in the general level of prices of goods and services. From this definition we see that price growth must be general for most commodities, that is, the general level of prices is increasing, and that this growth will be continuous, so the growth in the price of one commodity or a limited group of commodities is not considered inflation. Even if this growth continues. Economists also argue that according to the previous definition, a distinction must be made between a one-time increase in prices and that which is continuous over some time.

3. THE GENERAL PRICE LEVEL IN INFLATION IS INCREASING

An increase in the price of one or two goods is not inflation, as a decrease in other goods may correspond to this increase, causing the general level of prices to remain constant or perhaps even less, but with the rise in all or most of the prices of goods and services affecting general inflation. Inflation is measured by the so-called (general price level). The general price level is defined as the weighted average price of a set of goods and services used or consumed in a country. It is usually what is called a single measure of the average prices of goods and services in a country, according to either consumer or producer prices (Al-Fitouri, 2019, p. 156). Inflation is also a dynamic phenomenon, and the danger of it is that it continues. In this regard, we differentiate between a one-time temporary increment and a one-time permanent increment. Bad weather conditions in one year can lead to a serious shortage of agricultural commodities, which will lead to the growth of these commodities, and subsequently to the growth of the general price level. Such a one-time temporary increase in prices is not considered inflation. Goods and services to the extent that they cause a general shortage of the means of production or employment or both. However, the previous definition of inflation has some shortcomings, which are mainly reflected in the following points:

- 1) The previous definition of inflation did not mention the length of time that prices will continue to rise during which they are considered inflation.
- 2) Also, this definition of inflation does not distinguish between an increase in prices accompanied by an improvement in the quality of goods and services and an increase in prices that is not accompanied by an improvement in the quality of goods. Does the rise in service prices affect the rise in price inflation? If prices remain stable as the quality of goods and services deteriorate, isn't this inflation?
- 3) The previous definition of inflation did not consider the effect of technological progress. If there is technical progress that has led to a decrease in production costs, while prices have remained constant, this is not considered inflation, so the members of society must benefit from technological progress in terms of lowering prices if it is accompanied by a decrease in cost.

4. CONDITIONS THAT MUST BE MET FOR THE SUCCESS OF THE DISCOUNT POLICY

Some many fluctuations and changes occur in the value of the local currency compared to other currencies based on a decision by the monetary authorities, whether the decision is a recognition of reality or an attempt to adjust the exchange rate ratios according to certain goals, and cases of devaluation of the local currency are more widespread and frequent than cases of currency appreciation (Malak, 2018, p. 177).

The success of the local currency devaluation policy also depends on the following factors:

- 1) Ensuring the stability of the level of prices of local goods and services to maintain the stability of the real value of money. On the contrary, the prices of foreign goods and services rise in front of the demand of local consumers, i.e., ensuring that the prices of local goods and services do not rise by an amount greater than or equal to the rate of reduction.
- 2) The second factor on which the success of the reduction policy stands is the sum of the elasticities of foreigners' demand for exported local goods and services, as well as the domestic demand for imported foreign goods and services (i.e., the demand for exports and imports) must be greater than the correct one.
- 3) That this reduction is not matched by a similar reduction by the partner country in the trade, otherwise the policy of reduction is not feasible, as happened in the European countries between the first and second world wars, which is known as competition in devaluing the currency to promote exports when a country reduces its currency to enhance its exports to the other partner, and at a later time, this partner devalues its currency as well to boost its exports and reduce its imports, and so on. This competition in devaluing the currency led to the emergence of inflationary pressures in that period.
- 4) That the economy devalued its foreign currency should have appropriate flexibility on the productive side to accommodate the change that occurs in the value of the currency.

4.1. The impact of the devaluation of the dinar exchange rate on Libyan exports

A change in the nominal exchange rate leads to a change in the real effective exchange rate. This change in the exchange rate will lead to a change in the relative prices of exports and imports, as well as this reduction will increase the profitability of companies exporting national goods, as it raises the income of those companies or individuals exporting local currency, which is reflected in an increase and raise the degree of utilization of available energy and investment in the long run. average. However, this trend does not apply to Libya, because the Libyan economy depends on the oil commodity, the price of which is determined in international markets. It is noted from Table 2 that the average growth rate for the last three years was about 45%, and thus the year 2020 recorded the highest value of exports, which is 31.148 billion dinars. The Libyan economy's exports are also limited to mineral fuel exports, in addition to chemical exports, but in simple proportions. Oil exports are not affected by the devaluation of the local currency. This is because the value of the oil commodity is determined by external factors, which are the quantity demanded and offered in the global market, and the number of quotas determined by the organization Oil-exporting countries. A group of studies were conducted in the United States of America to calculate the price elasticity of crude oil demand and in 23 other countries as well, in different periods and different methods, all of which confirmed that the demand for crude oil is inelastic, and Table 1 shows us the low and low elasticity of some of the most important Libya's international trade partners who imported Libyan crude oil.

Country	elasticity ratio	Country	elasticity ratio	Country	elasticity ratio
France	0.478	Germany	0.0823	Greece	0.086
Italy	0.441	Japan	0.0186	Switzerland	0.1147
Turkey	0.0279	Britain	0.0279	USA	0.0338

Table 1: Price elasticity of demand for Libyan oil

(Source: Central Bank of Libya, Economic Bulletin, Statistics Department, 2020.)

Year	Exports		Imports		Trade balance	
	The value	Growth rate %	The value	Growth rate %	The value	Growth rate %
2015	5,221.5	41.80	1,911.4	-0.89	3,310.1	88.76
2016	5,393.9	3.30	2,660.4	39.18	2,733.5	-17.41
2017	10,177.0	88.67	5,585.7	109.95	4,591.3	67.96
2018	14,806.6	45.49	5,597.9	0.21	9,208.7	100.59
2019	20,848.3	40.80	8,255.2	47.46	12,593.1	36.75
2020	31,148.0	49.40	7,953.5	-3.65	23,194.5	84.18

Table 2: Developments of exports, imports, and trade balance of the Libyan economy - Value in millions of Libyan dinars

(Source: Central Bank of Libya (WBG, 2021))

5. DISCUSSING THE RESULTS OF THE CONCEPT OF INFLATION IN LIBYA

The concept of inflation has become one of the global economic problems affecting both developed and developing countries. Excessive or continuous price increases devour up the salaries and profits of detainees, push them into uncertain jobs, and kill the incentive for new investments. In the long run, inflation disturbs the monetary and economic stability of the developed countries and hampers the development processes of the developing countries. This economic phenomenon is causally related to many other economic factors that can significantly affect the movement of economic variables. They have the strongest effect on the movement of price levels, limiting economic growth, disrupting international economic relations amid which the relationship between supply and demand and the payment system is disturbed, as well as attempts to create a new impetus in various economic situations. There is consensus among most economists about defining inflation as a continuous increase in the general level of prices for goods and services. They believe that price growth should be general for most commodities and that this growth should be continuous. Hence, the growth in the prices of one commodity or a limited group of commodities is not considered inflation, even if such growth has been continuous over a long time. Some economists also argue that according to the general definition of inflation, a distinction must be made between a one-time increase and a continuous increase in prices over time.

6. THE EFFECT OF INFLATION ON INCOME DISTRIBUTION

One of the main reasons for paying attention to the phenomenon of inflation is its strong effects on the distribution of income in society, and to understand the effects of inflation on the redistribution of income, it is necessary to distinguish between monetary income and real income. And if we say that the individual's monthly income is 200 dinars, then this is the cash income. As for the real income of this individual, it means the number of kilograms of meat, and the magnitude of loaves, fruits, and other goods that he can obtain 200 dinars, that is, with his cash income, and the distinction between Monetary income and real income play an important role in understanding the effects of inflation on income distribution (Attia, 2018, p. 133). Inflation affects the distribution of income among the different groups in society, and in this regard, the members of society are divided into two groups, the first category are those with fixed or semi-fixed incomes, and the second category are those with rapidly increasing incomes. The first category includes workers and employees who receive fixed or increased salaries at low rates. Those who own real estate with fixed rents, and pensioners, all of these, their real incomes decrease due to inflation if prices rise greater than the rate of increase in their cash incomes, and this results in a decrease in their relative share of real national income.

As the second category, it contains fast-growing income earners, such as factory and shop owners, and self-employed professionals such as doctors, contractors, lawyers, craftsmen, and others. All of them increase their profits with the rise in prices because their revenues increase at a greater rate or a rate equal to inflation, and their costs increase at a lower rate. The wages they pay are similar, the rents are also fixed, and the interest rates on their loans are fixed. Since the cash incomes of this group increase at a rate equal to or greater than the rate of inflation, their real incomes do not decrease unless they increase. Therefore, their relative share of the national income increases, and from here it can be said that inflation redistributes real income in favor of the rich classes.

7. THE MOST IMPORTANT CONDITIONS THAT MUST BE MET FOR THE SUCCESS OF THE DISCOUNT POLICY

There are many fluctuations and changes that occur in the value of the local currency compared to other currencies based on a decision by the monetary authorities, whether the decision is a recognition of reality and its legalization, or as an attempt to adjust exchange rate ratios according to certain goals, and cases of devaluation of the local currency are more widespread and frequent than cases of currency appreciation. And the analysis of the conditions necessary for the success of this policy will focus on the process of devaluing the value of money but resorting to raising the value of money is rare. Therefore, the success of the national currency devaluation in restoring the balance of payments balance of the devaluing country is not considered an easy task. The process of devaluing the currency is a legal process of eliminating the number of units of the foreign currency against one unit of the local currency, and economists believe that the devaluation of the foreign currency leads the country's economy to decline in the prices of local goods and services in the eyes of foreigners and leads exports to an increase in their value even more than before. The success of the local currency devaluation policy depends on the following factors:

- Ensuring the stability of the level of prices of local goods and services to maintain the stability of the real value of money, and on the contrary, the prices of foreign goods and services rise in front of the demand of local consumers, that is, to ensure that the prices of local goods and services do not rise by an amount greater than or equal to the rate of reduction.
- The second factor behind the success of the reduction policy is that the total elasticities of foreigners' demand for exported local goods and services, as well as the domestic demand for imported foreign goods and services (ie, the demand for exports and imports), must be greater than the correct one.
- That this reduction is not matched by a similar reduction by the partner country in trade, otherwise the policy of reduction will not be feasible, as happened in European countries between the first and second world wars, which is known as competition in devaluing the currency to promote exports, where a country reduces its currency from to enhance its exports to the other partner, and at a later time, this partner devalues its currency as well to enhance its exports and reduce its imports, and so on. This competition in devaluing the currency led to the emergence of inflationary pressures in that period.
- That the foreign currency finds suitable flexibility within the depreciating economy in the productive aspect to accommodate the change that occurs in the value of the currency.

8. CONCLUSIONS

In this study and research work, the conclusions of this study are presented about the most important results of the recommendations that raise the efficiency of the relationship between monetary variables and other economic variables in the Libyan economy.

Exchange rates are also of pivotal importance in the economies of countries, whether developed or developing ones and the reduction of the local currency exchange rate against other foreign currencies is a legal annihilation of the number of units of foreign currency that represents the unit of the Libyan dinar. The Libyan economy is characterized by the presence of two values of the Libyan dinar during the observation period in this paper. The first value of the Libyan dinar was determined by the Central Bank of Libya and called the official value of the local currency, and the second value was called by the Central Bank as the unofficial value to create a parallel market. The currency and the central bank described the second value as the unofficial value of creating a parallel market, and the gap between the two prices in the two markets widened until 2019 when it peaked at 29.681 Libyan dinars, which caused a loss of confidence in the Libyan dinar. The inflationary wave in the Libyan economy is largely attributed to the monetary expansion during the observation period, as its growth rate reached 5.5% annually, while the growth of the gross domestic product reached 2.6%. This difference in the growth rate contributed to the increase in the monetary stability coefficient, which amounted to 2.9% for the period observed in this research. The Libyan economy is characterized by one export commodity - oil because the share of oil exports is less than 95% of the total Libyan exports, which exposes the income of this economy to fluctuations because the price of these commodities is governed by external factors. The measures of trade policy and foreign exchange control during the 1990s contributed to the emergence of illegally imported goods, that is, illegal imports at very high prices, which led to a decline in the real value of the Libyan dinar. A cognitive analysis of the economic criteria of the Libyan economy revealed that the change in the Libyan dinar exchange rate affected inflation and had a positive moral position, and when the exchange rate rose by 10%, inflation rose by 79.7%. With the moderation of monetary policies, the government directly affected the rate of change in the price index, and thus the severity of the inflationary wave in the Libyan economy.

9. RECOMMENDATIONS

From the epistemological analysis of the change in the exchange rate of the dinar in the Libyan economy and its repercussions on inflationary pressures, several recommendations emerge for the Libyan monetary authorities. The first recommendation refers to the need to reconsider the value of the Libyan dinar so that the national currency regains its health compared to other currencies because the dinar has lost more than 80% of its value. This recommendation, if applied consistently by established global standards, can raise the value of the Libyan dinar to a level that guarantees and contributes to reducing the intensity of the inflationary wave in the Libyan economy. The implementation of this recommendation will require full coordination between monetary policy and fiscal policy, to determine the level of general agreement that corresponds to the growth of money supply. The second recommendation calls on the Libyan monetary authorities to coordinate between the amount of money on their part and the volume of the real GDP, to avoid any inflationary gap that leads to instability in the economy, or to ensure an increase in the total output. Goods and services. The third recommendation of the Libyan authorities is to provide advice to the Libyan economic policy to develop plans and programs to increase the productive capacity of the national economy, focusing on small and medium enterprises in a way that ensures self-sufficiency to reduce imports as an element of income leakage and reduce the degree of dependence on the income of exported goods only (oil) and use this potential to support these projects. It is necessary and tries to limit the import of luxuries and entertainment by using the appropriate world-acceptable standards of tax and customs policy.

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SOME MANAGERS' OUTCOMES AND THEIR PERCEPTIONS OF INTERNAL GREEN MARKETING PRACTICES AND ACHIEVED FINANCIAL GOALS IN THE ENVIRONMENTALLY SENSITIVE SECTOR ORGANIZATIONS

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ABSTRACT

Many environmentally sensitive organizations pay attention to their environmental sustainability, social and environmental responsibility, and therefore to the alignment of their business, social and environmental performance. In order to respond to environmental challenges, organizations adopt the internal green marketing concept. The role of managers in adopting this concept and its practices is crucial. Therefore, organizations need motivated and satisfied managers. Simultaneously with the implementation of such an innovation, managers are expected to achieve the financial goals of their organization. Although rare, previous studies report that managers who positively identify with the organization contribute to the achievement of the organization's financial goals, while their organizational identification is influenced by the internal green marketing practices. In line with the above, the subject of this paper was the examination of some managers' outcomes (e.g. managers' satisfaction and their identification with the organization), and the internal green marketing practices and achieved financial goals in the environmentally sensitive sector organizations. The empirical research was conducted by an online survey. The sample consisted of managers in the small and medium-sized organizations operating in the agribusiness sector in Serbia. The aim of the paper was to determine whether the level of managers' satisfaction and the level of their organizational identification coincide with their perceptions of the level of implementation of internal green marketing in the organization and the level of achieved organization's financial goals. The results have shown that the managers in the agribusiness sector organizations in Serbia are satisfied managers and the ones who are highly identified with the organization. In addition, they positively perceived the implementation of internal green marketing in their organizations and reported that the financial goals of their organizations were achieved. The results of this research provide an insight into these managers' outcomes, as well as the level of their awareness about both some environmental issues from the internal green marketing perspective, on the one hand, and some financial issues (financial goals), on the other, the realization of which must be coordinated, although it is not always easy. The results of this paper refer to the small and medium-sized organizations operating in the agribusiness sector in Serbia, so these results can be useful to the managers in these organizations and other environmentally sensitive organizations.

Managers' perceptions of the mentioned variables are important, since managers are key in spreading eco awareness among employees, in adopting internal green marketing concept and its implementation, and achieving the financial and environmental goals of their organizations, especially those operating in the environmentally sensitive sector such as the agribusiness sector in Serbia.

Keywords: *internal green marketing, financial goals, managers' satisfaction, managers' organizational identification, agribusiness sector*

1. INTRODUCTION

Many organizations operating in environmentally sensitive sectors strive to the alignment of their organizational and environmental performance. In order to respond to environmental challenges, organizations adopt a green orientation and “greening” their operations. The adoption of the green orientation in any organization is supported by the adoption of green marketing, and thus its internal dimension. The implementation of green marketing and green marketing strategy has a positive effect on business performance (Van Nguyen & Nguyen, 2020) and leads to better environmental protection (Crittenden et al., 2011). According to Fraj et al. (2011, p. 349), green marketing strategy affects marketing performance, and marketing performance¹ affects economic performance². Hence, the green marketing practices are important for organizational outcomes such as financial performance. In addition, it was confirmed that the internal green marketing practices are important for the financial performance of the agribusiness sector organizations, which is mediated by managers' organizational identification (Milanović et al., 2022a). The adoption of internal marketing by managers affects the perception of internal marketing by employees (e.g. Boukis et al., 2015). Accordingly, the adoption of internal green marketing by managers should influence the perception of internal green marketing by employees. This is one of the reasons why managers' perceptions of internal green marketing in an organization are important. In addition, it was confirmed that the internal green marketing practices have a positive impact on managers' satisfaction (Qureshi & Mehraj, 2022). Consequently, satisfied managers should adopt the internal green marketing philosophy more quickly and apply it more efficiently in the organization's operations. In line with the above, the subject of this paper is the examination of some managers' outcomes (managers' satisfaction and their identification with the organization), the internal green marketing practice and achieved financial goals in the environmentally sensitive sector organizations, based on the perception of their managers. The empirical research was conducted. The sample consisted of managers in the small and medium-sized organizations operating in the agribusiness sector in Serbia. The aim of the paper is to determine whether the level of managers' satisfaction and the level of their organizational identification coincide with their perceptions of the level of implementation of internal green marketing in the organization and the level of achieved organization's financial goals. The results of this paper emphasize the importance of the coordinated efforts of managers in small and medium-sized organizations operating in the agribusiness sector in Serbia in the direction of improving their own satisfaction and identification with the organization, thus also the satisfaction and organizational identification of employees. In addition, the results of this paper emphasize the importance of coordinated efforts of managers towards more intensive application of internal green marketing activities, on the one hand, and achieving financial goals, on the other hand.

¹ corporate reputation, alignment between organization's offer and market expectations, “successful launching of new products onto the markets”, corporate and brand image, customer loyalty, customer satisfaction (Fraj et al., 2011, p. 346).

² profitability, sales growth, economic results, profit before tax, market share (Fraj et al., 2011, p. 346).

The structure of the paper consists of the following parts: introduction, conceptual framework—the connection of the observed variables, methodology, results and discussion, conclusion, and references.

2. CONCEPTUAL FRAMEWORK – THE CONNECTION OF THE OBSERVED VARIABLES

In general, most previous studies have examined the impact of green innovation in the development of new products, services and processes on financial performance or the impact of green supply chain management on the organization's operations (e.g. Novitasari & Agustia, 2021; Dong et al., 2021). Besides, previous studies conducted in the agribusiness sector have mainly examined the implementation of green supply chain management or green marketing strategies in agro industry (Sharma et al., 2017). Namely, previous studies in the agribusiness sector on managers' outcomes in the context of organizational "greening" are rare (e.g. Milanović et al., 2022a). Satisfied managers as well as satisfied employees are generally more motivated. Hence, organizations strive to satisfied managers and thus satisfied employees. From the employees' perspective, previous studies have shown that the implementation of green marketing orientation in an organization (Chahal et al., 2014), internal green marketing (Milanović et al., 2023), and green internal communication (Milanović et al., 2022b) lead to satisfied employees. Based on a literature review, it is determined that the implementation of internal green marketing leads to satisfied managers (Qureshi & Mehraj, 2022). Satisfied managers adopt the internal green marketing philosophy more quickly. For the above reasons, the agribusiness sector organizations also strive for satisfied managers. Since managers' or employees' organizational identification refers to "perceived oneness with an organization and experience of the organization's successes and failures as one's own" (Mael & Ashforth, 1992, p. 103), the impact of organizational identification of employees on their satisfaction and engagement (Karanika-Murray et al., 2015), and on motivation to achieve better performance (Bjerregaard et al., 2017) was expected and confirmed. At the same time, relevant literature states that internal marketing activities (Hernández-Díaz et al., 2017), and green/environmental activities (Gabler et al., 2014) like "the socially responsible activities of an organization can act to enhance the social identity of the employee as a member of the firm, which strengthens her/his identification with that organization" (Fu et al., 2014; Kim, et al., 2017; Turker, 2009 as cited in Su & Swanson, 2019, p. 440). Finally, it has been empirically confirmed that internal green marketing affects managers' organizational identification (the agribusiness sector organizations, Milanović et al., 2022a). According to Qureshi and Mehraj (2022, p. 791), "internal green marketing (IGM) is defined as the extent to which an organization involves endorsing environmental values and develops a wider corporate green culture across the organization." Qureshi and Mehraj (2022) define three dimensions of internal green marketing. The first dimension is green internal communication, the second dimension is green skill development, the third dimension refers to green rewards. Each of them consists of five activities – items. "Managers spread the philosophy of internal green marketing among employees. Therefore, it is important that managers adopt internal green marketing philosophy" (Milanović et al., 2022, p. 1081). According to Wieseke et al. (2009), the manager's organizational identification directly influences employees' organizational identification (employees as his/her followers). Wieseke et al. report that "when customer-contact employees identified strongly with their organizations, they were more likely to reach a higher level of sales quota achievement and to perform more effectively" (2009, p. 137). In addition, they report that managers of business units with high organizational identification generate higher business volume. Finally, organizational identification can contribute to the organization's facing green environmental challenges, as well as achieving financial performance in the agribusiness sector organizations in Serbia (Milanović et al., 2022a).

In the above, the connection between organizational identification and financial performance or financial goals can be seen. The financial goals of an organization can be observed through the level of its profitability, sales growth, market share, and cost reduction (e.g. Fraj et al., 2011). Finally, the implementation of internal green marketing practices must be supported not only by human but also by financial resources. Therefore, it is important that the organization adopts internal green marketing practices and simultaneously achieves financial goals which is facilitated when it has satisfied managers who are highly identified with the organization. In order to verify the truth of the stated claim, empirical research was conducted.

3. METHODOLOGY

Data collection was carried out on a sample of the managers of the small and medium-sized organizations of the agribusiness sector in Serbia at the beginning of the year. An online survey was used. The e-mail addresses of the managers were taken mostly from the websites of the organizations. From 197 distributed questionnaires, 34 completed ones were returned. The response rate was 17.23%. Since they were reluctant to participate in this survey, they were repeatedly reminded by e-mail to fill it out. The organizations in the sample operate in two sectors, in the Sector A: Division 01 ("Crop and animal production, hunting and related service activities"³) – 35, 29% of them, and in the Sector C: Division C10 ("Manufacture of food products") – 44,12% and Division C11 ("Manufacture of beverages") – 20,59% (SIC codes at: <https://www.siccodes.net/classification/>). The sample structure of respondents – managers was presented in Table 1. The managers were asked to rate the extent to which they agree with the statements offered in the survey (1 - to a very small extent; 5 - to a very large extent). Managers' satisfaction shows the level of satisfaction with their job. It was measured by a five-item scale by Huang et al. (2019). Managers' organizational identification shows the level of their belonging to the organization or oneness with the organization as well as the level of their experience of its "successes and failures as one's own" (Mael & Ashforth, 1992, p. 103). It was measured by a six-item scale (Mael & Ashforth, 1992). Internal green marketing was observed through green internal communication activities, green skills development activities, and green rewards activities (the scale by Quereshy & Mehraj, 2022). The level of the application of these activities in the organization was examined. The level of achieved financial goals was observed as the extent to which the organization has achieved the following goals – the increase of sales revenue and profit, and the reduction of costs in the past year.

Table following on the next page

³ A01, code 01.1; 01.2; 01.3; 01.4, 01.5, 01.6, SIC codes at: <https://www.siccodes.net/classification/>

Gender	
Male	38.24
Female	61.76
Age	
<31	29.41
31 – 40	14.71
41 – 50	32.35
51 – 60	20.59
>61	2.94
Education	
secondary	8.82
higher	91.18
Position	
general or executive managers	26.47
marketing manager	26.47
financial manager	23.54
human resource manager	11.76
manager of business unit	11.76
Organization size⁴	
small 10 – 49	67.65
medium 50 – 249	32.35

*Table 1: The sample structure (%) (N=34)
(Source: Authors' calculation)*

4. RESULTS AND DISCUSSION

First, the level of managers' satisfaction and the level of their organizational identification were examined. The results are shown in Table 2.

Scale rating	1	2	3	4	5
managers' satisfaction	0	2.94	11.76	41.18	44.12
managers' org. identification	2.94	5.88	8.82	29.42	52.94
1 - to a very small extent; 5 - to a very large extent					

*Table 2: Response structure - the managers' attitudes towards their satisfaction and organizational identification (%)
(Source: Authors' calculation)*

Out of the total number of managers, over 85% of them state that they are satisfied to a large or very large extent, while over 82% of them state that they are highly identified with the organization. The average rating of the level of managers' satisfaction is 4.27 and the level of managers' organizational identification is 4.25. Managers of the agribusiness sector organizations in Serbia are highly satisfied and strongly organizationally identified. The results of the examination of managers' perceptions of the implementation of internal green marketing and the achieved financial goals are presented below. The respondents' perceptions, that is, the managers' perceptions of the implementation of internal green marketing (through internal green communication, green skill development and green rewards) and their activities are shown in Table 3.

⁴ The number of active enterprises/entrepreneurs in the agribusiness sector in the Republic of Serbia (at the end of 2017) was 12,823, of which micro: 86.90%, small: 9.75%, medium: 2.7% and large: 0.65% (The Serbian Business Registers Agency as cited in: The analysis of prospective occupations in the agro-business sector, Table 7, Milanović et al., 2022a).

Scale rating Dimensions	1	2	3	4	5
green internal communication	5.89	8.82	17.65	32.35	35.29
green skill development	5.88	14.71	20.59	32.35	26.47
green rewards	20.59	23.53	17.65	26.47	11.76
1 - to a very small extent; 5 - to a very large extent					

Table 3: Response structure - the managers' perception of the implementation of internal green marketing – the IGM dimensions (%)
(Source: Authors' calculation)

Out of the total number of managers, over 67% of them state that green internal communication is used to a large or very large extent in their organizations, over 58% of them state that green skill development is used to a large or very large extent in their organizations, and only over 38% of them state that green rewards are used to a large or very large extent in their organizations. It can be seen that managers are very satisfied with the extent to which green internal communication activities are used in their organization. It is important because it emphasizes that managers should communicate with employees about green actions and balance the reactions of other stakeholders, since these actions may not be supported by them (Marthur & Marthur, 2000 as cited in Fraj et al., 2011). The results have shown that the green skill development activities were rated better than the green rewards activities. Namely, managers gave the lowest rating to the practice of green rewards in the organization. The average rating per item and the average rating per dimension of the internal green marketing are presented in Table 4. Table 4 (green rewards) illustrates that managers positively experienced only the statement that their organizations encourage their employees to use environmentally friendly products or services. Other ways of green rewards are used little in these organizations. For example, employees' rewards for environmental protection contributions and for the promotion of environmentally friendly behavior are largely absent. In this way, employees can be demotivated to care about the environment.

Dimensions	Average rating per item (five items)					Ar/D
	1.	2.	3.	4.	5.	
green internal communication ⁵	3.97	3.85	3.62	3.67	3.67	3.76
green skill development ⁶	3.32	3.59	3.94	3.71	3.15	3.54
green rewards ⁷	2.85	2.85	2.85	2.15	3.53	2.85

Table 4: Average rating per item and average rating per dimension (Ar/D) of internal green marketing
(Source: Authors' calculation)

⁵ The items: 1. "Our organization offers employees a green vision that we believe in"; 2. "Our organization's green vision is well communicated to all employees"; 3. "Our employees believe in the environmental values of our organization"; 4. "This organization places considerable emphasis on communication about green practices with employees"; 5. This Organization encourages employees to express diversity of opinions about green strategies of company" (Qureshi & Mehraj, 2022, p. 794, Table 3).

⁶ The items : 1. "This organization delivers training to improve employee awareness, skills, and know-how about environmental management"; 2. "This organization uses environmental protection elements as the central themes of green knowledge development of employees"; 3. "Our organization views the development of environmental knowledge and skills in employees as an investment rather than a cost"; 4. "Skill and knowledge development of employees about environmental management happens as an ongoing process in our organization"; 5. "Our organization sets green targets, objectives, and duties for each employee" (Qureshi & Mehraj, 2022, p. 794, Table 3).

⁷ The items: 1. "Our compensation system recognizes and rewards contributions for environmental protection"; 2. "High standard environmental behavior of employees is acknowledged and rewarded"; 3. "This organization continually reward those employees that promote eco-friendly behavior"; 4. "This organization has separate departments for internal audits about environmental performance of employees"; 5. "This organization encourage employees to use eco-friendly products/services"(Qureshi & Mehraj, 2022, p. 794, Table 3).

The managers' perceptions of the achieved financial goals in their organizations in the past year are shown in Table 5.

Scale rating <i>Finan. goals</i>	1	2	3	4	5
profitability growth	2.94	5.88	11.77	38.24	41.17
sales revenue growth	2.94	5.88	8.83	20.59	61.76
Costs reduction	5.88	8.83	14.70	41.18	29.41
1 - to a very small extent; 5 - to a very large extent					

Table 5: Response structure - the managers' perceptions of the achieved financial goals of their organizations in the last year (%)
(Source: Authors' calculation)

It can be seen that the managers perceived the level of achievement of financial goals of their organizations in the last year very favorably (Table 5). Tables 6 and 7 show managers' perceptions of the impact of the COVID-19 pandemic on the strengthening of a green responsibility towards employees in their organizations and on the operations of their organizations - financial performance.

Scale rating	1	2	3	4	5
Response structure	14.71	0	14.71	26.47	44.11
1 - to a very small extent; 5 - to a very large extent					

Table 6: Response structure - the managers' perceptions of the extent to which the Covid pandemic has encouraged the strengthening of green responsibility towards employees in their organizations (%)
(Source: Authors' calculation)

Out of the total number of managers, over 70% of them state that the Covid-19 pandemic has encouraged the strengthening of the organization's green (eco) responsibility towards employees.

Scale rating	1	2	3	4	5
Response structure	2.94	32.35	17.64	26.48	20.59
1 - to a very small extent; 5 - to a very large extent					

Table 7: Response structure - the managers' perceptions of the extent to which the Covid pandemic has negatively affected the operations of their organizations, especially their financial performance? (%)
(Source: Authors' calculation)

Out of the total number of managers, over 47% of them state that the Covid-19 pandemic had a large or very large negative impact on the operations of their organizations, especially on its financial aspect, while over 35% of them state that it had a small, or to a very small extent negative impact. It cannot be concluded that the pandemic has had significant negative consequences on the level of the achieved financial goals. Accordingly, organizations of the agribusiness sector have adequately responded to negative challenges from the environment, primarily thanks to the financial assistance received from the state.

5. CONCLUSION

The small and medium-sized organizations operating in the agribusiness sector in Serbia implement internal green marketing practices and simultaneously achieve their financial goals which is facilitated by their managers who are satisfied and highly identified with their organization. In these organizations, the level of managers' satisfaction and the level of their organizational identification coincide with their perceptions of the level of implementation of internal green marketing in the organization and the level of achieved organization's financial goals. Since the managers in these organizations are satisfied and highly identified with their organization, it is expected that their employees are also satisfied and identify more with the organization (adopt to Wieseke et al., 2009). According to the managers' perception, the level of implementation of internal green marketing dimensions in these organizations is favorable. Since managers have adopted internal green marketing, it is expected that the perception of internal green marketing by employees in these organizations is also favorable (adapted from Boukis et al., 2015). Managers believe in green vision of their organizations. They promote eco awareness and eco values in their organizations. They create a green culture in their organizations. However, managers emphasize that there is a lack of green rewards for eco-friendly behavior of employees or managers, but green skills development activities such as green training and education encourage the environmental awareness of all employees, and improve the skills and knowledge of both employees and managers about environmental management. Besides, the managers foster the internal green marketing environment in these organizations. Their high level of green (eco) awareness can improve to eco awareness of employees in these organizations. Finally, efficient and continuous green internal communication, rewarding green initiatives and activities of employees and managers, as well as training and education in this area should be constantly improved because they can affect the level of achievement of the organization's financial goals, including sales revenue, profitability and costs (Milanović et al 2022a). It is expected that the results of this paper will be useful to managers of small and medium-sized organizations in the agribusiness sector in Serbia, practitioners in the agribusiness area and other environmentally sensitive sectors. Managers in the agribusiness sector organizations in Serbia and in organizations operating in the similar area as well as in the contexts similar to the Serbian one must be aware that the role of the manager (leader) in spreading green culture, values and vision of the organization is irreplaceable, and that the perceptions of employees on internal green marketing practices are influenced by their perceptions of these practices. Besides, both managers' and employees' perceptions of the internal green marketing practices are positively related to the level of their organizational identification, and through organizational identification to the organization's financial performance. The results of this paper refer to small and medium-sized organizations operating in the agribusiness sector in Serbia. The number of respondents in the survey is modest. These are just some of the limitations that should be taken into account in future research.

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TIME AND COMPANY MANAGEMENT IN CASES OF FAKE NEWS WITHIN THE AUTOMOTIVE INDUSTRY

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ABSTRACT

The purpose of this paper is to analyze the current state of the art of time management in the automotive industry. The goal is to describe the importance of a successful manager's ability to set priorities and then divide them according to importance. The focus is to use the algorithm to suspend fake news that will disrupt the further flow of events in the work process and direct the future to artificial intelligence. In this paper, we present a case study of the use of artificial intelligence to detect fake news. The results of the study indicate that time management is a quality that every successful manager must possess and on the basis of which the absence of delays, perfectionism, and overcoming lack of motivation is reduced. This is due to the fact that in terms of quality technologies 4.0 (K4.0) it is possible to apply intelligent technologies, including countries that own the automotive industry, making them competitive and resistant to the influence of fake news, as well as the need to automate the implementation of security policies related to with the appearance of fake news. To understand the challenges in this field, we looked at findings related to human-machine interaction across various studies. Business efficiency at all industry levels requires the ability to detect and prevent the spread of fake news. The loss of consumer confidence due to the distribution of fake news is one of the damaging factors for the future development of companies.

Keywords: *Time, company management, cases of fake news, automotive industry*

1. INTRODUCTION

The success of the business is reflected in having the appropriate vision and the ability to manage time effectively. In addition to the basic principles of planning, organizing, leading, coordinating, and controlling mentioned above, it is necessary to have a responsible person who is able to successfully implement the units mentioned above within an organization. The market position dictates the efficiency and maintenance of such a position, which is an integral part of management and modern business conditions. Therefore, the business of a company is based on the application of an efficient time frame and the employment of qualified human resources. The time resource is a basic constant that is consumed, unlike others, and cannot be replaced or upgraded, as is the case with other tangible and intangible resources.

One of the direct examples that can be constantly updated is the individual's knowledge and intellectual capital. Successful managers of a company use certain management techniques and the organization of short meetings, through which they have the opportunity to gather various information. When talking about the other side of the coin (bad managers), we can recognize them by certain characteristic activities and behaviors. Some of the specific activities that appear as examples of poorly used time can be presented within the following characteristics:

- The first of the most characteristic features is the procrastination of work and the continuous taking of precious time
- They come to the meeting unprepared, constantly looking for or losing things
- They are indecisive and clumsy, which includes frequent delays
- They are irresponsible when answering or reading mail and other documents.

To effectively solve possible problems and communicate with leaders in positions and managers, it is necessary to define certain rules:

- The basic rule is to set business goals, train and organize human resources by encouraging the creativity of employees
- The production rule refers to productively used time, which does not mean that certain activities will be neglected when the deadline expires.
- The rule of urgency says that we should give priority to execution, regardless of the previously defined state of importance

2. PAPER ORGANIZATION

The structure and organization of the work were realized in the following order:

- Section III Time Management describes the basics of time management and aspects of good and bad managers.
- Section IV Company management in cases of fake news processes information related to company management in cases of crisis situations of fake news.
- Section V Conclusion summarizes and presents the conclusions made during the research that connects management, fake news, and the automotive industry.

2.1. Materials and Methods

The collected materials and methods were related to non-numerical summarization of the state within the area. Research methods were carried out through the definition of research questions, through which appropriate literature was collected.

2.2. Research Questions

- 1) What are the best time and company management techniques?
- 2) How do you deal with fake news and manage time in crisis situations that affect the company?
- 3) How do you overcome the problems caused by fake news?

3. TIME MANAGEMENT

The basic business activity of a good manager is reflected in the skills and abilities to manage time flows. Proving the correctness and confirming the quality of one person who manages according to the slogan "time is money" is the basis of the effective success of the organization.

Through the prism of observing business operations, certain key categories of success can be observed:

- The first basis is to know what are the most important priorities that can be directly used in industrial business
- The second can be related to how to plan and time define obligations
- Treca is one of the most important activities aimed at minimizing the negative effects that are the results of non-respect of time frames by other people

In order to better understand the ways of efficiency and rationalization of time utilization, we must look at the challenges that every company faces. One way is to monitor competitive activities and respond to changes in a timely manner by creating a plan to minimize negative effects. In order to respect the culture that defines an organization, we must perform business obligations that will contribute to smooth operations. As an example, we can take the business of a trading company, within which there must be a series of preparatory activities. They include procurement of products (wardrobe), delivery to the point of sale, sorting, advertising, and final sale. The management requires transparency in communication and information from its employees, in order to solve delays and difficulties in a timely manner. Business plan and prevention of idling means keeping organizational diaries of tasks that have been completed and that should be completed. This is manifested in the aforementioned part related to time management, which can lead to certain good or bad business results. Inconsistency in the organization and planning process leads to disorganized time [28].

3.1. Productivity and Efficiency

Managers set directives for the execution of tasks by setting deadlines for the purpose of exploiting specific business opportunities. Clients' requests that need to be respected in order to ensure their loyalty and the aforementioned are priority tasks in the work process. The realization of these activities should lead to a better solution for the projects and the performance of the company. Activities guided by planning techniques allow such actions to be performed at the right time and in a first way. The manager's goal is to strive for effective management with this pattern of behavior, making a profit with maximum results and minimum costs. Decreased productivity of managers occurs as a result of a poorly managed plan and not applying planning techniques. Conducting meetings without a previously defined goal is an irrational use of the time that will not yield a positive outcome. In such conditions, the organization encounters a crisis situation in which it is difficult to find a way out and it is even more difficult to return to the right path of business.

3.2. Organization on the field

The constant need for improvement of knowledge, skills, and competencies is the goal of every leader in the organization. A successful leader tends to adapt to business conditions within the organization and in the field, which enables him to transfer knowledge to his own employees. As a product of his skill, a higher qualification of human capital appears. Intellectual capital in the organization is motivated to adopt new knowledge and new techniques by planning in space, and as a result creatively used time is obtained [3]. Managing an organization is not a formula that can be rewritten. One company differs from another precisely by the specific characteristics of its employees. Not all managers have the same gift for management, which is why we cannot say that there are no two same managers or two same companies. Each director is an individual in his own right who has his own characteristics and different visions of management [2].

3.3. Techniques of time management

In order to achieve simultaneous time management, it is necessary to use some of the most important techniques: The first technique is the Pareto rule (80/20) (Figure 1), It was named after the Italian economist Vilfredo Pareto (Vilfredo Federico Damaso Pareto), who said that 80 percent of the world's wealth is held by 20 percent of the people [12, 25]. On the other hand, he points out that 80 percent of our greatest achievements are achieved with 20 percent of our time. Guided by this rule, managers must direct their time to jobs that are the most productive and that will give maximum profit with minimum costs [4]. This way of doing business is considered correct and extremely effective, it is not primary how long you perform the work task, it is important to achieve success and victory in the end. In this case, with only 20 percent of the time spent, he can use the total available time and it is considered a good result [13, 14].

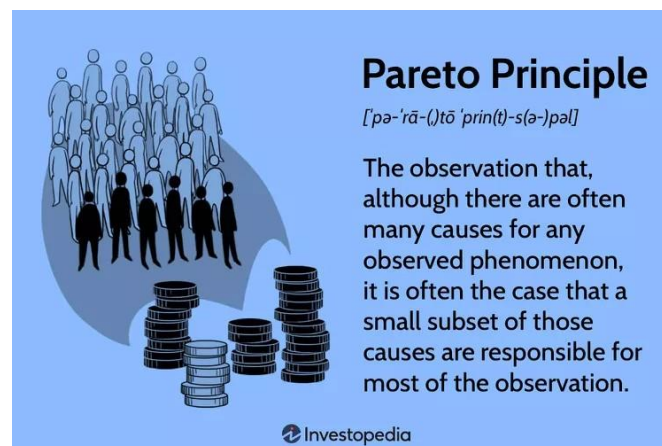


Figure 1: Pareto's principle. Source: [13].

Another time management technique is the ABC rule, which methodically explains three rules.

- A is the first rule and includes very important tasks and key decisions of the manager, i.e. the range (65/15), where 65 percent of the value in the organization is realized with 15 percent of the manager's total time
- B is another rule that includes important tasks and tasks that can be distributed among employees, i.e. the spread (20/20), where 20 percent of the value in the organization is realized with 20 percent of the manager's total time
- C is the third rule that includes less important tasks that are less important, that is, they have a range (15/65), where 15 percent of the value is realized with 65 percent of the manager's time. These tasks provide little value while consuming a lot of time. Therefore, such business tasks should be avoided and are therefore categorized as less important.

Another division of the manager's work tasks refers to:

- Creative work that is vital to the manager and the organization, ensuring consistent and continuous business success
- Work that has no importance for managers and the organization is routinely repeated from time to time.

Some more successful techniques that managers can apply in the process of time management in order to achieve good business results are:

- **Clear definition of goals** is the desired state of positions or the result of an individual, group, or entire society. The success of the organization depends on the achievement of goals, so we can say that the goal is a measure of the positioning of activities in the organization.

Defining the goal at the very beginning of the business is the direction in which managers must move. Using optimal knowledge and personal abilities, the creators of the organization's business policy lay the foundations for the most important tasks that need to be implemented. The fastest and safest way that will lead to the achievement of tasks is to react in a timely manner in crisis situations and to monitor and control the course of events in the organization.

- **Full concentration** represents another manager's ability to confront obstacles and distractions from the environment with absolute control and focus on events. Leaders of a team must have self-confidence and self-esteem that enables them to achieve business continuity. Also, by strengthening their own integrity, leaders encourage the more efficient and faster performance of activities, which results in better relations at the superior-subordinate level.
- **Performing activities on time** meeting deadlines is one of the main characteristics of a company's business etiquette. Delays in deadlines are not acceptable for organizations led by established managers. Tactical stalling and excuses for not completing tasks by the manager result in his immediate personal betterment, but not in the long-term success of the company. Starting from the saying "Don't leave for tomorrow what you can do today", we prove the accuracy of the need for immediate problem-solving.

By postponing obligations on the part of the manager, there is an accumulation of work with an increase in the volume of work and a shortening of the deadlines for the execution of those obligations. Also, there is an accumulation of problems and disruption of relations between clients and strategic partners. Solving the routine postponement of work can be solved by formulating execution deadlines, implementing a planner, and designing a schedule for performing activities [13].

3.4. Rules for time management

What separates successful managers from unsuccessful ones is precisely the way they manage their time and how wisely they use that time. In addition to the Pareto technique mentioned above, there are some other golden rules of effective time management.

The stated rules can be presented in the following formulations:

- Design and manage the daily work routine, such as regularly checking the inbox, preparing and holding meetings, and more.
- Consider and analyze your working day by keeping a diary, formulating new tasks, and checking the status of tasks that have not been implemented and that need to be completed [2].
- Develop mental abilities and perform tasks that require mental strength, but at a suitable time of day or night that is inspiring for the manager.
- You should set deadlines for the most important tasks and respect the set deadlines.
- The most difficult jobs should not be prolonged and put on the back burner with the assumption that over time they will be easier to manage and that the time for completing other tasks will be shortened.
- It is necessary to study wasters and thieves of time, reduce their direct effect, or partially and completely avoid such influence.
- Work should be done step by step, one task at a time, spontaneously and continuously.
- Those with the greatest contribution to a company always have the advantage in solving tasks. Therefore, it is necessary to redistribute the tasks according to their importance and group them according to the hierarchy of importance, from the less important ones to the ones that are extremely important for the organization.
- It is necessary for managers to estimate their free time and take vacations based on it. They must be organized in such a way that they are unavailable to others at certain time intervals.

Established managers with many years of experience will use their free time more rationally than less experienced managers. Continuity with the aim of accumulating strength and energy for new business challenges is the key to future success.

- Before starting a business, one should consider the golden rule of analysis and think about the venture.

Time is not a product that can be bought or rented. It is a critical resource that flows, is inimitable and is irreplaceable. Time stocks and resources are incoherent and not elastic, and therefore the problem of their deficit arises. Operative managers, recognizing that time management is a learning task, strive to analyze it in accordance with business preferences and provide answers to the questions in which direction they will move [16].

3.5. How to use available time rationally

The rational use of time implies thinking and analysis. When considering time analysis it is desirable to investigate the flow of activities:

- First, one should analyze one's own time in the direction of assessing the current situation and achieving further goals.
- Next, the goals related to development should be systematized and the advancement of the organization should be prioritized. Delegate goals that are driven by management in the accounting department. Employees at lower levels of the organization should be assigned short-term goals, and top management should be allowed to set long-term goals.
- It is important to focus on crucial tasks.
- The analysis should provide an answer as to whether the results of the work culminated in the initial goals. Finally, it is necessary to study the obtained results and compare them with the set goals.

A successful and productive manager makes strategic decisions while effectively managing time. In order to use time rationally, it is important to follow several steps [23]:

- The first step is to address the concerns that hold managers back from giving their best and acting strategically. It enables managers to become more relieved in their work, more motivated, and more productive to perform tasks.
- The second step is to create a list of work tasks that should be completed during one working day. After that, it is necessary to define the time for performing each task. Based on the list, a clear insight into the exact day when the type of task is performed, the time required for its implementation, the quality of the work performed, and the time that was lost are formed. This kind of analysis results in a data report that shows all the changes (successful and unsuccessful) and what needs to be done in order to make the most rational use of the daily time.
- The third step includes multitasking, as the ability to monitor and effectively solve various problems simultaneously by maximizing time while achieving the best possible results and with minimal costs.

Another important element of the general business of managers and other employees in the organization, and to some extent ourselves, is motivation. The level of motivation at our disposal does not exclude the possibility of efficient work. In situations where there is a scarcity of motivation, managers will not manage time in the most competent way. For this reason, it is good to mention, among other things, the radical importance of motivation in the process of time management [2]. Motivation is the key to success starting from the manager to the ultimate success of the organization. Human resources in the organization, with their motivation, contribute to the effectiveness of work and represent the basis for realizing the competitive

advantage of the organization. In order to have a high degree of motivation, the manager must be satisfied [23]. Because only a satisfied worker is a productive worker. And, in order to be satisfied, he must believe in the achievement of his goals and that a positive performance will give him satisfaction in the future. The motivation that a manager perceives towards a certain task is more the result of the final outcome of the given work than some material benefit. A highly motivated manager will be recognized by energetic engagement, high business ventures, dedicated work, and expeditious action [2, 28].

4. COMPANY MANAGEMENT IN CASES OF FAKE NEWS

Within the research, we had the opportunity to get acquainted with different views on the problems related to fake news in companies. The majority of authors in this field looked at the processing and integration of data by elucidating the truth, probability, and fusion of the obtained results [15, 16]. In order to better understand the challenges in this area, we looked at the findings regarding human-machine interaction through various studies. In this case, the machine had the task of recognizing fake news through the application of feedback and a logical detection system with further monitoring. The most common methods we were introduced to were applications of reverse tracking of articles that are connected to the cognitive system and artificial intelligence [9]. Detection methods rely on rapid detection and improvement of the detection AI model. They imply the use of verified samples of fake news data for the purposes of single-class classification. One of the most common detection simulation methods is presented in the form of a computer game with the idea of developing a new approach or tool [11]. By designing a visual approach and interactivity through the game, it is possible to create a certain level of literacy and perception on the part of the public regarding fake news [19]. When reporting fake news in the automotive industry, we realized that there are major challenges in putting out the “fires” caused by this information. In most companies, the result is the initiation of the development of algorithms in decision-making processes. Based on this, the need for automating the implementation of security policies related to the occurrence of fake news is defined [26]. Algorithm development enables opinion polling and active monitoring through machine learning based on graphs and probability. During the research, we noticed that the primary goal is to understand three perspectives within the company and to get answers to the following questions:

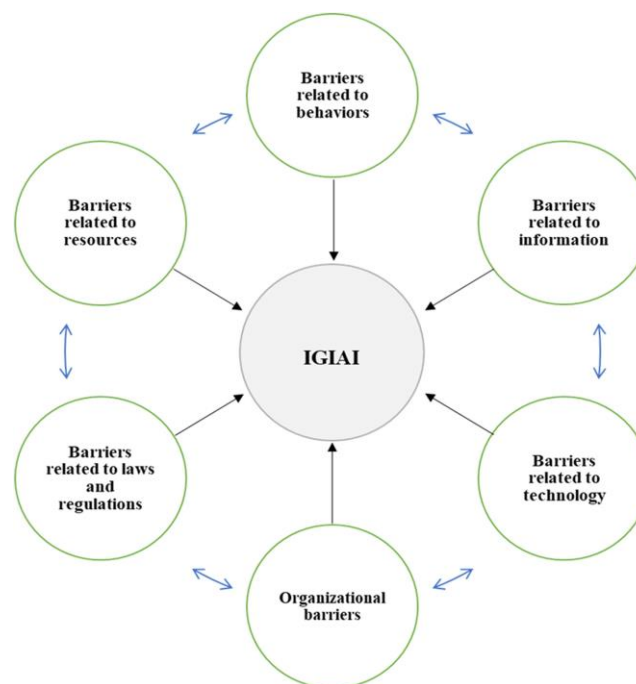
- What is the attitude towards fake news?
- What would be the perception and interaction in case of disinformation?
- How to stand up to opinions and a sea of fake news?

In order to answer some of the questions, we suggest the use of a Factual News Graph (FANG) [18], which is a new instrument for graphically displaying the foundations and social context when discovering untrue information. The biggest challenge remains in recognizing and classifying fake news [1, 6].

4.1. Automotive Industry Specifics

The specificity of the automotive industry is in the holistic transition from the traditional supply chain to a sustainable approach that has the possibility of integrating logistics within different industries [7, 8]. Logistics as a cornerstone has a great reliance on fiscal incentives in various companies and refers to the final products that represent the results of the auto industry. Inefficiency or disruption of the logistics supply chain in countries such as South Korea or the People’s Republic of China can significantly disrupt the production process due to its dependence on specific components, because the automobile manufacturing industry has the greatest driving influence on global development and the movement toward a sustainable society [17, 27].

Supply chain management is oriented towards the production process of parts and finished products [22]. The current state of research and the availability of interviews of managers from the production branch indicate that this is a very important aspect and an unexplored topic of the circularity of dependent products [24]. That is why the logistics process can be disrupted in cases of the appearance of false information or the targeting of individuals. In situations where false information is distributed, it is possible to prolong the implementation of green innovations within the automotive industry (IGIAI) and change the direction when making decisions. In the last few years, IGAI has faced several different obstacles (Figure 2) and tries to synthesize and show the existence of problems during implementation [10]. When it comes to automotive companies in the Slovak Republic, they take the focus and evaluation of the maturity level of the use of Industry 4.0 Technology (I4) as their main results. Organizations (OEMs, Tier 1 and Tier 2 suppliers) [21] operating in this space are trying to apply intelligent technologies in the matter of quality technology 4.0 (K4.0), including countries that own the automotive industry, making them competitive and resistant to the influence of fake news. The obtained results serve as inputs in the identification of errors, the development of learning needs, and the establishment of security policies.



*Figure 2: Integrated conceptual model of barriers - Implementation of Green Innovations in the Automotive Industry (IGIAI).
(Source: [10])*

4.2. Technologies of Industry 4.0

The production industry and the application of I4 are gaining more and more importance because it has the possibility of a higher degree of efficiency and the realization of higher income [5]. Researchers and industrial innovators are trying to enrich and initiate the debate on sustainable supply chain management (SSCM) and dynamic capabilities (DC) manufacturing. The current results on the sample for the food industry in the period from 2014 to 2018 [20] indicate the necessity of moving from “standards and certification” to a “proactive strategy” and the integration of all interested parties. All this together affects the business performance and entrepreneurial orientation in the application of new technologies that do not possess a sufficient degree of trust.

5. CONCLUSION

Looking at the characteristics of the modern market, we conclude that time management is a quality that every successful manager must possess and on the basis of which the absence of delays, perfectionism, and overcoming lack of motivation is reduced. Suppressing negative emotions results in better use of scarce resources, which directly culminates in the growth of profits, which manifests itself in better positioning of the company in the market. At this moment, the ability and skill of creating time require quick decisions in business, it represents the essential importance and essence of the success of every manager. The implementation of this pattern of behavior undoubtedly leads to the success of the manager and the organization. It is necessary to use the opportunities presented in today's turbulent business environment and to avoid the dangers and threats that come from the external environment. We have seen that a successful manager must learn to set priorities and then divide them by importance. The success of leadership is reflected in the ability to master one's own perceptions, self-discipline, and efficiency in creating a business environment. The automotive industry is dependent on trust and successful management by management, which we had the opportunity to see during the investigation. For this reason, more attention should be paid to the implementation of internal rules in cases of fake news. Although managers have a major role in evaluation and decision-making, modern trends bring novelty. They are based on automation and verification of information that is part of the organization. The goal is to use the algorithm to suspend fake news that will disrupt the further flow of events in the work process and to focus the future on artificial intelligence. Leaders who set priorities in business and use time management techniques and rules will achieve high results in all branches of the industry. By creating trust, a positive synergetic environment in the business world should be achieved and the achieved results materialize.

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SOCIAL NETWORKS IN THE ERA OF PANDEMIC

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ABSTRACT

In this paper, we investigate the problems of the behavior of social media within the framework of reliable and unreliable information that they offer, as well as the issue of the security of certain distributed and mobile online systems in the era of the COVID 19 virus pandemic. In the wake of coronavirus disease (COVID-19), many turned to social media for information and guidance. There are both positive and negative aspects to this behavior. These range from the spread of misinformation to the indispensable role social media has played in the dissemination of accurate information and mental health education. This article looks at both the challenges and benefits, considering who is potentially more likely to use social media and thus be impacted by the information imparted on the digital platforms that are now an integral part of our daily lives.

Keywords: *Statistics, Infodemic, Vulnerability, News, TV, E learning, DDoS, LMS, APT*

1. INTRODUCTION

Throughout human history, epidemics have been an integral part of man's struggle with the negative influence of the environment, but also a factor that changed the course of civilization development. The consequences were far-reaching, but with the progress of society and science as a whole, as well as the gradual creation of immunity, the effect of epidemics threatened the survival of the human species less and less. Figure 1 shows the catastrophic consequences caused by the Covid pandemic so far. Social media has once again been put to the test. Once again, they had the chance to show what their great strengths and weaknesses are in this situation. We are all aware of the seriousness of what has been happening to us in recent years due to the COVID-19 virus pandemic. However, everything would have been far more alarming if it had not stood in the way of the spread of a new infection - the infodemic [1,2].

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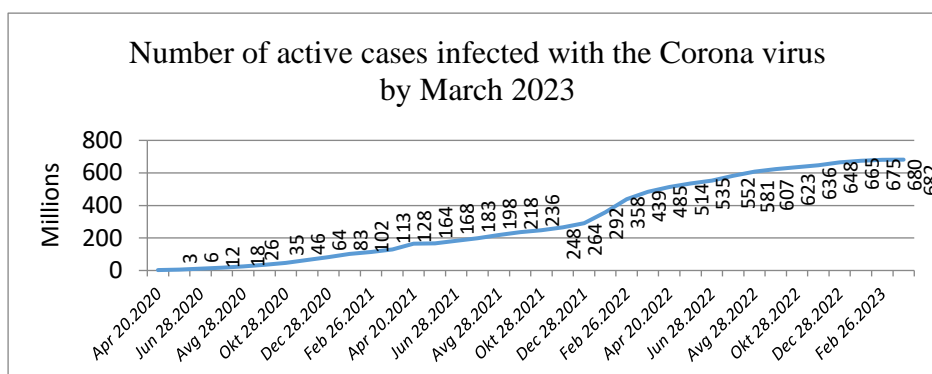


Figure 1: Number of active cases infected with the Corona virus by March 2023

In such circumstances, the media and journalism represent a key point in the public sphere and build a framework in which the entire public relates to the most important issues related to the pandemic. Free and independent media must provide citizens with accurate, comprehensive and high-quality information, which is both a right and a duty. The media must perform this key function at all times, but it is even more important in times of crisis. The risks of misinformation and manipulation of information increase in times of crisis. The threat posed by information disruption has intensified and the need for its prevention and suppression is becoming increasingly urgent. Social media platforms should redouble their efforts to combat information disruption by developing fact-checking tools and promoting reliable and accurate news sources. We are aware that the emergence of the Internet and social networks has made it possible to distribute a huge amount of data and information every second. However, in addition to the useful tips and news that you can find on different media, there is also a large space for disinformation to spread, now more than ever, because people are tied to computers, mobile phones and tablets, which at this moment can have serious consequences. However, the spread of panic in the public, speculation, misinformation, incomplete and unfounded information, can cause a series of negative effects, intensify the crisis of institutions - the "information epidemic", which in the circumstances of technologically based rapid and almost unlimited dissemination of information represents a completely new level of crisis.

2. SOCIAL NETWORKS IN THE ERA OF PANDEMIC

All the big platforms and the biggest media are aggressively trying to get in the way of this misinformation. Despite attempts at censorship by Facebook, Google, Twitter and other platforms, there are still posts, video content, photos and written posts that spread panic, political intolerance and untruths. Social distancing and millions of people in isolation have caused a drastic increase in watching online movies and TV series. The first and biggest channel with infodemic symptoms was Facebook. The first measure that was taken on that occasion concerned the creation of a page within the company's blog where all the necessary information regarding the global pandemic and the company's position on marketing content about the virus were presented. With this announcement, Facebook, as one of the partners of the World Health Organization, provided assistance to the global fight against the coronavirus. Facebook has clearly indicated all the rules of behavior during the pandemic, as well as all the protection measures it will take in the coming days. For this reason, Facebook has announced that it will ban any content that can harm the emerging situation, such as false treatments and false preventive measures to protect against the coronavirus. Like Facebook, YouTube has created an info panel that provides all the information on current topics during the pandemic. YouTube has announced that it is in close cooperation with the WHO, and that when it comes to the COVID-19 virus, video content from this organization has primacy. Instagram, WhatsApp and Snapchat have offered their services to the World Health Organization.

Through the chat bot, users can connect with local, national and global organizations, but also get reliable information from relevant sources such as the WHO or the national ministry of health. If we look at the statistics in percentages of represented social media on different continents [3], we get Figure 2.

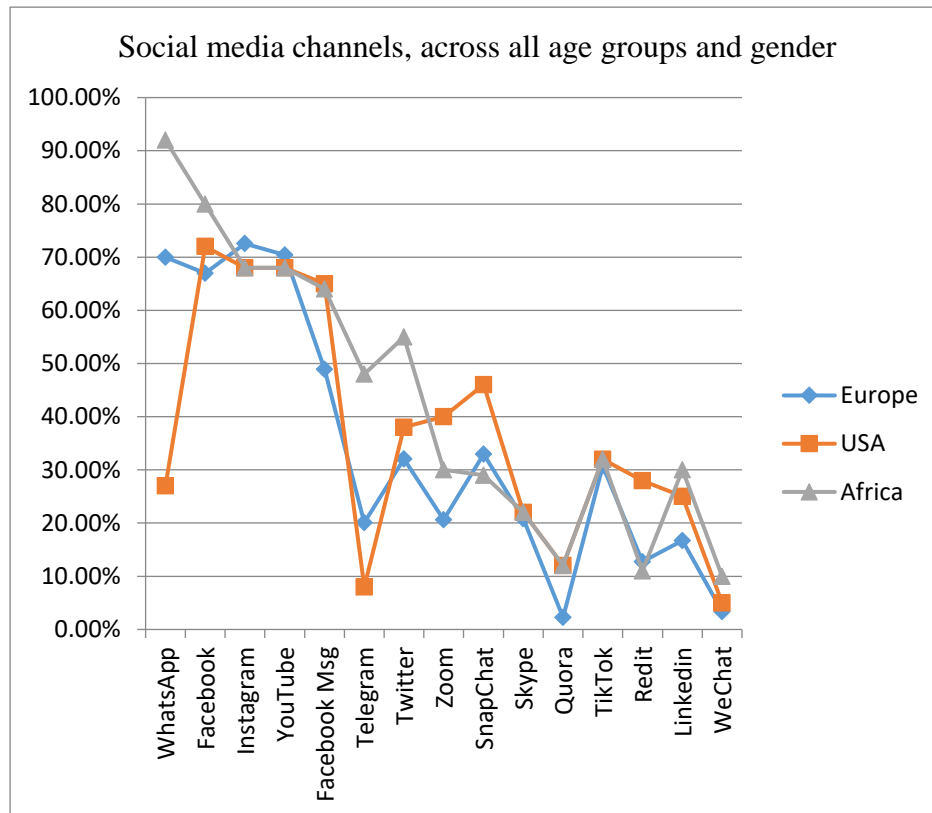


Figure 2: Social media channels during the pandemic in Europe, USA and Africa

The increase or decrease in general traffic due to the Covid-19 pandemic is shown in percentages in Figure 3. It can be concluded that growth is shown only in the areas of Finance, Food, Healthcare and Media.

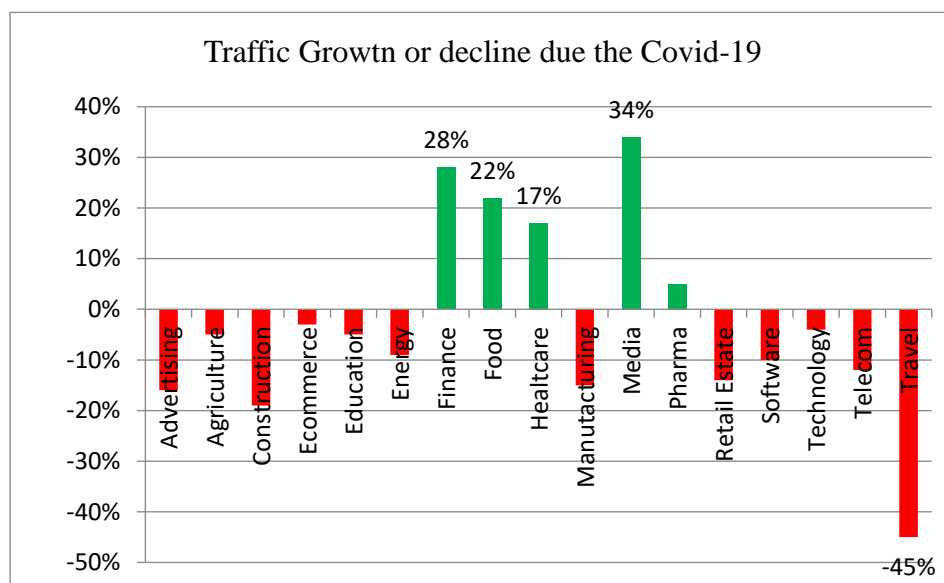


Figure 3: Traffic trends in different areas of society

Figure 4 shows the most visited social media channels during the pandemic [4]:

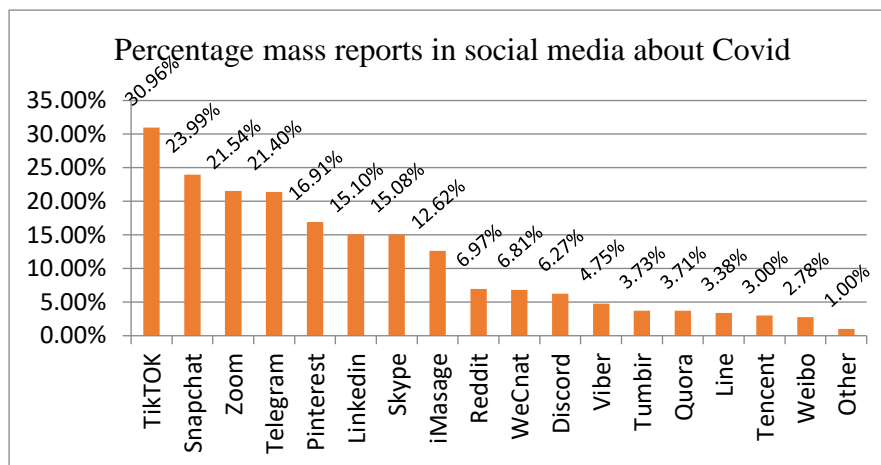


Figure 4: Shows the most visited social media channels during the pandemic

The majority of media reporting was from the USA (40.7 %), and about 46 % of reports highlighted the scarce item. The New York Times and The Washington Post reported a 50 percent increase in web traffic in April alone, while traffic to the Financial Times website grew 250 percent year-over-year in the month. The number of unique visitors to The Guardian's website almost doubled from a record 191 million in February 2020 to 366 million in March of this year, Figure 5.

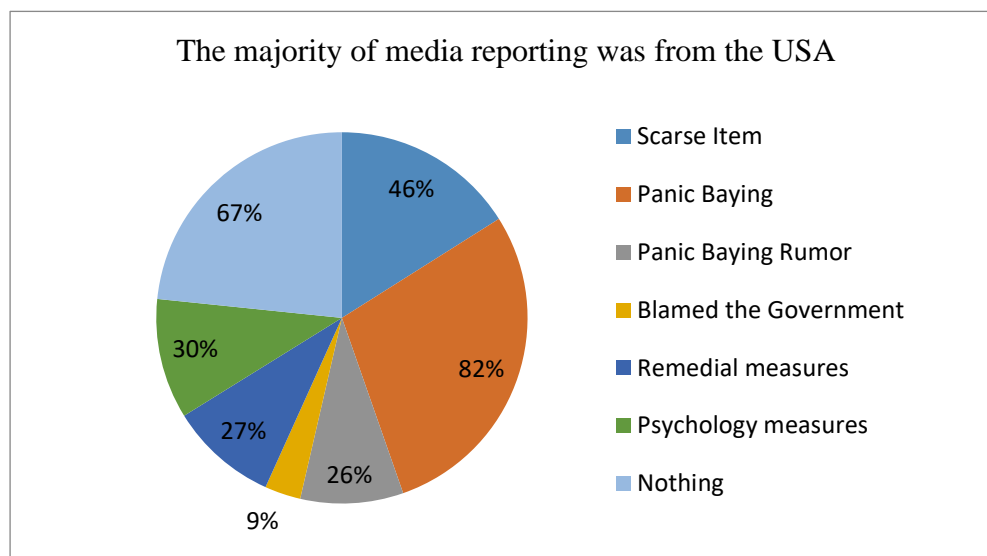


Figure 5: Shows the most visited social media channels during the pandemic

It was a "boom time" for certain media, such as News, a magazine whose subscriptions grew from a few thousand to 15,000. In the UK, the Secretary of State for Digital, Culture, Media and Sport said the pandemic had caused the "biggest existential crisis" in print history, as local and national newspapers saw their circulation fall. News articles are partitioned across the following categories: articles eligible for inclusion in our study (eligible), articles not focusing on the newspaper's country of publication (location out of scope), articles that are not original news reporting or analysis (opinion/editorial/letters), and articles that include COVID-19-relevant search terms, but do not include any direct focus on COVID-19 public health or policy information (no direct focus), Figure 6.

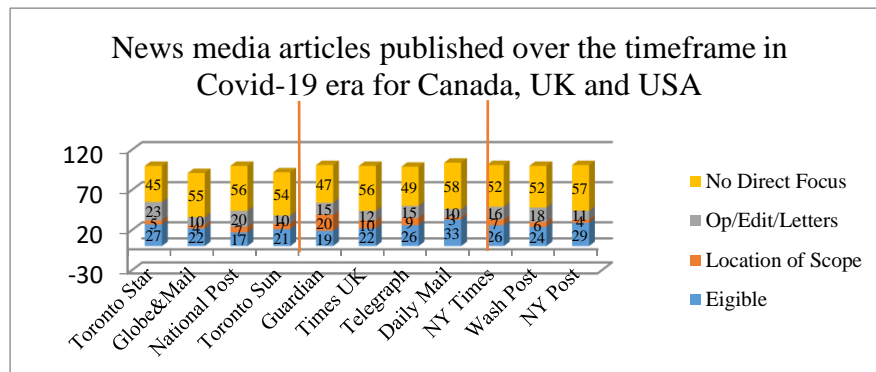


Figure 6: News articles by categories From March through August 2020

Analysis of the content of six daily Serbian newspapers of different editorial policies - Blic, Danas, Informer, Kurir, Politika and Večernje novosti and three TV stations RTS, TV Pink and TV N1 conducted for the period from February 26 to May 6, 2020, i.e. from the first addresses of the state bodies of the Republic of Serbia to the public regarding the coronavirus pandemic, until the state of emergency is lifted, Figure 7.

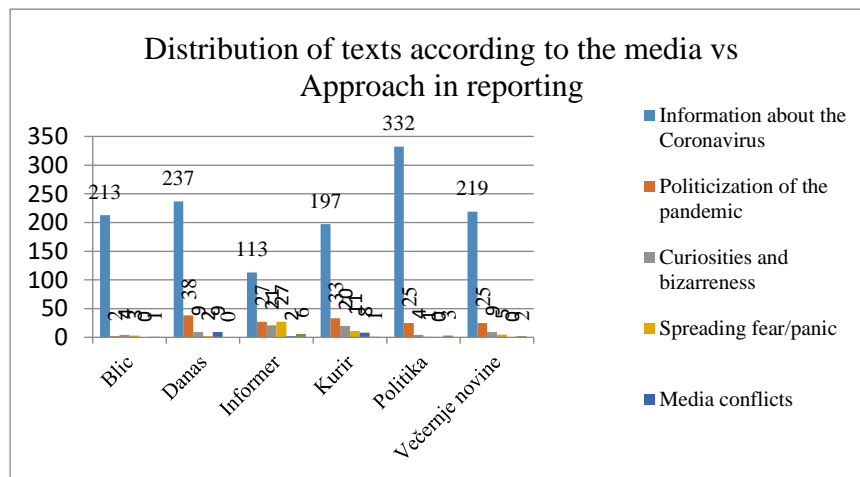


Figure 7: News in Serbia and approach in reporting from February to May 2020

The range of topics within which TV stations reported on the coronavirus and the pandemic was largely reduced to the fight against the coronavirus, measures introduced and implemented by the state, and a cross-section of the situation in Serbia, i.e. daily reporting on statistical data and the condition of patients, Figure 8.

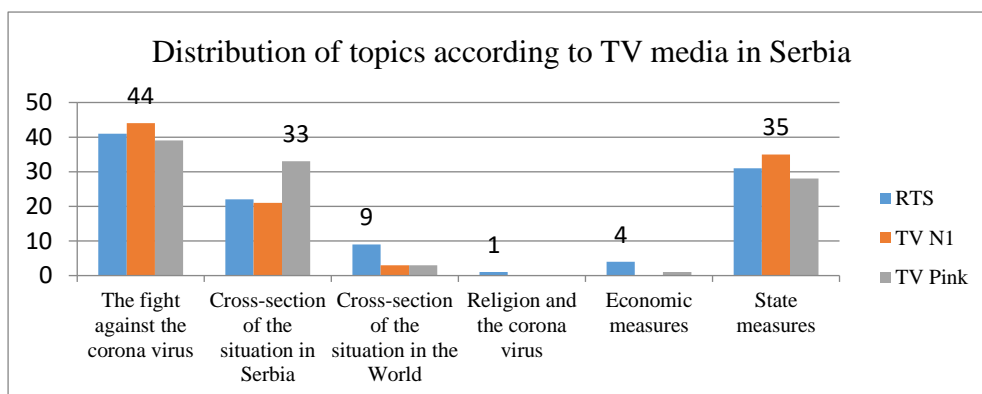


Figure 8: TV News in Serbia and approach in reporting from February to May 2020

3. MISINFORMATION ON SOCIAL MEDIA

In the year of the pandemic, social media reached a historically low level of trust. Their constant trend of falling trust reached its lowest level so far in 2022, where only one third of people believe in the reliability of the information they find on them. In the first half of 2022, technology companies removed nearly 3.5 billion messages from their social media (Facebook, YouTube, Twitter) based on various criteria for harmful content. Although the largest part goes to spam on Facebook (about 3.3 billion), there is an impressive number of messages that were removed due to their harmful content as hate speech (32 million on Facebook), then as violence, promotion of violence and extremism (3.1 million on Youtube), or behavior that incites hatred (955 thousand on Twitter). A large number of all kind of social media platforms have emerged over the past years which operate very differently in this space. Some social media platforms have adopted a COVID-19 crisis policy. However, a large number of social media platforms have emerged internationally with the aim to also grow on the international level. These include non-Western platforms such as the video sharing site TikTok, interactive messenger platforms such as Viber, nationally specific platforms, such as Skyrock in France, KakaoStory in South Korea, Line in Japan, VK in Russia, and QC in China. In addition, encrypted platforms attract sometimes radical communities, such as Telegram and Parler, and thematically specific platforms are geared toward particular genders, regions, or interests. Responses to the question, ‘How do you react to COVID-19 information – shared by others on social media/messaging apps – that you know is false?’ Countries with the maximum percentage for fake news: Russia answer that 49.8% of the overall sample said that they ignored the content, France answer 24% reported the content, South Korea answer 25.6% commented on the content, France answer 9.4% unfollowed the person and South Korea answer 25.2% shared the content, while South Korea answer 5% ‘do not know.’, Figure 9.

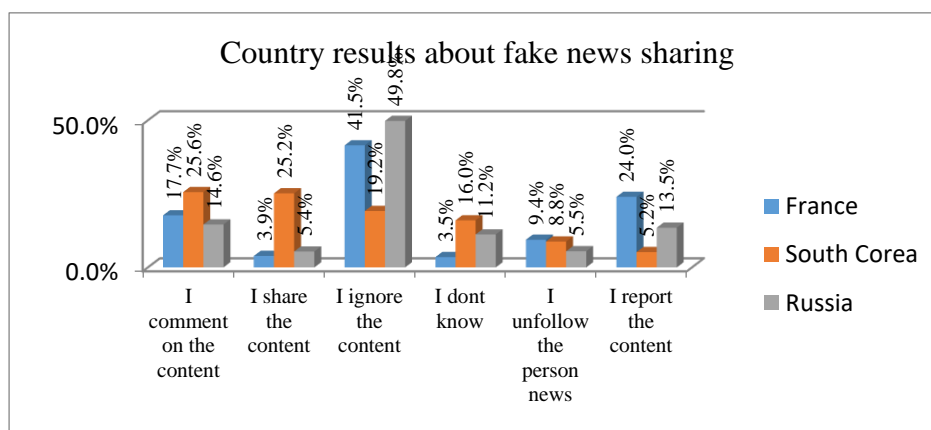


Figure 9: Responses to the questions about the COVID – 19 pandemic

For many companies, any attack that results in system downtime is a critical event. When talking about protection and security risks, one must know that it is a constant battle between them who discover vulnerabilities and attack applications and those who build defense mechanisms. What is current today as an attack method may be modified or replaced by another method in the near future. SQL injection attack consists of insertion or “injection” of a SQL query via the input data from the client to the application. Cross site Scripting (XSS) attacks are a type of injection problem, in which malicious scripts are injected into web sites. Many PHP vulnerabilities were discovered with ratings including both high and critical risk. Remote code execution (RCE) is used to describe an attacker’s ability to execute arbitrary commands or code remotely across the Internet or network on a target machine. This is the result of leaving unprotected files on a hosting environment, systems using inadequate authorization or poorly deployed systems which result in directory listing and sensitive data disclosure, Figure 10.

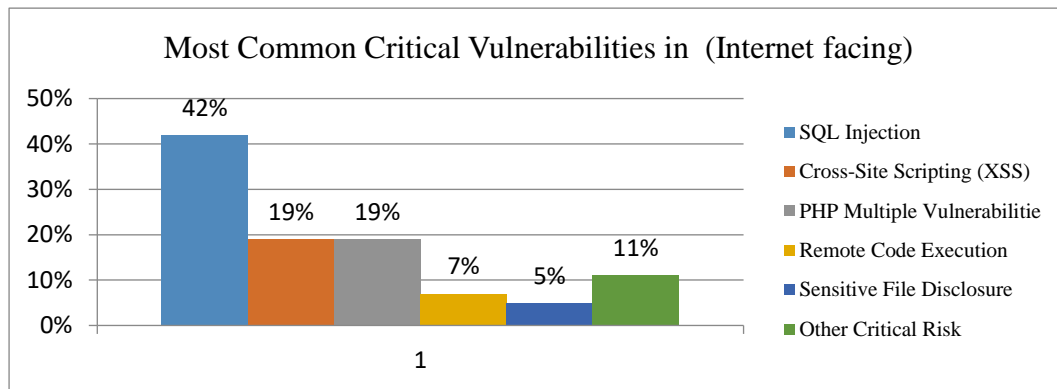


Figure 10: Internet facing critical Vulnerabilities

The following results represent the average scoring for all organizations across all six security domains in the 2023. Year, Figure 11.

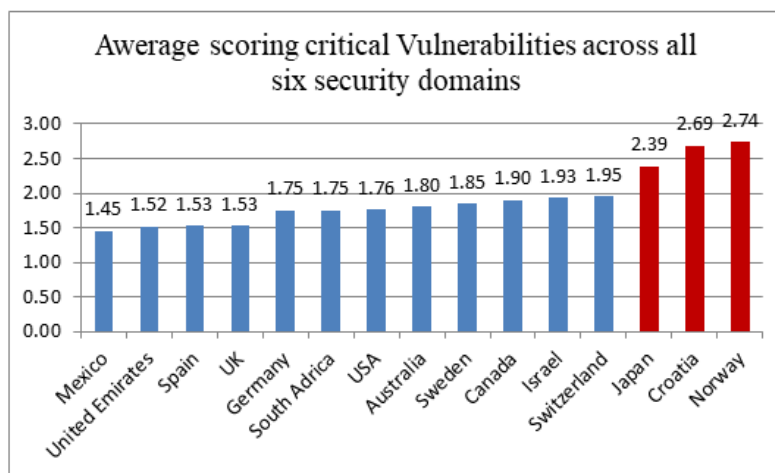


Figure 11: Average scoring of the Critical Vulnerabilities in some Countries

In the last weeks of 2020., more new domains were registered – a 44% increase compared to the week before. Immediately following the news of the Covid-19 outbreak, cyber criminals started using global media interest as a cover to spread their malicious activity. The graph below shows the trend line of the overall search for coronavirus by Google Trends, compared to the trends we observed in social media discussions on cybersecurity and cyber-crime in relation to the virus, Figure 12.

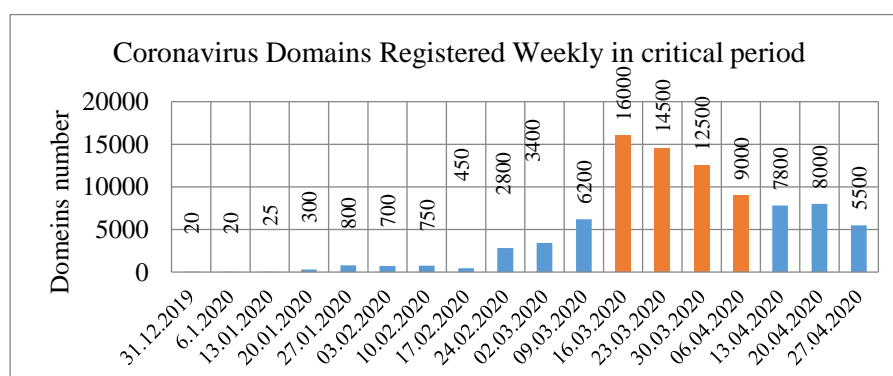


Figure 12: Average scoring of the Critical Vulnerabilities in some period

Application level security describes security measures at the application level that aim to prevent data or code within an app from being stolen or hijacked. This includes security considerations during application development and design, as well as systems and approaches to protect apps after they are deployed, Figure 13.

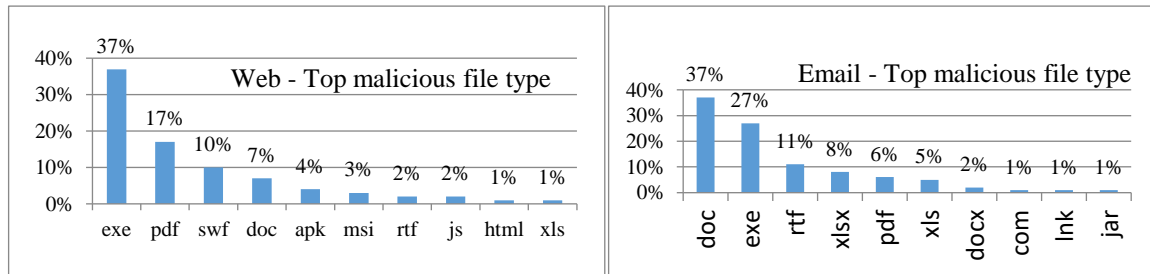


Figure 13: Web and email top malicious file type

Operating systems are also exposed to attacks, so as you can see in the figures, the Windows operating system experienced much fewer attacks in the second and third quarters of 2020 (the period of the pandemic crisis), about 5%, in relation to the Linux operating system, which was attacked at the same time for about 95%, Figure 14.

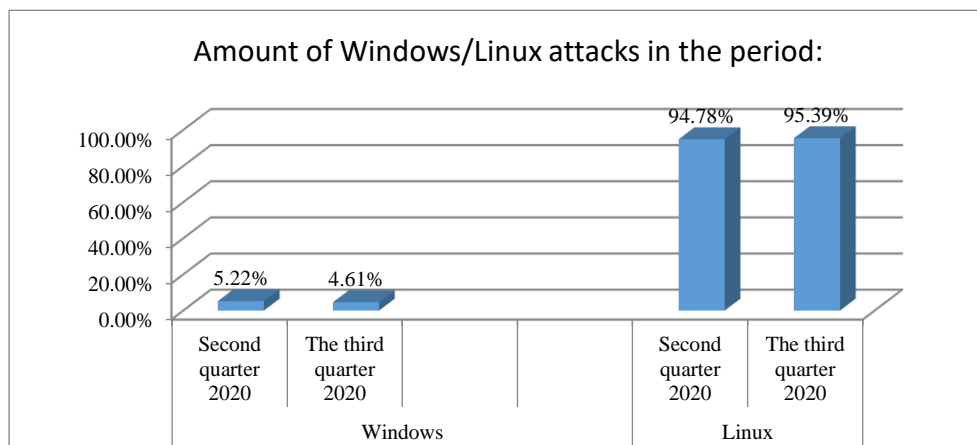


Figure 14: Web and email malicious file type

Rapid technological change involves, among others, technologies like big data, the Internet of things, machine learning, artificial intelligence, robotics, 3D printing, biotechnology, nanotechnology, renewable energy technologies, and satellite and drone technologies, Figure 15.

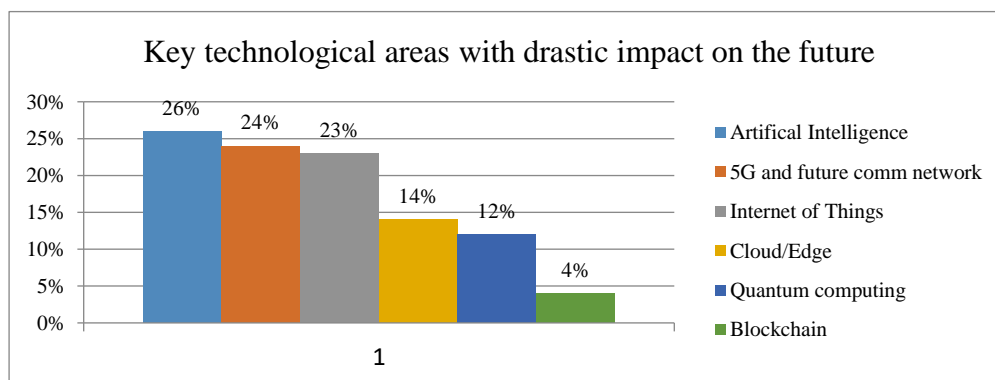


Figure 15: What will happen in the future

4. COVID - 19 PANDEMIC AND ONLINE LEARNING

In the spring of 2019, when the COVID-19 pandemic took hold, online learning became the new norm as colleges and schools around the world were forced to close their doors. As of April 29, 2020, school closures have affected more than 1.2 billion children in 186 countries. Soon after schools began to rush to distance learning, it became clear that many were not ready for the kind of full-time digital education that is now required. In fact, in June, Microsoft Security Intelligence reported that the education industry accounted for 61% of the 7.7 million malware encounters that businesses experienced in the previous 30 days—more than any other sector [5]. In April, a major Turkish university was forced to go completely offline for 40 minutes after being hit by a DDoS (Distributed Denial-of-Service) attack on the morning of exams. In June, exams at a large University in the Northeastern US were suspended after a DDoS attack affected its network and testing platforms. The total number of DDoS attacks globally increased by 80% for the first quarter of 2020 compared to the first quarter of 2019, Figure 16. Cyber security company Kaspersky says that the number of brute-force attacks targeting RDP (Remote Desktop Protocol) endpoints has increased sharply since the start of the coronavirus (COVID-19) pandemic.

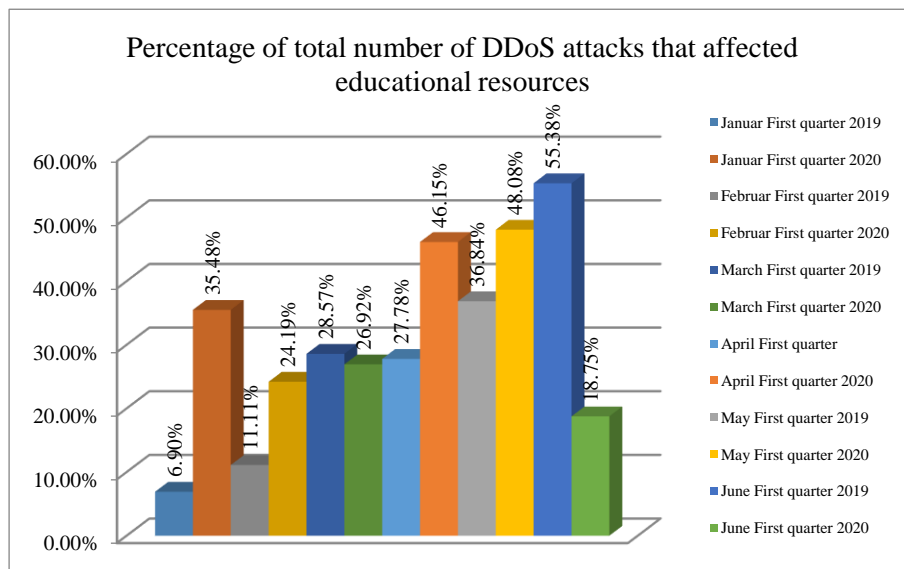


Figure 16: Educational resources and DDoS Attacks

Zoom was far from the platform most often used as bait, and today, 99.5% of users encounter various threats masked under its name. This is not surprising considering that Zoom has [6] become the main platform for video conferencing. By February 2020, the platform had added more new users (2.22 million) than it had in the whole of 2019 (1.99 million), Figure 17.

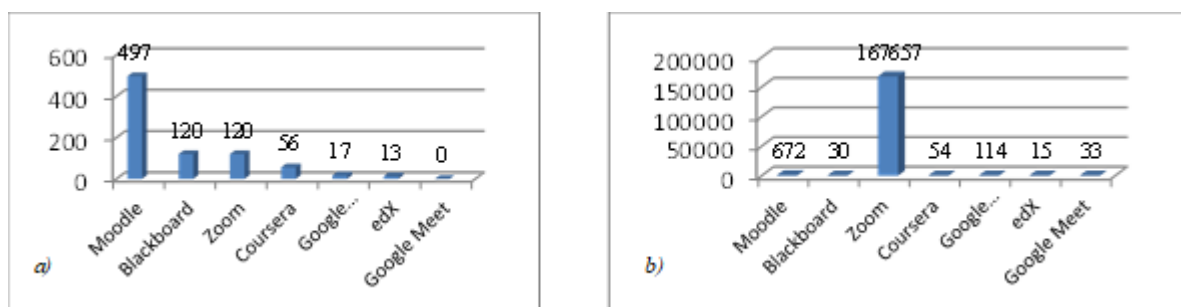


Figure 17: Number of users who encountered various threats disguised as popular online learning/video conferencing platforms, a) January - June 2019, b) January - June 2020

The number of DDoS attacks [7,8] affecting educational resources increased by at least 350% compared to the corresponding month in 2019. "Since the beginning of March, the number of BruteForce.Generic.RDP attacks has increased almost all over the world," Russian antivirus maker Kaspersky said, Figure 18.

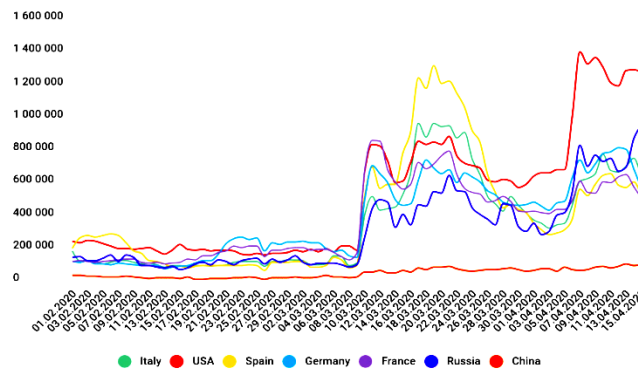


Figure 18: Number of BruteForce attacks in certain countries

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STUDENTS' PERCEPTION TOWARD PUBLIC SECTOR ACCOUNTANT POSITION

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ABSTRACT

The activity of the public sector has become so extensive and so dominant in economic and social life that good accounting has become a necessity for its continuance. Current and future accountants need to be properly trained to support good financial management in the dynamic and complex environment of the public sector. However, previous studies have shown that student interest in the public sector accounting profession is limited and that a career in public accounting is not attractive to them compared to the private sector. Due to the numerous reform processes in the public sector and the expansion of the global market, now is the right time to look for competent accountants in public institutions. Students as future accountants play a crucial role in the implementation of reforms. Therefore, the aim of this study is to investigate whether students are interested in becoming accountants in the public sector. It also aims to investigate how students perceive the attractiveness of the public sector accounting profession compared to the private sector accounting profession. The study was conducted through a survey of students at public universities of the Faculty of Economics in Croatia. The study revealed that only a small percentage of students have the desire to work in the public sector. Moreover, the position of an accountant in the public sector is less attractive than that of an accountant in the private sector in terms of realization of monetary and non-monetary benefits. The results indicate a need to consider who will work in public accounting in the future and who will implement the necessary reforms. Our study contributes to the academic literature on students' perceptions of the attractiveness of public sector accounting as a career. In addition, the results of the study may also be of interest to practitioners to encourage them to think about what can be changed to increase the attractiveness of the public sector accounting profession.

Keywords: *Career, Public sector accounting, Public sector accountant position, Reforms, Students*

1. INTRODUCTION

Public sector reforms present challenges to public sector accountants. Accounting plays a central role in mapping the future direction of organizations by providing information aimed at aligning organizational goals and strategies. Therefore, the role of the accountant cannot be ignored (Adams et al., 2014). Accountants play an important role in public sector entities because they are responsible for reporting and providing financial information to external and internal users, determining and evaluating the effectiveness of budget execution, and

participating in the decision-making process about public sector entities (Martin and Waymire, 2017). Accountants are important stakeholders involved in changing public sector accounting and reporting systems because their feedback is based on practical experience (Adhikari and Garseth-Nesbakk, 2016). Due to the increasing need to compare financial information and improve accountability to information users, harmonization of public sector reporting is needed (Aggestam Pontoppidan & Andernack, 2016). Therefore, reforms are underway at the European Union level to harmonize accounting standards for public entities (European Commission, 2016). The numerous reform processes taking place in the public sector and the need to meet the normative framework in the public sector, combined with the aging of the workforce and the expansion of the global market, have made now the right time to look for competent accountants in public institutions (Ahmad, 2019). Therefore, students as future accountants are crucial to implement reforms. However, previous studies have shown that students' interest in public sector accounting professions is low (Beights, 1954; Engstrom, 1979; Shivaswamy and Hanks, 1985). Croatia has been a member of the European Union since 2013. Although there have been no changes in public sector accounting in the meantime, as a member of the EU, Croatia is required to harmonize reporting system at the country level as well as with other members. Therefore, the need for qualified accountants is growing. All this led to the need to conduct this research. Therefore, the aim of the research is to determine whether students are interested in the position of accountant in the public sector. How attractive is this position compared to the position of an accountant in the private sector. Will Croatia face the potential problem of a shortage of trained and qualified personnel in the future? The answers to these questions are provided in this paper. The paper is divided into five sections. After the introduction, a literature review of studies already conducted is provided. The following section contains the development of the research problem. The research methodology and results are presented in the fourth section before the conclusion follows.

2. LITERATURE REVIEW

Countries that have implemented public sector accounting reforms have found that one of the challenges has been the inadequate training of civil servants, i.e., accountants (Pwc, 2014). Therefore, it has become clear that there is a need for qualified personnel (European Commission, 2016). Accountants are considered cornerstones in the reform process as they are involved in the reporting process (IAESB, 2019). Lack of general accounting knowledge may lead to implementation barriers that cannot be addressed in the short term and may result in unsuccessful attempts to implement a more informative accounting system (Ahmad, 2019). Previous studies on public sector accounting education have already indicated that there is an opportunity for accountants who are willing to take responsibility to pursue a career in public sector accounting (Beights, 1954). According to Beights (1954), government accounting is not a limited and narrow field of activity. It is diverse and broad, and every government function and activity that has a financial aspect must be recorded and reported. The business of the public sector has become so vast and so dominant in economic and social life that good accounting has become a necessity for its continued existence. Current and future accountants need to be properly trained to support good financial management in the dynamic and complex environment of the public sector (IAESB, 2019). However, previous studies have shown that students' interest in public sector accounting is limited and that a career in public sector accounting is not attractive to them. Shivaswamy and Hanks (1985) conducted a survey of students enrolled in accounting courses to examine their perceptions of a career in public accounting. Their results indicated that the closer students came to graduation, the less likely they were to believe that a career in government accounting would offer high earnings and/or advancement opportunities. One aspect of government careers that students viewed positively was job security.

McKenzie (1992) extended the work of Shivaswamy and Hanks (1985) by comparing students' perceptions of job characteristics in three accounting careers: public, commercial, and government accounting. She found that careers in government accounting appeared to have an advantage over commercial and public accounting only in the area of job security. In addition, she examined the differences between the responses of students who had taken a governmental accounting course and those who had not. The students who had taken the governmental accounting course generally felt that a career in governmental accounting offered limited opportunities for innovative and creative thinking in the profession. In contrast, students who had not taken the government accounting course were more neutral in their attitudes toward innovation and creativity in working in government careers. Martin and Waymire (2017) examined the perceptions of undergraduate and graduate accounting students and found that students who had taken a governmental accounting course believed that a career in governmental accounting offered more work-life balance opportunities than public accounting or corporate accounting, but that they viewed a career in governmental accounting as less rewarding. Pitulice et al. (2018) examined students' decisions about public sector employment and found that the majority of students surveyed preferred working in the private sector to working in the public sector.

3. DEVELOPMENT OF THE RESEARCH PROBLEM

As financial reports are recognized as tools that provide high-quality information for the decision-making process (Ezzamel et al., 2005), there is a need for harmonized reporting. Therefore, reforms are underway at the European Union level to harmonize accounting standards for public entities (European Commission, 2016). In 2013, following a public consultation, the European Commission presented a report highlighting the need to introduce harmonized accounting standards on an accrual basis. As the previous consultation showed that it would be difficult to implement the International Public Sector Accounting Standards (IPSAS standards) in the EU Member States, the initiative to develop European Public Sector Accounting Standards (EPSAS) was born. EPSAS will be based on accrual accounting and will meet the needs of EU member states. According to the European Commission, EPSAS should be implemented by 2025. Although EPSAS is still in the development phase, many EU member states have recognized the importance of financial reporting and have begun the reform process and adoption of accrual accounting, which will facilitate the application of EPSAS in the future. As a result, public sector entities are putting strong pressure on academics and practitioners to produce graduates who have accounting skills that meet the changing needs of the public sector (Ahmad, 2019). However, a previous study has shown that universities provide limited knowledge of public sector accounting and public financial management and that the number of individuals with relevant skills in this area is likely to be low (Adam et al., 2019). Furthermore, the authors conclude that the aforementioned workforce is unlikely to be sufficient to meet the high demand for public sector financial management graduates in the near future. They therefore conclude that reforms in public sector accounting are unlikely to be supported by adequate numbers of graduates (Adam et al., 2019). Croatia has been a member of the European Union since July 1, 2013, and harmonized reporting requirements are imposed on it, and it is likely that financial reporting reform will be required in the future and there will be an obligation to implement EPSAS as soon as they are developed (Vašiček et al., 2022).

Therefore, despite all the above, we defined research questions:

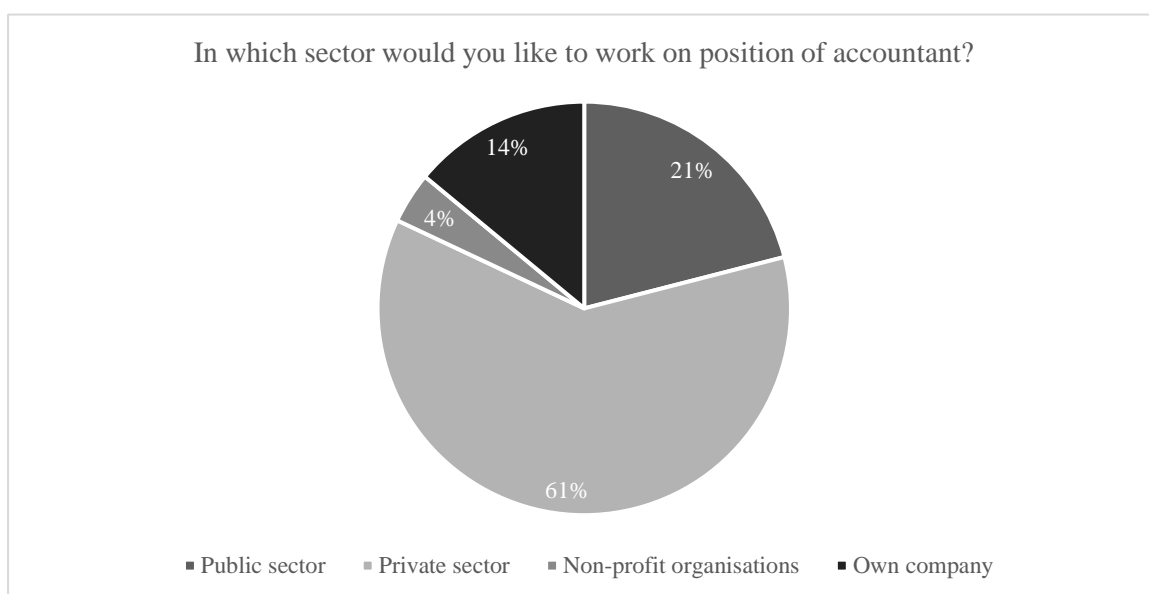
- *RQ1: Is there an interest of students to start a career as accountants in the public sector?*
- *RQ2: How attractive is the public sector accounting profession to students?*

4. RESEARCH METHODOLOGY AND RESULTS

The research was conducted using a questionnaire prepared for the project "Challenges of financial and non-financial reporting by public sector entities in the changing user needs environment". For the purpose of this work, only questions related to students were used. These questions were related to the students' personal characteristics and the attractiveness of the public sector accounting profession. The questionnaires were completed in online form. 500 students from the faculties of economics at public universities in Zagreb, Rijeka, Osijek and Split were contacted in the period from March to June 2022. In the end, 135 responses were collected. To analyze the results, both descriptive statistics and inferential statistics (paired samples t-test) were used to determine if there is a difference in the attractiveness of the position of accountant in the public sector and the position of accountant in the private sector. Of the students surveyed, 75% are studying in the accounting field, while 25% are studying in other business fields. In addition, 58% of the respondents are in their 4th year of study, 17% are in their 5th year of study, 16% are in their 3rd year of study, and a small number are in their second or first year of study.

4.1. Interest for position of public sector accountant

To answer the first research question, whether students are interested in pursuing a career as a public sector accountant, students were asked what field they would like to work in after graduation. Most of the students surveyed (64%) would like to work in the accounting field. These results were to be expected considering that 75% of the students surveyed were in the accounting field. Finance is in second place (17%), while the percentage of other fields (marketing, management, human resources, IT, procurement, sales) is extremely low. The students who answered that they would like to work as an accountant were further asked in which field they would like to work as an accountant. The results are shown in Chart 1. The results show that 2/3 of the respondents would like to work in the private sector, while only 21% would like to work in the public sector. In addition, 14% of the students would like to work in their own business, while only 4% would like to work as an accountant in a non-profit organization. From the results, it can be concluded that although students are interested in working in the accounting field (as many as 64%), only one-fifth of them would like to start their career in the public sector.



*Chart 1: Sector in which students like to work on position of accountant
(Source: Prepared by the authors)*

The results show students' preferences in terms of employment after graduation, indicating that the largest percentage of students surveyed would like to work in the private sector. The aforementioned results are consistent with Pitulica et al.'s (2018: 88) findings that the majority of students surveyed would prefer to work in the private sector rather than the public sector.

4.2. Attractiveness of position of public sector accountant

The second research question aimed to determine students' perceptions of the attractiveness of the accounting profession in the public sector. Like Martin & Waymire (2017), we prepared statements for students to respond to using a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) to explore the attractiveness of the accounting profession in the public and private sectors, respectively. It was emphasized that in answering the questions, respondents assumed that they had obtained a bachelor's or master's degree in economics and that they had been offered a position as an accountant in state, regional, or local self-government in one case and a position as an accountant in the private sector in the other. The results in Table 1 show that students believe that a public sector accountant position is a secure job (in terms of job security and a permanent position without the possibility of being fired) and offers flexibility in terms of work-life balance. However, most students do not believe that the public sector accounting profession offers the potential for high initial earnings and long-term earnings. They are also not very positive about the statement that the accounting profession offers non-monetary benefits and the opportunity for career advancement. The same table shows that students agree with the statement that the accounting profession in the private sector offers the opportunity for further advancement and high earnings in the long term. However, most students disagree that the accounting profession in the private sector is a secure job and offers a good work-life balance. A comparison of the results shows that students believe that the position of an accountant in the private sector has the potential for higher initial earnings and higher long-term earnings than the position of an accountant in the public sector. In addition, students agreed that the position of an accountant in the private sector has greater potential for non-monetary benefits and greater opportunities for advancement than the position of an accountant in the public sector. On the other hand, students agreed that the position of an accountant in the public sector is a more secure position that offers a better work-life balance than the position of an accountant in the private sector. The results can be related to the previous research conducted by McKenzie (1992), who found through a survey of students that the advantage of career development in the public sector compared to the private sector is job security. In addition, the findings are consistent with those of Martin & Waymire (2017), who found in their study that a public sector accountant position is a secure job but offers fewer opportunities for monetary benefits than a private sector accountant position.

Statements	Position of accountant in the public sector		Position of accountant in the private sector	
	Mean	Std. Deviation	Mean	Std. Deviation
Job position has the potential for high initial earnings	2.956	1.078	3.296	1.037
Job position offers the potential for high earnings in the long term	3.207	1.120	4.007	0.926
The position is a safe job (in terms of business security and permanent employment without the possibility of being fired)	3.933	0.956	2.956	1.078
The position has the potential to realize non-monetary benefits (awards...)	3.407	0.980	3.800	0.953
The position provides balance between work and private life	3.615	0.970	3.230	1.029
The position ensures the possibility of further advancement	3.444	1.090	4.163	0.883

Table 1: Attractiveness of the job position of accountant in the public sector and private sector

(Source: Prepared by the authors)

Given the studies previously conducted, we wanted to determine if there was a statistically significant difference, i.e., if the public sector accountant position was less attractive than the private sector accountant position. A paired-samples T-test was conducted and the alternative hypothesis is that measure 1 (public sector job) is less than measure 2 (private sector job). From Table 2, we can see that the public sector accountant job is less attractive than the private sector accountant job because it offers less earning potential, promotion opportunities, and non-monetary benefits. On the other hand, we cannot fully confirm that the public sector accountant job is less attractive than the private sector accountant job from the students' perspective because the results show that the public sector accountant job is a secure job that offers work-life balance.

Position in public sector	Position in private sector	t	p-value
Job position of accountant in the public sector has the potential for high initial earnings	Job position of accountant in the private sector has the potential for high initial earnings	-3.116	0.001
Job position of accountant in the public sector offers the potential for high earnings in the long term	Job position of accountant in the private sector offers the potential for high earnings in the long term	-7.294	< .001
The position of accountant in the public sector is a safe job (in terms of business security and permanent employment without the possibility of being fired)	The position of accountant in the private sector is a safe job (in terms of business security and permanent employment without the possibility of being fired)	8.302	1.000
The position of accountant in the public sector has the potential to realize non-monetary benefits (awards...)	The position of accountant in the private sector has the potential to realize non-monetary benefits (awards...)	-3.575	< .001
The position of accountant in the public sector provides balance between work and private life	The position of accountant in the private sector provides balance between work and private life	2.905	0.998
The position of accountant in the public sector ensures the possibility of further advancement	The position of accountant in the private sector ensures the possibility of further advancement	-6.072	< .001

Table 2: Job position of accountant in public sector is less attractive than job position of accountant in private sector

(Source: Prepared by the authors)

5. CONCLUSION

As the demand for public sector accountants continues to grow, our study sought to determine how students perceive the attractiveness of working as public sector accountants. The research found that while the majority of students want to pursue a career in accounting, only 21% of students want to work in the public sector. The survey found that students believe that being an accountant in the public sector is a secure job (in terms of job security and permanent employment without the possibility of being fired) and offers flexibility in terms of work-life balance. However, when comparing the attractiveness of the public and private sector accountant position, students felt that the private sector accountant position had the potential for higher initial earnings and higher long-term earnings than the public sector accountant position. Students agreed that the private sector accountant position has greater potential for non-monetary benefits and greater opportunities for advancement than the public sector accountant position.

The results suggest that the position of an accountant in the public sector is less attractive than the position of an accountant in the private sector. The results suggest that there is some concern about who will work in public accounting in the future. Indeed, accountants should have certain skills. If there are no qualified accountants, people from other professions will certainly be hired, but the question is whether they will be able to provide quality information and interpret it. Our survey also has certain limitations. The research was conducted only in one country - Croatia, which limits the possibility to generalize the results to the population. For future research, it is necessary to expand the sample and consider other research methods, such as in-depth interviews, to better understand students' attitudes towards the above mentioned topic. Despite the above limitations, our study contributes to the academic literature on students' perceptions of the attractiveness of public accounting as a profession. The results of the study may also be of interest to practitioners to focus their attention on the question of who will work in public accounting in the future, i.e., what can be changed to increase the attractiveness of the public accountant position.

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OFFICIAL DOCUMENTS AND THEIR (AB)USE IN LEGAL TRAFFIC

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ABSTRACT

In accordance with the idea that a stable state must have legal procedures and legal affairs based on legal official documents, the authors considered that this is a current topic worthy of scientific and professional attention and research. The first part of the paper is dedicated to the legality and legitimacy of administrative action and the value justification of specific action, the necessary assumption of the rule of law, the realization of constitutionality and legality, justice and fairness, including the modern theoretical model, organization, role and position of the administration in the administrative legislation of Serbia, and social processes in regard to it. This includes the terminological determination of key concepts such as official documents, their legal use, the concept of legal traffic, but also the falsification of official documents, as a form of illegal communication in a legal traffic. Therefore, the necessary goal of the paper is to discover causal connection between official documents and their legality, legitimacy and value justification of specific action, on the one hand, and the degree of social danger of abuse related to the official documents and their use, on the other hand. The second part of the paper is devoted to abuses related to official documents, and the emphasis is placed on criminal acts against legal traffic and the way they are regulated in the currently valid Criminal Code of the Republic of Serbia. Further in the paper, the authors search for individual criminal acts such as falsification of official documents, special cases of falsification of official documents and falsification of official documents and their impact on legal security in the state and society. The research was conducted on the basis of data that included the criminal acts in question, and refer to the previous ten-year period. Statistical data were collected on the entire territory of the Republic of Serbia and refer to the number of suspects, accused and convicted adults for the observed criminal acts. The conclusion reached by the authors at the end of the conducted empirical research is that on average, on an annual level, about 235 persons of legal age commit the criminal act of falsifying a document, on average, about 671 persons of legal age commit falsification of a document, in a special way, while on average, on an annual level, about 93 adults commit a criminal offense falsification of a document issued by a special authority. Having in mind the data presented, the authors appeal that these types of abuse related to official documents must be suppressed and the damage that can be caused by using falsified official documents in legal processes is serious, both for the state and for society as a whole.

Keywords: *administrative activity, functional administration, falsification of official documents, legal traffic, state administration*

1. INTRODUCTION

The official document represents any official document issued in the prescribed form by the competent authority, in the form and within the framework of the exercise of public powers granted by law or regulation (Article 118, Law on General Administrative Procedure). This means, for an official document to be public, it must meet three key legal conditions: (a) that it was issued by a competent authority, institution, or person; (b) that it was issued in the

prescribed form and (c) that it was issued within the limits of competence, that is, the public authority of the body, institution or person that issued it. In this sense, by official document, we imply any written document representing a source of information about facts relevant to the proper resolution of an administrative matter. Thus, the official documents are classified in the so-called actual evidentiary actions (Bećirović-Alić 2018: 195). In the context of criminal legal matters, an official document is any item and certificate issued by an individual or a legal entity containing a statement, or proof of a fact relevant to legal relations, including computer data (Article 112 paragraph 26, Criminal Code of Serbia). The Criminal Procedure Code of the Republic of Serbia does not define the term official document, however, it refers to the legality of adducing evidence (Article 116 paragraph 1) based on the Constitution, the law in question, and other laws of Serbia, generally accepted rules of international law and ratified international treaties. Therefore, it is accurate to consider that official documents in criminal legal matters are every item and/or computer data that is eligible or determined to serve as proof of facts relevant (for) and established in the procedure. At the level of the European Union, public documents are defined as documents emanating from an authority or an official, court clerk, public prosecutor, a clerk of a court or judicial officer (*'huissier de justice'*); administrative documents; official certificates placed on documents signed by persons in their private capacity (eg. certificates recording the registration of a document or the facts that it was in existence on a certain date); documents drawn up by the diplomatic or consular agents of a Member State in their official capacity, if they have to be presented in the territory of another member state or other Member States acting in the territory of a third State (Article 3, Regulation of the European Parliament and of the Council 2016/1191/EU 2016).

2. PUBLIC AND PRIVATE OFFICIAL DOCUMENTS

We divide official documents into public and private. Public official documents are documents issued in the prescribed form by a state, provincial or local authority, an organization, institution, public enterprise, or a legal or natural person entrusted with public authority within the scope of their jurisdiction (Kulić 2017: 223). This includes verdicts, decisions, permits, approvals, certificates, and others. Public official documents prove established (confirmed) facts in them. Other official documents are private. Private official documents are documents issued by a natural or legal person who does not perform business based on the public authority. However, their probative value consists only of the fact that its issuer made the statement contained in the document. Private official documents include contracts, promissory notes, wills, and others. Special types of official documents are certificates and other documents such as endorsements, confirmations, etc., which are issued by state bodies and organizations exercising public authority. Certificates can be issued on facts included or excluded in official records of the competent authority or organization, and in both cases, such are issued upon oral or written request. When they issue a certificate about the facts kept in official records, we consider that such a certificate has the probative force of a public document.

2.1. About the truth

In the philosophical reflections in their book "Truth" published by Princeton University, Professors John and Alexis Burgess suggest numerous answers about the nature of truth and its existence using philosophical theorizing and debates about truth, relativism, and pluralism (about truth), the relationship between truth and meaning, between truth and value... and much more. The authors wonder whether truth is valuable in itself and focus on answering "What is it for a thing to be true" (Burgess & Burgess 2011: 1). From the perspective of traditional philosophical theories, they emphasize Aristotle's philosophical assertion about the truth that "To say of what is that it is not, or of what is not that it is, is false, while to say of what is that it is, and of what is not that it is not, is true" (Burgess & Burgess 2011: 2).

In this regard, following the definition of modern philosophy inherited from medieval Aristotelianism, they describe the traditional definition of truth in such a way that "truth is agreement of thought with its object" (Burgess & Burgess 2011: 2). In the context of this paper, we do not consider nor express "truth" in a philosophical sense [e.g. agreement (thoughts) against the subject (thoughts) about the truth], but we already understand it as a construction of law and legal theory, in the meaning of methods and ways of collecting procedural materials, in establishing facts and the actual conditions, on the basis of which the appropriate legal act will be evaluated and based on. Professor Boris Ljubanović wrote about and advocated for the most important rules of administrative procedural law and defining the principle of material truth on which they are based and thus limited (Ljubanović 2019).

2.2. Facts and truth

In procedural law, the subject of an administrative act processes information about facts. In terms of public official documents, these are facts about the established i.e. verified subject of consideration, while in the case of private official documents, these are facts about the content of the statement. In terms of the same probative value, if issued by a relevant body within the limits of its jurisdiction, microfilm or electronic copies of a public official document or a reproduction of a copy, are equal to a public official document. Proving, that in a public official document or its copy, the facts are untruthfully confirmed or that they were compiled incorrectly, is allowed. An official document issued in the prescribed form by the competent state and other authority within the limits of their powers, as well as an official document issued in such a form by another organization or person exercising public authority (public official document), proves the veracity of what is confirmed in it or determined (Article 238, Civil Procedure Law; Articles 10, 116 and 118, Law on General Administrative Procedure; Article 16 paragraph 1, Criminal Procedure Code). Facts whose existence is presupposed by the law are not proven (Article 116 paragraph 4, Law on General Administrative Procedure). If the court doubts the authenticity of the official document, it can request that the authority issuing such a document make an assertion (Article 238 paragraph 4, Law on Civil Procedure). The competent authority has to obtain data *ex officio*, i.e. in the procedure initiated at the request of the party, and when necessary for decision-making, it is the duty to access, obtain and process personal information contained in the facts kept in official records (Article 103, Law on General Administrative Procedure).

3. LEGAL (RELATED) ASSESSMENT OF THE EVIDENCE

The official documents have full probative value. Thus, a positive relationship of mutual validity of the principle of legal (related) assessment of evidence and *praesumptio iuris tantum* (or *iuris simpliciter*, a term used in canon law) was established between official documents and proof. These are the presumption of authenticity; that it was issued by an authorized entity; and the assumption of truth, that the content of the official document is valid and corresponds to the facts (Bećirović-Alić 2018: 195-196). For the sake of illustration, in the canonical tradition and through canonical science, in procedural law, the official document was acknowledged both as a tool (*instrumentum*) and as a document about facts (*documentum*). In the first case, in a broader sense, the official document as a tool implied everything that can provide evidence of the facts, i.e. "any object suitable for presenting, proving or teaching" (Arroba Conde 2012: 451; cf. Ivanković Radak and Tóth 2017: 185). In a narrower sense, the official document was considered as a (written) document in the strict sense, i.e. "any representation of a fact made in material form, by an author who uses reason and will" (Horak 1995: 33; cf. Ivanković Radak and Tóth 2017: 185) and is identified with a record, a written form of existence (D'Auria 2008: 362 ; Del Amo and Calvo 2004: 1028; Horak 1995: 32; cf. Ivanković Radak and Tóth 2017: 186).

4. PROBATIVE FORCE OF DOCUMENTS

Official documents are used as evidence in administrative proceedings. Obtaining official documents in the administrative procedure is made by submission by the party or by obtaining the authority conducting the procedure (Kulić 2017: 224). The party submits the official document in the original or microfilmed or electronic or reproduction copy, or in a certified or ordinary transcript. At the request of an authorized official, the original official document must always be presented. The court must evaluate as genuine what is determined or confirmed by a public official document, that is, in the case of private official documents, the content of the statement. However, the official document can also be found with the opposing party or a third party who will not submit it voluntarily. In that case, the court or official can order the third party to submit (present) the official document only if it is required by law to show or submit it, when it is necessary for decision-making, i.e. when the content of the official document is common to that person and the party referring to it (Article 103 paragraph 3, Law on General Administrative Procedure). In this regard, the official orders that the official document be brought to him for an oral hearing. Coercive measures can be applied against a third party who unjustifiably refuses to show an official document, and the same procedure is applied against a witness who refuses to testify. Professor Peter Badura emphasizes that a breach of this obligation can justify the "contributive fault" (*mitwirkendes Verschulden*) of the party involved in the compensation for damages (Badura 1975: 254). If the official document is with another authority, the authority conducting the procedure obtains it *ex officio* (see above), and the party is not denied the right to obtain it himself (the so-called dominance of the principle of investigation in administrative law) (Badura 1975: 254). Just as the probative value of official documents is treated in administrative proceedings, we have identical treatment of official documents in civil and criminal proceedings. Therefore, in the criminal branch of law, the official document has the same purpose - proving the fact established in the procedure. According to the latest amendments to the Criminal Procedure Code, the only novelty is that, the presumption of the truth contained within the official document is determined for the first time, with this type of presumption being *praesumptio iuris tantum* - a rebuttable presumption. This solution was taken from the civil procedure.

5. OPTIMIZING THE CONCEPT OF THE STATE OF LAW

A ten-year period of observation of statistical crime-related data in terms of legal processes, counterfeiting official documents, special cases of counterfeiting official documents, and counterfeiting official documents, as well as their impact on legal security in the state and society, indicates data that require adequate attention but also an intervention by the state as a whole. The content of our claim is multidimensional, and it is based on three key elements: (a) national policy of state administration; (b) striving to optimize the concept of the state and the rule of law; and in regards thereof; (c) striving to ensure the envisaged efficiency, flexibility, consistency and professional-political orientation of the state administration based on modern management models respecting the concept of the social function of the state. This requires adequate monitoring, evaluating a situation, and proposing measures for solving problems in society.

6. FUNCTIONAL MENAGEMENT

In this paper, continuing with abuses related to documents and criminal acts in legal processes, the meaning of potential weaknesses is revealed, the results of their showing are presented and an attempt is made to explain why it is important for the state to answer the "question of functionality". The data showing an average of 235 adults per year commit the crime of falsifying a document, of which 93 adults commit the crime of falsifying an official document, suggest the importance of thinking about the functionality of the work of the state

administration, i.e. how the bureaucracy can be conformed to the "value justification" of its actions. This includes a much more comprehensive range of state administration jobs, both quantitatively and qualitatively, and requires—as regulated by legislation—greater participation of the state administration in shaping the Government's policy. According to Professor Stevan Lilić, efficiency represents the relationship between "invested and realized". This means that in addition to the requirements of cost-effectiveness, achieving administrative goals in terms of political imperatives and respect for human rights should be taken into consideration (Lilić 2011: 13). In this way, the so-called irreversible relationship between legitimacy and legality is established. In the first case (legitimacy), the meaning of the word "legal action" encompasses the requirements of "value justification" of a specific measure or action, while in the second case, the modern administrative system is inconceivable without legality (Lilić 2011: 13 and 14).

6.1. Value justification as a necessity

Therefore, the realization of the concept of modern state administration carries a new dimension and improves the management model in a way that the concepts of the legal state and the rule of law, social and economic elements, and the terms of justice and fairness represent a necessary assumption and require value justification of the content of state action. The research data presented in this paper suggest that the current way of responding to crime requires greater commitment and attention from the authorities in the functional understanding of the meaning of modern state administration, and the authors refer to scientific evidence that many projects dealing with risk factors that cause criminal behavior show effective results. Furthermore, from a cost-effectiveness perspective, instead of sending more people to prison or hiring more police, a focus on solving problems in the community is more beneficial for preventing criminal behavior from occurring (for more see Professor Irwin Waller; Waller 2006). These changes in the theoretical approach caused a change in the concept of state administration, according to which the modern model of administration derives from the concept of the social function of the state and represents a "complex system for the social regulation of social processes" (Milenković 2013: 33; Lilić 2011: 30; Otajagić: 269). According to this model, the activity of the administration is realized through various activities of an "authoritative" and "non-authoritative" nature (Mladenović 2013: 33), that is, through social interaction and the social function of "legitimate influence on people's behavior according to predetermined standards", i.e. neutralizing the negative effects of "uncertainty", which is conditioned by "possible illegitimate behavior of other people in social interaction" (Lilić 2011: 30).

7. CRIMINAL-LAW APPROACH TO LEGAL TRAFFIC IN THE REPUBLIC OF SERBIA

The concept of legal traffic implies the use of official documents in legal relations between citizens and other subjects. Because of the great importance of official documents for the establishment of legal relations, the need for criminal protection of this documents arose. The main purpose of the existence of official documents is their evidentiary power on the existence of legally relevant facts. The official document is often equated with the term *document*. Nevertheless, as a term of official document, it is represented in all branches of law, and it is adaptable to all legal systems (Crimes against the Person, 2003).

7.1. The criminal act of falsifying a document

The first in a series of criminal offenses related to the subject of research is the criminal offense of forgery of a document defined by Article 355 of the Criminal Code of the Republic of Serbia. All other types of criminal acts from this area directed against the same protective object refer to either some special and specific documents or to special ways of falsifying documents.

The action of this criminal offense consists in making a false or modifying a real document, which is usually called material forgery in practice. By forging a signature or by changing, erasing or altering the content of the document itself, the above offense can be committed. By false document we mean a document that does not come from the person listed as the issuer, while by altered document we mean a document whose content has been significantly changed. On the other hand, creating a false document implies creating a completely new document in which all its elements are false. In addition to the above, the act of this section also includes obtaining a false or modified document for use. For the prosecution of the perpetrator, it is completely irrelevant whether the method of obtaining the false or modified document was with monetary compensation, in exchange for some other type of goods or services and the like. As a form of guilt for the existence of this criminal act, it is necessary to have the intent and intention to use the obtained document as a real one. Therefore, the intention should be aimed at the document being used by any person as an original (executor, customer, etc.). By the use of the document, we mean that it has been released into legal circulation. For the realization of the term "use" it is necessary that the document was presented to a person in order to serve as evidence for some legally relevant fact. Otherwise, this would represent an attempt to commit the criminal act of falsifying a document, which is also punishable under the law of the Republic of Serbia. The object of the action is the document. We have already explained in the previous text what can be considered a document in legal traffic, however, we must emphasize that sometimes in legal practice the term "document" includes something that would not be a document in the narrower sense (Jovancevic, 2015, p.135). For example, for the purposes of resolving legal disputes, a motor vehicle's license plate number (a public document) or a motor vehicle's engine number (a private document) would constitute a document. Jurisprudence has accepted as a document both the board with the taxi association mark (public document) and the number on the taxi vehicle (private document). However, an uncertified copy of a document, regardless of whether it is formally in a suitable form, will not be accepted as a document. For the basic form of the criminal offense, the punishment is imprisonment for up to three years. For the more serious form of criminal offense falsification of a document, the punishment is imprisonment from three months to five years.

7.2. Special cases of document falsification

Special cases of document falsification are considered to be special forms of the criminal offense of document falsification. Special cases of falsification of a document according to the positive legal regulations of the Republic of Serbia exist if a person "unauthorizedly fills in a paper, form or other item on which a person has put his signature with a statement that has value for legal relations, or other deception about the content of the document and he puts his signature on that document, considering that it is signed under another document or under different content, if the document is issued in the name of another person without his authorization or in the name of a person who does not exist, as well as when, as the issuer of the document, he states with his signature that he has a position or rank or title although he does not have such a position, rank or title, and this has a significant impact on the probative value of the document. In addition to the above, a criminal offense will also exist when a person corrects his actions in such a way that he uses a real seal or sign without authorization." In the first case, the signature of a person previously placed on a blank document is misused, which is now filled with a statement that has a certain value for legal relations. In the second case, it is a fraudulent act, where the person signing the document is misled into signing a completely different type of document (for example: the person thinks he is signing some kind of contract or power of attorney, but he signed a will). The third form of criminal offense exists when a document is issued in the name of another person, but without his knowledge or his consent, or is issued at a time when such a person no longer exists, for example, he has died.

The fourth form exists when a person adds some false fact to his name, such as a title or a position that such a person does not have, and it is precisely this information that gives evidentiary force (for example, a person signs as a doctor of science, and the process of acquiring the title is still during). The last case, the fifth, involves using a real seal or mark, but with the intention of obtaining a false document. For example, a tag for one taxi vehicle is used on another taxi vehicle. However, even though it is a label of law, judicial practice has taken the position that this case is a criminal offense that we are investigating. The penalties for such special forms of the crime of falsification of documents are listed in the previous text.

7.3. Falsification of an official document

In contrast to the first analyzed offense, that is, the criminal offense of falsifying a document, we call these types of criminal offenses intellectual falsification, because they are committed by a person who has the status of an authorized or competent person. Therefore, the document contains false information and its content is untrue, but it is really issued by an authorized official. The basic form of this criminal offense is committed by "an official who enters untrue information in an official document, book or file or fails to enter important information or authenticates an official document, book or file with false content with his signature or official seal or when with his signature or official seal enable the creation of an official document, book or document with untrue content". By official documents, we mean official identification cards, certificates, permits, passes, etc. Under the term official books, we mean registers, various types of records, etc. By official file we mean a set of various documents that represent a whole, emphasizing that official files do not have to contain only documents compiled by official persons, but can also be submissions made by different persons or parties. An official appears as the perpetrator of the crime. On the subjective level, there must always be an intention. The criminal offense of falsifying an official document carries a prison sentence of three months to five years.

8. RESEARCH AND DISCUSSION

The paper presents data taken from the Official Gazette of the Republic of Serbia, and they refer to criminal offenses in the period from 2012 to 2021. Newer data than these are not available to the public at the time of writing. The data used include all adult perpetrators of criminal acts that the authors are investigating throughout the territory of the Republic of Serbia. The authors decided to research this phenomenon on the territory of the Republic of Serbia, although there are similar abuses in other societies and rights (Wan Ismail, 2019). In order to achieve the set goal in the work, we collected with the help of various methodological techniques and methods the data related to the number of reported, accused and convicted persons for individual criminal offenses in the field of criminal offenses against legal traffic for a ten-year period. We are of the opinion that observing a period of ten years is quite a satisfactory time frame on the basis of which certain trends, tendencies and research conclusions can be drawn. However, it should be emphasized that it is impossible to expect that all criminal acts related to document forgery have been reported and prosecuted, because other more developed countries do not achieve this either (Semukhina, 2014). In the period from 2012 to 2021, a total of 13,990 adults were reported for the criminal offense of falsifying documents. Of that number, 3,405 were charged, while 2,354 were convicted. Of the total number of reported persons, only 24% will be charged, while 17% will be convicted. Of the total number of accused persons, 69% were convicted. These data remind us that we do not have a high degree of "crime loss", but that the "bottleneck" is precisely the first part of the criminal procedure. It should be noted that the perpetrators of these types of crimes try to cover them up in every way, and that the work of the investigative bodies is not easy at all (Sugawara, 2010).

What is also noticeable is that the largest number of reported, accused and convicted persons is precisely in the last year of the observed period, 2021. This gives us a clear sign that the topic we have chosen for research is very important for institutions and society. Also, this data can signal to us that the crime rate in this area is increasing, and that it is necessary to take some new systemic measures to suppress this criminal act.

Year	Number of registered persons	Number of accused persons	Number of convicted persons
2012.	1.290	556	363
2013.	1.256	488	240
2014.	1.123	417	233
2015.	1.161	339	151
2016.	1.242	168	120
2017.	1.404	149	126
2018.	1.659	154	123
2019.	1.514	172	127
2020.	1.354	363	320
2021.	1.987	599	551
Σ	13.990	3.405	2.354

Table 1: Total number of reported, accused and convicted adults for the criminal offense of forgery of documents on the territory of the Republic of Serbia in the period from 2012 to 2021.

(Source: Official Gazette of the Republic of Serbia, Bulletin)

When we observe and analyze the special forms of the criminal offense of document forgery, we notice that the number of reported persons is lower than the number of accused persons for the entire ten-year period. Due to the direct detection of the perpetrator of the criminal offense (for example, to catch the perpetrator at the time of the commission of the criminal offense, etc.), it is possible that the investigation phase in the criminal procedure is omitted, and that there is an indictment immediately. Of the total number of accused persons, as many as 85% are convicted. What is encouraging about this type of crime is that the number of reported, accused and convicted persons decreases almost every year.

Year	Number of registered persons	Number of accused persons	Number of convicted persons
2012.	763	1.368	1.144
2013.	364	1.293	1.016
2014.	229	1.070	857
2015.	399	758	620
2016.	426	633	537
2017.	237	620	538
2018.	393	630	584
2019.	605	613	573
2020.	451	423	398
2021.	461	452	441
Σ	4.328	7.860	6.708

Table 2: Total number of reported, accused and convicted adults for the criminal offense of special cases of document forgery in the territory of the Republic of Serbia in the period from 2012 to 2021.

(Source: Official Gazette of the Republic of Serbia, Bulletin)

When observing and processing data related to the criminal offense of falsification of an official document, we observe a tendency to decrease in the number of reported, accused and convicted persons. These are encouraging data for society and the state, because it is very important that officials do not commit criminal acts. Therefore, the degree of legal certainty and trust in the legal order and institutions of our society can and should grow. Of the total number of reported persons, 65% will be accused, and 34% will be convicted. Of the total number of accused persons, 52% were convicted. Therefore, the "loss of crime" is not at a high level and the statistical data are not alarming and worrying. However, we will see how such data should be fundamentally and meaningfully understood in the following work and discussion related to the end of criminal proceedings and the type and amount of criminal sanctions.

Year	Number of registered persons	Number of accused persons	Number of convicted persons
2012.	394	230	110
2013.	338	234	100
2014.	322	379	215
2015.	330	266	147
2016.	278	191	100
2017.	205	170	92
2018.	283	103	52
2019.	283	123	50
2020.	181	58	40
2021.	151	39	21
Σ	2.765	1.793	927

Table 3: Total number of reported, accused and convicted adults for the criminal offense of falsifying an official document on the territory of the Republic of Serbia in the period from 2012 to 2021.

(Source: Official Gazette of the Republic of Serbia, Bulletin)

The act of pronouncing the verdict does not completely end the criminal proceedings. Then follows the execution of criminal sanctions and what is most important - monitoring the process of execution of criminal sanctions and the effect of the prescribed sanction on the perpetrator of the criminal act. The main goal of criminal sanctions is the resocialization of the person. Therefore, this part of the criminal procedure must not be neglected. For this reason, we performed an analysis of the type of criminal sanctions imposed on perpetrators of crimes against legal traffic. In 2012, a total of 1,617 persons were convicted for the three analyzed criminal acts. Of these, 313 persons received a prison sentence, 45 persons received a fine, 4 persons were sentenced to work in the public interest, and 1,255 persons received a suspended sentence. In 2013, a total of 1,356 persons were convicted for the observed criminal acts. Prison sentences were imposed on 322 adults, fines 21 times, suspended sentences as many as 1,007 times, while community service and court warnings were issued once each in 2013. Four persons were found guilty, but were acquitted due to minor social danger and elimination of the consequences of the crime. In the following year, 2014, 1,305 persons were convicted. Of these, 358 prison sentences, 27 fines, two house-arrest sentences, one court warning and 917 suspended sentences. In 2015, the situation regarding the imposed criminal sanctions for 918 convicts was as follows: 160 prison sentences, 17 fines, 716 suspended sentences, 21 house-arrest sentences, one sentence of community service, one court warning and two convicted persons, but exempted from punishment. In 2016, 757 persons were convicted. 132 persons were sentenced to prison, and 16 persons were fined. 575 persons were sentenced to a suspended sentence, while house-arrest was imposed 27 times.

In the observed year, work in the public interest was pronounced four times, and court reprimanded three times. In 2017, 756 people were convicted. In one verdict, the judges imposed a sentence of community service, and in 43 cases they assigned a sentence of house-arrest. There were a total of 136 prison sentences, seven were fined. In 2017, suspended sentences were handed down 569 times. In the following year, a guilty verdict was pronounced 759 times. Of these, 172 prison sentences, 13 fines, 540 suspended sentences, one sentence of community service and 33 house-arrest sentences. During 2019, 746 people were sentenced for the three criminal acts presented. The types of sentences that were imposed were prison sentences - 118 times, fines - 12 times, suspended sentences - 578 times, house-arrest sentences - 36 times, and penal servitude public interest and court warning once. Four persons were found guilty, but were acquitted and given a security measure. In 2020, out of 758 convicted persons, judges decided to impose a suspended sentence 584 times. They decided: the penalty public interest work in only one case and fine in six cases. The house-arrest sentence was imposed 50 times, while the prison sentence was imposed 116 times. One person was found guilty and acquitted. In the last year of the observed ten-year period, 1,013 persons were convicted for all three criminal acts. Of all these persons, 168 received a prison sentence, 23 received a fine, 742 received a suspended sentence, 73 received a house-arrest sentence, while community service was issued only once, as well as a court warning. Five persons were convicted and found guilty, but acquitted.

9. CONCLUSION

Falsification of documents or official documents represents one of the oldest and most significant criminal acts that has been present from the oldest written legal monuments until today. Since the formation of states and the legal regulation of social relations, documents have appeared, but also certain behaviors of individuals or groups that abuse them. Such behaviors threaten safe and secure legal traffic. For this reason, there is no doubt that documents and their protection should be given a special place in the legal system. In the paper, the main and individual scientific and professional goals are fully justified and achieved. After the terminological determination of the concept and types of documents through different areas of law and the explanation of the real importance of documents in legal transactions, many methods were used to reach the conclusions of this paper. We highlight the most important:

- The importance of the correct definition of the term document has been observed in every area of law, and the correct drafting and handling of documents is of great importance for the development of legal states;
- With the development of society, there is a need for new types of documents, and thus the risks of misuse in that field also increase, therefore it is necessary to constantly engage the entire state apparatus for their protection and proper use;
- The way in which criminal offenses against legal traffic are defined in the positive legal regulations of the Republic of Serbia is quite satisfactory and harmonized with the legislation of developed countries;
- Falsification of documents often occurs for the execution of some other criminal acts. For example - fraud. In most cases, there will be a confluence of the criminal offense of falsifying a document with the other offense committed by using a forged document. This represents a huge problem in the realistic assessment of the number of committed criminal acts that contain some of the elements of falsification of documents and leads to the conclusion that the number of falsified documents is higher than the official data show;
- For the observed ten-year period, 9,989 persons were convicted for all three investigated criminal acts. So, about 999 people per year, that is, about 83 people per month or an average of three people per day. Counting further, every 8 hours, on the territory of our country, one person commits one of the three criminal acts analyzed in the paper.

Looking at it this way, it cannot be said that this is a crime that rarely happens, taking into account that a person even with one falsified document can commit several abuses and cause enormous damage to a large number of people;

- Out of the total number of persons convicted for all three crimes (9,989), 7,483 of them received a suspended sentence. Therefore, in 75% of cases, the judges decided that the adequate criminal sanction is a suspended sentence. The authors are of the opinion that a suspended sentence is a very high-quality criminal sanction, but that it is not a good indicator that in such a large number of judges decide exclusively on this type of sanction, bearing in mind the way of executing a suspended sentence in the Republic of Serbia. This can indicate several things, from the incompetence of the judiciary to the abuse of a suspended sentence as a sanction, because with this warning measure a win-win situation was achieved (the judge successfully ended the case - the perpetrator was warned, but does not suffer the consequences of more rigorous sanctions). Here, the only thing that is questionable is the degree of resocialization of the perpetrators of such criminal acts by the application of a conditional sentence, which can be a guide for the next research aimed at the recurrence of this criminal act;
- The authors remind us of the fact that in the last year of the observed period, there was a noticeable increase in the number of reported, accused, but also the number of convicted persons in connection with the crime of document forgery, and that this may be a reflection of bad court practice. We have to wait for more recent data and supplement the analysis, which is another reason to continue monitoring this type of criminal acts and the data related to them.

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FUNDAMENTAL ANALYSIS OF THE APPLE COMPANY

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ABSTRACT

Financial markets are specific markets and places where shares, mortgages, bonds and other claims related to real assets are traded. Their primary role is to facilitate the flow of funds from individuals and companies who have excess funds to those who need funds in excess of their income. The financial markets show everything that happens in real economic, as well as social trends. Regulation, participants, instruments, IT and employees are the factors that determine the financial market. One of the important items in the investment process, in order to be able to form a portfolio, is a fundamental analysis. Fundamental analysis is essential for analysis and planning for both investors and analysts. It is used to determine the discounted value of all payments that shareholders would receive upon each sale of a share. Through this analysis, risk and interest rates are assessed. Investors are tasked with developing fundamental and technical analysis strategies. Thus, they can understand how share prices change in a dynamic market, but also constantly monitor trends and forecasts. Fundamental analysis can be applied together with technical analysis to assess the quality of the company's management. Fundamental analysis is just one of the techniques that investors use to discover the value of securities. It represents a much deeper analysis than just tracking changes in the prices of securities. Basically, it tries to explain what initiates a price change, taking into account the state of the company, the state of the industry in which the company operates, and the state of the global economy. Investors are the ones who represent the main participants, carry out detailed analyzes and perform evaluations. Through this paper, answers will be given about the "financial health" of the Apple company.

Keywords: *fundamental analysis, macroeconomic environment, investors*

1. INTRODUCTION

For the successful operation of a company on the stock market, fundamental analysis is very important. Its task is to help stakeholders and analysts achieve the set targets and find out the answers they are interested in. These are questions related to the company's market value, investments, satisfaction and the average salary of employees. . The financial health of the company also helps in building the reputation and image in the public, and it is very important that the company does not have scandals, such as the use of creative accounting and that the financial statements are not badly presented to the public. This can be one of the reasons why investors do not decide to invest. to the company. Analysts and stakeholders have a difficult task when it comes to ratio analysis, as well as the analysis of market indicators. The paper will present the ratio analysis of the Apple company, the company's revenues, cost of goods sold, the ratio of profitability, growth, cash flows, liquidity and efficiency.

2. SIGNIFICANCE, OBJECTIVE AND CHARACTERISTICS OF FUNDAMENTAL ANALYSIS

Fundamental analysis is one of the techniques that investors use to discover the value of a security. It represents a much deeper analysis than just tracking changes in the prices of

securities. In essence, she tries to explain what initiates the price change by taking into account the state of the company, the state of the industry in which the company operates, and the state of the global economy. This analysis is a method of valuing stocks by measuring their "intrinsic, fair" value. The data that the analysis deals with are: economic factors, trends that are characteristic of a certain competitive branch, conditions on the capital market and specific data related to the company. Within the framework of fundamental analysis, quantitative factors are studied, which include specific indicators and results of the company's operations and market functioning, but also qualitative, intangible indicators, such as the quality of technology or the efficiency of the management itself. The goal of this analysis is to identify the real or internal value of the shares of a certain company and compare it with the market price. Fundamental analysis is suitable for long-term investors who buy undervalued stocks and wait for the stock to reach a realistic market value. If the market price is below the estimated value, the investor should buy the stock because it is undervalued. Conversely, if the market price is above the estimate, the investor should sell it if he owns it in his portfolio. Fundamental analysis uses a firm's earnings and dividend prospects, expectations of future interest rates, and an assessment of the firm's risk to determine the true price of the stock. It can be said that fundamental analysis is an attempt to determine the present discounted value of all the payments that the shareholder will receive from each share. If the value determined by the fundamental analysis exceeds the price of the stock, then the fundamental analyst would recommend buying a block of shares. Fundamental analysts typically begin by studying past earnings and examining a firm's balance sheet. Later, the analysis is supplemented with detailed economic analyses, usually including an assessment of the quality of the company's management, the status of the company in its industry, and the prospects of the industry as a whole. The goal of fundamental analysis is to recognize the performance of a company that is not yet recognized on the market. However, the efficient market hypothesis predicts that most fundamental analysis is doomed. If an analyst relies on publicly available earnings and business information, his valuation of the firm's outlook is unlikely to be significantly more accurate than that of rival analysts. Only analysts with unique insight will be rewarded. That is why fundamental analysis is difficult to evaluate. It is not enough to analyze the company well; you can only make money if your analysis is better than that of your competitors, because the market price of shares already reflects all publicly available information. Fundamental analysis represents the so-called top to bottom approach, where the analysis starts with macroeconomic factors, then the economic environment, competitive branches are analyzed and finally an in-depth analysis of the company itself is performed. There is a regularity between the state of the economy and the movement of share prices. When economic and market conditions are favorable, stock prices can be expected to rise, and vice versa. The movement of stock prices, however, is not only affected by the state of the economy, but also the company's operations. Technical analysis attempts to exploit repetition and predictable patterns in stock price movements and thereby generate superior investment performance. Technical analysts do not deny the value of fundamental information, but believe that prices are already embedded in the value of stocks. For example, one of the best-documented behavioral tendencies is the disposition effect, which refers to the investor's tendency to hold an action until the investment is lost. According to the disposition effect, investors are willing to accept losses. This effect can lead to impulses, that is, movements in share prices, even if the fundamental values follow a free movement. The fact is that the demand for shares depends on the demand of investors for shares of companies whose price depends on historical prices. Technical analysis thus uses volumes of data as well as historical prices for a direct trading strategy. Technical analysts believe that fundamental market analysis is based on irrational expectations and the influence of certain factors. Charts used in technical analysis are line, bar and candle charts.

2.1. Quantitative factors in fundamental analysis

The balance sheet represents the financial state of the company at a certain point in time, on a certain date, which shows us the assets of the company and the way in which these assets are financed. The balance sheet as a tabular representation has two sides: the left side is marked with "assets" and the right side is "liabilities". The difference between assets and liabilities represents the net worth of the company, otherwise known as shareholders' equity. Assets include all funds, while liabilities include sources of funds, i.e. all obligations created on any basis. Assets must always be equal to liabilities, that is, funds must always be equal to their sources. Assets show current assets (cash and cash elements, short-term investments, receivables from customers, inventories, real estate, assets and equipment, goodwill). All categories of assets can be converted into money: equipment through sale, and receivables through collection. It should be emphasized that certain positions of liabilities cannot be linked with certain positions of assets because the structure of assets changes daily. Liability shows the ownership of assets, ie sources of funds. It is divided into two categories: capital (net assets), which shows how much of the assets belong to the company, and liabilities, which show how much of the assets belong to entities outside the company. An income statement is a profit/loss statement that presents the results of business operations over a specific period of time such as a quarter or year. It shows the generated revenues and incurred expenses of the company during the accounting period. The main goal of compiling this balance sheet is to see how much of the periodic result has been achieved. Revenues that are an integral part of the income statement are classified into four groups: Business income - arising from the sale of goods, products and services, through income from subsidies, grants, recourse, compensation, etc. A typical business should have a dominant share of these revenues (over 90%) in total revenue. The reason for this is that the company's main activity is to produce or provide services, and therefore the income from the sale of products, goods and services must dominate the total income. Financial income - consists mainly of income from interest and dividends. A typical business should have a small share of these revenues in total revenue because the business was not established with the goal of raising and distributing funds. Non-business and extraordinary incomes - the share of these incomes should amount to less than 1% because the largest part of non-business incomes is the result of irregular operations (incomes from surpluses, realized incomes in the current year from the previous year). Revaluation income - arising from the revaluation of parts of assets: fixed assets, unpaid subscribed capital, financial placements, increase in receivables. Expenses that are an integral part of the income statement are classified into four groups: Business expenses: cost of goods sold, material costs, salary costs, costs of production services, depreciation costs, intangible costs. Financial expenses: expenses based on interest, negative exchange differences, etc. Non-business and extraordinary expenses: expenses that arise as a result of unforeseen business events that the company cannot influence. Revaluation expenses: expenses arising from capital revaluation. The financial result is obtained as the difference between income and expenses. A statement of cash flows is prepared to show how a company's operations have affected its cash balance by examining investment decisions, uses of cash, and financing decisions, i.e., sources of cash.. It represents a financial statement that shows the inflow and outflow of a company's funds during a certain period. This report answers the following questions: does the company generate sufficient amounts of cash to be able to purchase additional fixed assets for further growth and does it have excess cash flows that it could use to pay off debts or invest in new products. preparations and presentations is broken down into three cash flows: The cash flow of business activity results from the main activity of the company, i.e. from the inflow of money from the sale of goods and the provision of services and outflows that arise in connection with the settlement of obligations to suppliers, creditors, shareholders, as well as outflows due to new investments. The cash flow of investment activity includes investments in resources (investments in fixed assets, intangible

investments, participation in the capital of related legal entities, etc.) and inflows based on the sale of fixed assets, collection of loans and interest, dividends and profit sharing. The cash flow of financing activities includes cash flows that occur as a result of obtaining capital from external sources (issuance of shares, bonds, bills, mortgages, etc.) and repayments based on financial leasing, paid interest on debts and dividends, etc. The difference between the balance sheet, the income statement and the cash flow statement is that if the product is sold today, with a 30-day repayment period, the balance sheet will immediately increase the account receivable, the income statement will say that this income was generated at the time sales, and the statement of cash flows will not recognize the transaction until the debt is settled and the company receives the cash. Another difference between the income statement and this statement relates to depreciation. Depreciation expense on the income statement is a way to spread the capital cost over a longer number of years, rather than recording it at the time it is incurred. The statement of cash flows recognizes the cash implications of capital expenditures as they occur. Accrued depreciation charges are not taken into account, but the full amount of the capital expenditure when that amount is paid. No company can survive without customers. They buy products and use services provided by companies. Keeping up with changing customer wants and needs is critical to business success. There are 5 levels of customer expectations: trust - what was promised should be achieved, responsibility - to do it on time and as promised, security - to know what and when you are doing, empathy - to be approached with respect and understanding, environment - space, atmosphere. There are two basic strategies for following up with customers: reactive and proactive. Reactive customer monitoring is about identifying customer trends and issues and responding to them as they arise. One of these strategies is to monitor and listen carefully to customer complaints and to respond to their objections. Research has shown that customers are much more satisfied when the company responds to the letter in which they sent a complaint in a way that offers them an honest and concrete answer explaining how the problem will be solved. Of course, there are also small gifts, coupons for subsequent purchases. Proactive customer monitoring is about identifying potential needs, problems, and taking action before they arise. Multi-branding attracts more customers because they are offered more choice. Absolute market share or ATU (Absolute Market Share) is the data through which we find out how much our sales are in relation to sales in the entire market. It is calculated by dividing the size of sales by the size of the market, that is, by dividing the achieved sales by the sales achieved by all market participants together. Information about ATU is very important. It tells how successful we are and how important we are in the market. This data is one of the most important business performance indicators (KPI) and is used in the field of marketing. The goal of every company is to increase its ATU as much as possible in order to become one of the most important players on the market. Relative market share or RTU (Relative Market Share) is the data through which we find out how much our sales are in relation to the sales of the biggest competitor. It is calculated by dividing our sales volume by the sales volume of the largest competitor, or by dividing our ATU by the ATU of the largest competitor. It tells us the degree of market concentration. If the RTU is small, it means that there is probably a pronounced concentration in the market, ie. that one competitor has an ATU of over 40-50%. RTU shows how strong we are compared to our biggest competitor. If this participation is small, it means that the competitor is quite strong and that we have a weaker position on the market. To analyze the structure of market participation, the indicator of market concentration is used, that is, the Herfindahl-Hirschman index (HHI). To calculate the HHI, data on business income from the income statement is required. The amounts of the companies included in the analysis are added up, so that the individual amount is divided by the total and thus a certain percentage is obtained - the market share that is squared. Thus, we distinguish three types: unconcentrated where the value is below 15%, moderately concentrated where the value is between 15% and 25% and highly concentrated where the value is above 25%.

3. THE APPLE COMPANY IN THE LIGHT OF FUNDAMENTAL ANALYSIS

Apple Inc., formerly Apple Computer, Inc. , is an American multinational corporation headquartered in Cupertino, California. The company develops, manufactures and sells personal computers, computer hardware and software, and media players. The most famous hardware products we know are the "mac" line of computers, as for phones, it is the "iphone" and the "ipad" tablet computer. What makes them distinctive and unique are the operating systems OS X and i OS, and the creative business packages iLife and iWork. Steve Wozniak, Steve Jobs and Ronald Wayne founded the Apple company on April 1, 1976. It became a joint-stock company on January 3, 1977. The first mass-market product that achieved great success was the Apple II computer. In 2018, the number of employees was 123,000, and the company plans to employ another 20,000 workers in the next five years. The number of sales facilities is around 500, and Apple App stores are available in 175 countries as of April 2019. Cuba, Sudan, North Korea and Syria are countries where Apple products are not sold. Apple products are sold the most in North and South America, followed by Europe, China and Japan. 10 interesting facts about the Apple company: The worst investment decision ever - The two founders of the Apple company, Steve Jobs and Steve Wozniak, are well known. What is less well known is that there was also a third founder, Ronald Wayne. Wayne sold his 10 percent stake in the company for \$800 just 12 days after it was founded in April 1976. He received an additional \$1,500 payout. If he had stayed with the company, his stake would now be worth \$100 billion; the first Apple computer didn't have a keyboard and a screen - Apple's first product, the Apple 1, was basically a motherboard. It had no keyboard, monitor or case. Some users have made their own wooden case and added a keyboard; The Macintosh (iMac) was launched with a commercial directed by Ridley Scott - The Apple Macintosh was launched in 1984 with a \$1.5 million TV commercial directed by Ridley Scott that aired during the Super Bowl. It is considered one of the best TV commercials of all time; When Macintosh sales began to decline, Jobs was ousted from the Apple board. He did not perform the same job and was given an office in a "small, anonymous building where only his secretary and a guard were housed." Jobs called his office there "Siberia". Jobs sold 85,000 shares of Apple when the price was less than \$14. He and Wozniak left Apple in 1985; Apple paid \$427 million to bring back Steve Jobs. In 1996, Apple bought NeXT, the company Jobs built after he left the company in 1985, for \$427 million, bringing him back to Apple; The iPhone was originally a "Purple" project - a team of 1,000 employees worked secretly on the so-called to the "Purple" project, which eventually produced the iPhone. They spent \$150 billion in 30 months before they released the first iPhone. On June 29, 2007, Apple unveiled the iPhone to the public using the slogans "This is just the beginning", "Apple reinvented the phone". Jobs said at the launch: "This is the day I've been looking forward to for two and a half years. Today, Apple will reinvent the phone"; The Secret Behind the Apple Logo - It turns out that the Apple logo isn't as big a deal as many believe. As Jobs said, he was inspired to use the apple after visiting an apple farm because the fruit was "fun". There was widespread speculation that the bite into the apple was a gift to Alan Turing, the founder of computing, who committed suicide by consuming cyanide. An infected apple was reportedly found next to his body; The world's largest company - Apple has become the world's largest business whose shares on the world market have reached the value of one trillion dollars. That is three times the value of South Australia's GDP, i.e. everything produced by that country in one year. We can mention the following as the main advantages of the company:

- Strong brand image and equipment - the focus of business is always the customer, hence the great trust of users in Apple. Dedication and work on product quality and constant innovation made the brand a leader in computer technology from the very beginning.
- Unique ability to design and develop your own hardware, software, services and applications – Highly unique, innovative products that are easy to use and integrate into the Apple ecosystem are why customers buy and enjoy using Apple products. The company's

ecosystem is the result of its ability to design a wide variety of integrated proprietary hardware, software, applications and services. This is one of the main competitive advantages that no other company can establish.

- A strong brand that is supported by strong advertising and marketing capabilities – This company's brand is the most recognizable brand in the world, and it supports a large ecosystem of products. Due to constant comparison, work and research, they managed to create a very strong brand recognition and for more than 30 years they have relied significantly on the help and support of the external advertising agency TBWA / Chiat / Day. "1984" (in which the Macintosh personal computer is promoted) and "Think different" stand out as the two most significant advertisements that helped the company to create the original image of the brand. Recently, the focus has been on strengthening the internal advertising and marketing teams by attracting new talented and professional experts to the internal agency. The result should be lower costs and new advertising opportunities.
- They have the most loyal customer base in every major market in which they operate - The users of the products praise and gladly use them primarily because of their ease of use, reliability, design. Research has shown that because of these benefits, customers will buy Apple products even when there are better or cheaper products on the market. Compared to its competitors, the company has the highest user retention rate on the market at 74.6%, while Samsung has 63.9%, and LG and Motorola have 40.7%. We can mention the most important weaknesses of the company:
 - High price of products - Products can be considered luxurious due to the premium price. Low-income consumers simply cannot afford these products, as they are meant for middle- and high-income earners. Because of those premium prices, only individuals can afford Apple products.
 - Limited promotion and advertising - The reason for the lower advertising comes from the fact that the company believes that it has solidified its loyal customer base and relies heavily on its flagship retail stores. Because of their success, there is no need to overinvest in marketing moves like Coca Cola and Samsung do.
 - Incompatibility with other software - Customers must use only Apple applications and accessories to continue using their products. The base model of the iPhone 11 from 2019 came with an ordinary, not a fast charger, while the new model is speculated not to come with a charger. In addition to the high price of the phone, users will initially have to shell out another \$100 for a charger.
 - Skilled workers – Apple's developers, researchers and experts represent a team of highly qualified professionals who have years of experience in branding consumer products. If the team expands, the company will be able to continuously build new opportunities.
 - Consistent customer growth – The company has been a leader in the technology sector for years. As noted, their customer retention rate is excellent. They can rely on the power of the Internet for some future opportunities and to gain more new customers.
 - Use of artificial intelligence - In 2017, Apple acquired Regaind, a French AI startup and DeskConnect, an AI tool. The first acquisition helped Apple integrate intelligent search into the iPhone's Photos app, while the second acquisition helped automate tasks by helping consumers organize apps and features with a series of commands. The company should focus on expanding its AI portfolio to achieve a strong foothold.
- Globalization – Through globalization, people are enabled to own technology very easily and simply. As a result, people can shop and order products directly from the company wherever they are. Potential threats to the company are:
 - Outbreak of the corona virus and global tensions - Like most companies, they rely on production and procurement from China. The new situation managed to damage the

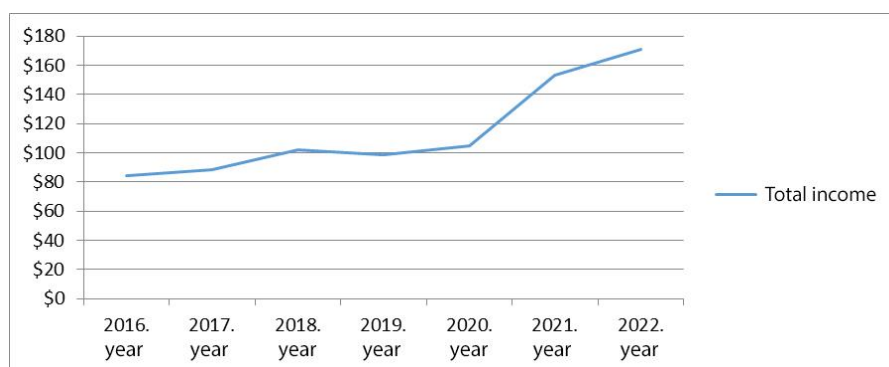
annual revenue by 20% until April 2020. Also, the increase in tariffs on imports from China may lead to higher product prices, which will directly affect customers.

- Increased number of competitors - As technology is constantly advancing, brands such as Samsung, Dell, Google, Huawei represent strong competitors to Apple. The company must introduce new technologies or revise its prices in order to survive alongside the competition.
- Chinese Tariffs – The US government has imposed a higher tariff on imported goods from China, which increases the cost of the product. This adversely affects the gross margin.
- Lawsuits - 60 lawsuits have been filed against Apple because users were upset and confused when it announced that it was deliberately reducing CPU performance on iPhone models with older and damaged batteries. Consumers felt betrayed because they thought Apple didn't believe in transparency, which led to a number of people filing lawsuits.

3.1. Apple strategies

Apple's strategy can be classified as product differentiation. The multinational technology company differentiates its products and services based on simple yet attractive designs and advanced features. We can break down the strategy into the following elements:

- Focus on product design and its functionality – In accordance with its strategy, the company has adapted the advanced functions and capabilities of its products and services as the basis of competitive advantage. The list of innovations introduced by the company includes the iPad, the first device to store thousands of songs with easy song-editing capabilities, also the development of the Macintosh, the first personal computer to use a graphical interface, and the launch of the iMac. Competitive advantage can be a challenge to maintain a long-term perspective because management may fail to provide some innovative features in new versions of the product, thereby jeopardizing its competitive advantage.
- Strengthening the Apple ecosystem - We can characterize the strategy as vertical integration. The company simultaneously has advanced expertise in software, hardware and services. This integration significantly differentiates and sets it apart from the competition. A very important source of competitive advantage relates to the ecosystem enabled by vertical integration. Apple software and devices sync easily and work great with each other. The apps run smoothly on multiple of their devices at the same time and there isn't much difference in user interfaces, but the same items don't mesh as easily with other company's products.
- Reducing business dependence on iPhone sales. Apple's business strategy is shifting from relying on iPhone sales to prioritizing its services business and other divisions.



*Chart 1: Apple's Total Revenue from 2016 to 2022 in (Millions of US Dollars)
(Source: creation of the author)*

In 2016, Apple achieved a total revenue of 84,263 million. US dollars, 2017 88,186, the increase continued in the following year in the amount of 101,839, in 2019, 98,392 were achieved, while in 2020, 104,580. The total income of the company is continuously growing, while only in 2019 there was a decrease, but it is already increasing in the current year. In the third quarter of fiscal year 2020, Apple reported net income of 58,424 million. US dollars. Apple's net income figures have grown massively over the last decade, with the total increasing annually from just over six billion dollars in 2008 to around \$55 billion in 2019. More recently, Apple has expanded its offering even further to provide consumers with cloud storage and a mobile payment platform.

Indicators	2019. year	2018. year	2017. year	2016. year
Business income	260,174	265,595	229,234	215,639
Cost of goods sold	161,782	163,756	141,048	131,376
Total profit	98,392	101,839	88,186	84,263

*Table 1: Apple's annual cost of goods sold history in million US dollars
(Source: creation of the author)*

As you can see, costs from 2016 to 2019 are increasing, but we also see an increase in total revenues. Higher production volume results in higher sales costs. In order to survive and grow, the company must constantly present innovative products. Net profit margin in 2019 is 21.24%, that means 21 cents of every dollar is profit. The margin is positive every year, and the reason for this is that Apple has been profitable. Return on equity is a key ratio for shareholders, as it measures a company's ability to generate a return on its capital investment. ROE is net income divided by shareholders' equity. ROE can increase without additional capital investment, as the ratio can increase due to higher net income due to a larger debt-financed asset base. Return on capital in 2019 is 61.06%, and ROA in the same year is 16.32%, where we see that $ROE > ROA$, which means that the company has positive leverage. In the analyzed years, Apple achieved a high return on ROE, for investors it can be a green light for investing. If the company invested \$1 in business at the beginning of 2019, at the end of 2019 it returned \$61.06, which is a very good indicator of profitability. What can be concluded is that in all four analyzed years the company had positive results that show that it is profitable, with the fact that profitability increased from year to year and we can say that the company is continuously growing. The company strives to use the available funds as effectively as possible, that is, to achieve the largest possible volume of activities with as little investment in funds as possible. We can see whether the company is efficient from income/expenditure as a financial expression of the quantity and assortment of manufactured and sold products and investment in business assets. The indicators resulting from this are designated as activity indicators or effectiveness indicators. This group of indicators provides an answer to the question of how effectively the company uses the available funds and represents the basis for assessing whether the assets shown on the balance sheet correspond in terms of the amount of realized (planned) revenues. Determining and controlling these indicators of activity is of great importance from the aspect of managing the company's finances, because the relationships between effects and investments directly determine the degree of liquidity and profitability of the company. The most important indicators of this type are: customer (receivables) turnover ratio, supplier turnover ratio and stock turnover ratio. What should be especially emphasized is that this company also makes significant investments in new technologies. Thus, the American technology company Apple announced that it will use 100% recycled cobalt in batteries by 2025. In a statement from Apple, it is stated that they have intensified efforts to expand the use of recycled materials in products. It added that the goal is to use 100% recycled cobalt in all batteries designed by Apple by 2025. It also stated that by 2025, magnets in Apple devices will use 100% recycled materials.

Circuit boards designed by Apple will also use 100% recycled solder and 100% recycled gold, the statement said. They also remind that the company has significantly expanded the use of recycled metals during 2022. According to reports, more than two-thirds of all aluminum and more than 95% of all tungsten in Apple products are currently made from 100% recycled materials.

4. CONCLUSION

One of the important items in the investment process, in order to be able to form a portfolio, is a fundamental analysis. Fundamental analysis is essential for analysis and planning by investors and analysts. It is used to determine the discounted value of all payments that shareholders would receive upon each sale of a share. Through this analysis, risk and interest rates are assessed. Investors are tasked with developing fundamental and technical analysis strategies to understand how stock prices change in a dynamic market, but also to constantly monitor trends and forecasts. Fundamental analysis can be applied together with technical analysis to assess the quality of the company's management. Apple uses this method to recognize company performance and make business more efficient. Apple is a company that has been operating successfully for many years in all parts of the world. What makes it one of the most successful technology companies is a strong brand, quality, product innovation, customer care. The company also plans to expand its operations in the coming years. Using qualitative and quantitative methods, we can conclude that the Apple company is innovative, that it invested in its business, this is the result of this popularity. From the ratio analysis we come to certain conclusions. The growth ratio shows us that Apple's total and net income are growing in all analyzed years. Cash flow explains the sources of cash inflows and outflows during a certain period, the level of which is affected by business, investment and financial activities. The liquidity ratio tells us that liquid assets can be converted into cash in the short term, and that the company's assets are greater than short-term liabilities. The net working capital was positive in all four analyzed years and it increased from 2016 to 2019, which means that short-term liabilities are less compared to current assets. An increase in the current ratio throughout the years indicates an increase in the company's assets, while the quick ratio shows that the company is able to cover its short-term obligations with funds that can be quickly converted into cash.

ACKNOWLEDGEMENT: *Using the profitability ratio, we come to the conclusion that the company is profitable and that all ratios are positive, that the company had a net profit and operating profit at the end of all four years. The margin is positive every year, and the reason for this is that Apple has been profitable. In the analyzed years, Apple achieved a high return on ROE, for investors it can be a green light for investing.*

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APPLICATION OF SIMULATION MODELS FOR PREDICTING POPULATION EVACUATION IN TRAFFIC

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ABSTRACT

Generally known, the fastest and safest way leaving of an endangered object, area or fire situation is an evacuation of people, animals and material properties. Because of safety and complexity, evacuation always presents a heavy and demanding task. That is because evacuation depends on many expectable and unexpected factors. For example, fear, stress and panic among people can lead to irrational and unforeseen behaviour and decisions. One particularly complex, heavy and always open problem presents the evacuation of disaster occupants in case of an accident, such as a traffic disaster. Traffic accidents could cause many victims, regardless of whether it is road, water or air traffic. Particularly situations are complex where the approach to injured and endangered occupants is difficult or completely stopped. The number of victims might be much higher when the proper actions haven't been taken. Therefore, it is crucial somehow, as far as possible, to anticipate a crisis or an accident. Simulation software is an excellent way to predict evacuation situations and design strategies. This way has advantages in evacuation planning and prediction to precision, safety, organisation and cheapness. Many conditions should be realised and analysed, and the optimal evacuation strategy can be found and determined. This paper presents the importance and advantages of simulation software Pathfinder by predicting and analysing evacuation situations and scenarios in traffic situations.

Keywords: *evacuation, simulation, software, traffic*

1. INTRODUCTION

The term evacuation presents an old term from the 13th century related to some cognitions because it marked only the evacuation of an army or parts of an army from the battlefield. In the etymology sense, the evacuation term originated in the Latin adjective vacation, which means leaving some area [1]. Later, in the 18th century, this term gained importance in a broad sense because it presents a detailed, planned, designed, shortest, fastest and safest way of moving people, animals and material properties from an endangered area or situation to a safe zone [2]. Whether the evacuation is temporary or permanent, the reasons for it can be the following: fire, overflow, earthquake, tsunami, terrorism threat, accidents and so on [3]. In the late seventies of the XX century, the evacuation concept was interesting because of several catastrophic fires where the worse investigation than others was in a workshop in Brussels when 300 people were killed [4]. The time needed for evacuation depends on many different parameters. The most parameters are the speed of occupants, properties and flow potential of routes and directions, the number of occupants for evacuation, and others [5]. Generally, evacuation pathways have to be logical, the level determined, and non-breakable, e.g., an object with a height of 75 m has an evacuation route not longer than 30 m, while for an object with a height of more than 75 m, the evacuation route has not been longer than 20 m [6].

Thus, the purpose, the technical content and many other parameters of the object imply the design of the evacuation route. Concerning the mentioned: objects for the production of explosives and similar products have to have evacuation routes up to 10 m [7]; production objects of powder and plants for dangerous materials have to have evacuation routes up to 20 m; markets, houses, cinemas, institutes and similar facilities have to have evacuation routes up to 25 m while underground garages must have evacuation routes up to 30 m [8]. The evacuation routes have to be crossable in three to five minutes. Every object exit has to mark with noticeable signs. Further, evacuation features have to illuminate with a light source that provides light of strength 50 lx at the illuminated surface. There is an evacuation concept, but the most important facilities are specific bandwidth, bandwidth and evacuation plan (procedure). A specific bandwidth is the number of occupants through the exit width unit for a determined time. Bandwidth is the most number of occupants through the exit width unit per a determined time, related to the capacity of the stair in the object. For example, related to British standards, the bandwidth for the openings with a length of 5 m is 400 occupants per minute [9]. The evacuation plan (procedure) presents a written document consisting of evacuation routes, safety zones, behaviour rules, logistics, and necessary activities of presented occupants. This document could be very complex and demanding due to the number of considered parameters (number of tenants, length of evacuation routes, necessary stairs, constructive solutions for fumigating evacuation routes and stairs and others). The time needed for evacuation, of course, cannot be unlimited. This time, related to some foreign standards, can be divided into several times: the time of fire detection, the time of occupant's alarming, the time of preparation for evacuation, the time of reel before the evacuation started, the time of living of endangered room or object and the time of crossing of imagination road [10]. Allowed evacuation time should be mostly $0.8 t_{cr}$ (t_{cr} presents critical time). Related to foreign literature, this time is about 2.5 minutes. For example, the realised experiment in Baljsoy Theatre, Moscow, showed that 210 occupants crossed the evacuation route in 2.5 minutes. Also, the results present that the needed time for evacuation of about 120 occupants from the top floor of a high residential building (16, 17 and 18th floor) was about 4.4 minutes [11]. This paper has presented the application of simulation software Pathfinder through evacuation time and its other benefits in the evacuation process.

2. PATHFINDER SOFTWARE

Pathfinder software presents the agent-based egress simulator intended for occupation motion modelling. It will be possible to calculate evacuation time for some specific situation or specific object for different conditions and different speeds of occupants if the dimensions of the object, its rooms, doors, stairs, and occupants are a reality [12]. There are two different modes for occupant motions that this simulator enables. The first one is SFPE mode presents a flow mode, which means the occupant density determines moving speeds. Also, door width controls flow through doors. The second mode is the steering mode, which provides the reality of human behaviour in the sense of movement and mutual interaction as much as possible. Results are presented visually or graphically by three different kinds of views: 2D view, 3D view and navigational view. The first two views enable easy and synoptic drawing of the simulation model with views from any direction. The third view is enabled the faster finding of objects and data that are not easily accessible in the 2D view and 3D view [13]. Significant benefits related to this software are the possibility to import files designed in AutoCAD, FDS, PyroSim or similar software, which significantly enables easy and faster designing and drawing of the simulation model and its direct consequence time-saving [14]. It is obvious the advantages of this way of evacuation times calculation and evacuation routes and generally evacuation prediction.

In the first place, it is safety. It would be hard and complex to safely design some actual evacuation objects and test the evacuation with many populations under some conditions, such as fire. Also, it would take a long time, preparation and technician conditions. After that, efficiency is a very significant factor. It is practically impossible without using the simulation software to predict, design and compare all cases or scenarios for various conditions such as occupant speed or jam potentials. Also, the influential factor is the financial factor [15]. For example, how much would it cost to design a simulation railway tunnel with its actual dimensions or to design a collision of a few cars in the tunnel? It is so much cheaper way to realise that by simulation models.

3. SIMULATION OF EVACUATION FROM ROAD TUNNELS-AN EXAMPLE OF STRAŽEVICA TUNNEL

Generally, tunnels present very significant and complex facilities for population evacuation. Their position related to the ground or water, the way of construction, a large number of humans and vehicles presented at the tunnel at the same time, the lack of space and other influential parameters makes the task of evacuation very hard, complex and always opened for better and more effective solutions. The Straževica tunnel presents, a component of Belgrade's detour, the largest and the most modern tunnel in Serbia. It is an integral part of the KORIDOR 10 highway. The complete length of the tunnel is 772m, and the tunnel consists of two separate tubes, the right and left. The width of one is 13m, while the width of the roadway is 11.5 m inside the tube. The right tunnel tube was completed, while the left tube tunnel made up only 115m in length. The pedestrian tunnels with a tunnel cross-section of 25m² interconnecting both routes were recommended for evacuation in emergency cases [16].

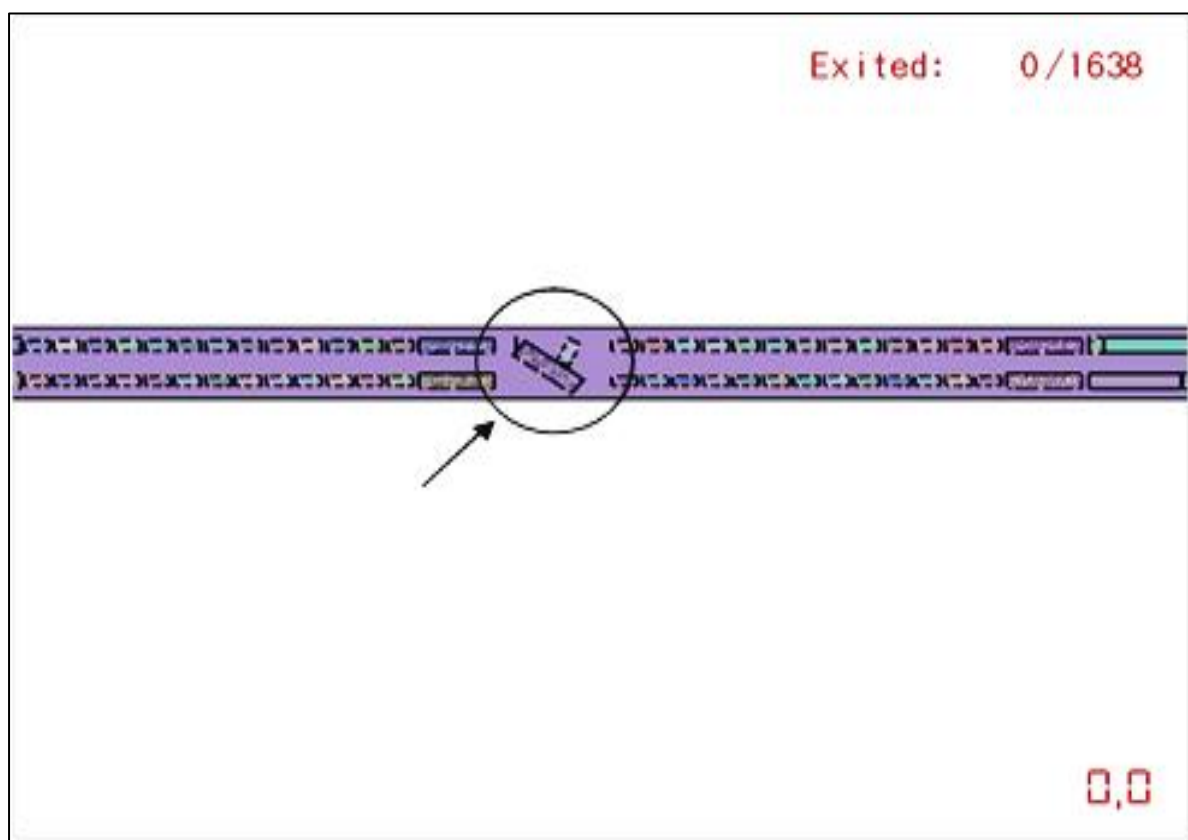


Figure 1: The collision in the middle of the tunnel with the marked collision location at the start

(Source: Jevtić, B. R. (2016) Evacuation from tunnels-an example of Straževica tunnel)



Figure 2: The collision in the middle of the tunnel after 174.2 seconds for the first scenario
(Source: Jevtić, B. R. (2016) Evacuation from tunnels-an example of Straževica tunnel)

The tunnel of the latest standards, which purport modern light and signalisation equipment, systems for fire and burglary control and protection, powerful air and ventilation control, radio and audio equipment, traffic control systems, cameras and others, was made up. For the collision scenario in the Straževica tunnel, the evacuation simulation and calculation of evacuation times for different speeds of motion were realised. Because of the traffic frequency in the tunnel, an occurrence, such as a collision, was expected. So, the collision simulation was in the middle of the tunnel, and there was a big traffic jam in the whole tunnel with different vehicles, such as 199 cars, 14 buses and 15 trucks. Related to the fact that in one car was situated four occupants, in one truck two occupants, and in one bus 58 occupants, the complete number of occupants in the tunnel was 1638.

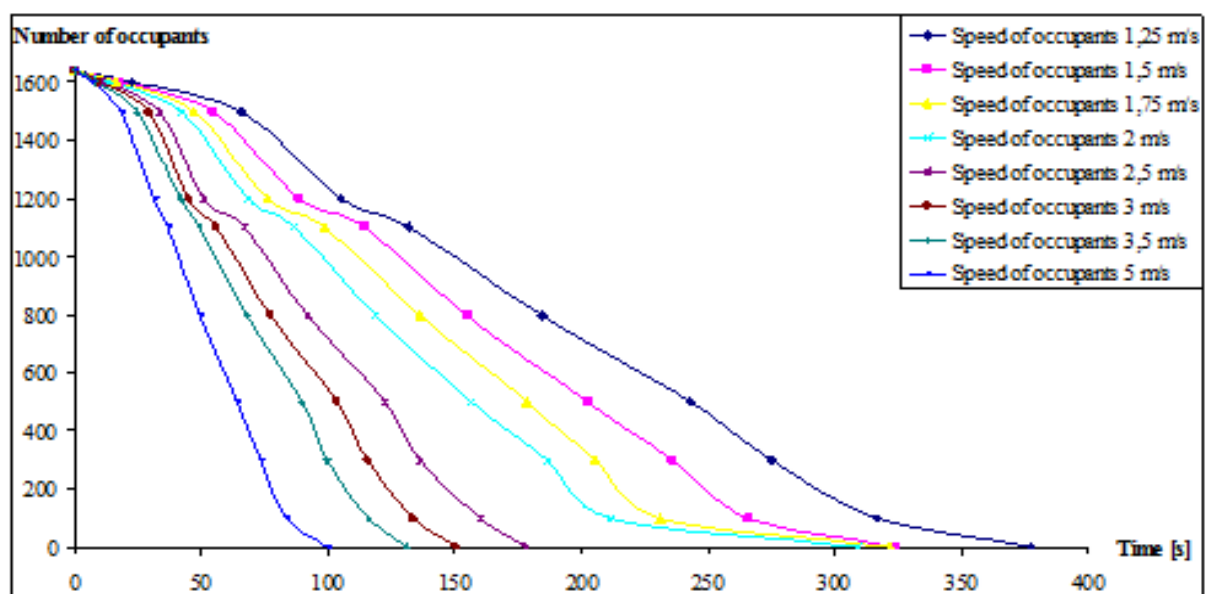


Figure 3: The complete simulation results related to evacuation times
(Source: Jevtić, B. R. (2016) Evacuation from tunnels-an example of Straževica tunnel)

Simulations of evacuation in the tunnel were realised for the following speeds: 1.25 m/s, 1.5m/s, 1.75m/s, 2m/s, 2.5 m/s, 3m/s, 3.5 m/s and 5m/s. The Pathfinder presentation of the collision scenario in the middle of the tunnel with the marked collision location at the start and after 174.2 seconds, is shown in Figures 1 and 2, and the complete simulation results of evacuation times, are shown in Figure 3.

4. SIMULATION OF EVACUATION FROM RAILWAY TUNNELS-AN EXAMPLE OF A LONG RAILWAY TUNNEL

Railway tunnels present distinct objects for railway traffic, constructed with complete infrastructure for railway needs. These objects might be too long in length. For example, some of the longest tunnels in the world are the Gotthard Base Tunnel (GBT) in Switzerland, which is 57 km long; the Brenner Base Tunnel in Austria, which is 55 km long; the Seikan Tunnel in Japan, which is 53.85 km long; Channel Tunnel in the United Kingdom with the length of 50.5 km and others [17]. Although railway tunnels offer an advantage in traffic, they are liable to accidents and disasters, no matter the attempted safety precautions. Accidents in railway tunnels have had and can have unseen consequences on human lives, animals, nature and material properties. One of the most terrible accidents in the history of railway traffic was the accident in the tunnel in the area of Tore del Bierzo, in the Leon mountain in Spain. Related to the facts, over 500 people died in that accident. There were also many examples of leaked toxic and other dangerous materials. Safety precautions, including planned evacuation, have to be realised. Of course, in this and similar cases, planning evacuation by simulation are presented as a precise, safe, cheap, fast and effective way of realising a complex and demanded task. The simulation models of the railway tunnel present the tunnel with the following dimensions: length of 6100m, height of 5m and width of 12m. Chosen dimensions were not arbitrary because the railway Beograd-Bar has a tunnel called Sozina which is 6100m a length. There were two different simulated scenarios [18]. The first purported railway in its actual dimensions is without emergency exits. The obtained simulation results, as examples, are shown in Figures 4 and 5.

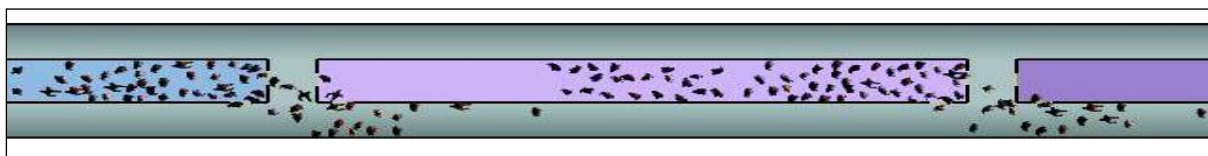


Figure 4: Evacuation simulation for the first scenario after 3.7 seconds from the start of the simulation

(Source: Jevtić, B. R. (2017) The Safety in Tunnels - An Example of Simulated Evacuation from a Railway)

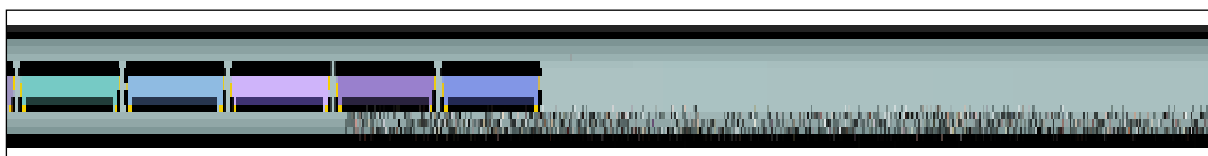


Figure 5: Evacuation simulation evacuation for the first scenario after 123.1 seconds from the start of the simulation

(Source: Jevtić, B. R. (2017) The Safety in Tunnels - An Example of Simulated Evacuation from a Railway)

The second one purported railway in its actual dimensions but with emergency exits at every 500m. In both scenarios, for the different speeds of occupant motion (1.25 m/s, 2m/s, 2.5 m/s and 3m/s), results are shown in Figure 6.

The complete number of occupants was 1604, and the location of the simulation was in the middle of the tunnel. The train had 20 wagons, with 80 occupants-passengers per wagon and four members of personnel.

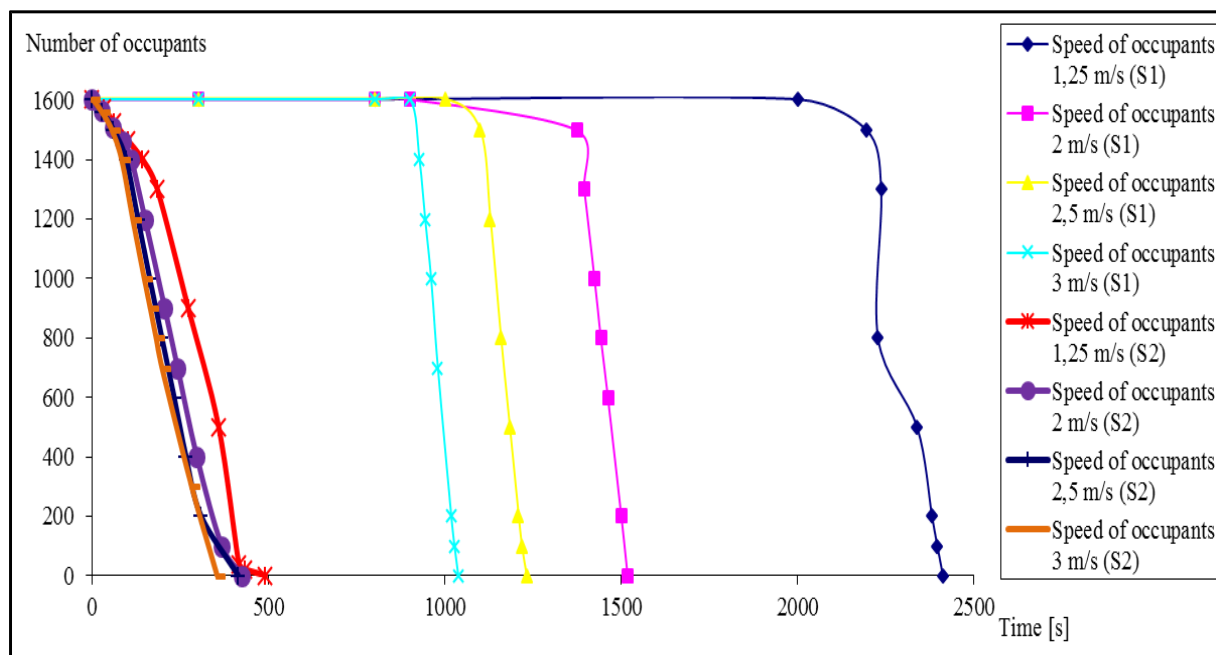


Figure 6: The complete simulation results for both scenarios (S1) and (S2)
(Source: Jevtić, B. R. (2017) *The Safety in Tunnels - An Example of Simulated Evacuation from a Railway*)

5. SIMULATION OF EVACUATION FROM AIRCRAFT ON LAND

Air traffic presents one of the most frequently used traffic. Related to the world tourism organisation UNWTO 2018 [19], air traffic had a 58 % of international tourism. From year to year, although the other ways of traffic increase too, the part of this way of traffic in international tourism becomes bigger and bigger. Related to the information from the World Bank in the form of global statistic reports, the total number of transported passengers on regular lines in air traffic in 2018 increased to 4.3 billion, more than 6 % related to the year before. There are other confirmations about the efficiency and frequency of use of air traffic. From the safety aspect, related to available information, it is one of the safest ways of traffic. Mostly, accidents have been happening in the air and with the tragic epilogue. But, in the case of the forces landing, there are chances for passengers to be safe. It depends on many different factors. So, because of that, effective, fast and safe evacuation from airplanes must be designed and realised. The only way to predict potential evacuation routes in a safe, precise, cheap and effective way is the application of simulation models. The simulation model of the aircraft on the land, designed in Pathfinder, was model A321. There are several versions of this aircraft in use, but one of them was the plane with the following dimensions: the complete length of 44.51 m, cabin length of 34.44 m, the maximal number of seating places of 220, fuselage width of 3.95 m, maximal cabin width 3.7 m and wing span 35.8 m. The complete number of passengers-occupants and airplane crew was 228. There were two evacuation scenarios simulation: one with emergency stairs and the second with emergency slides. The first simulate scenario was realised for one exit door opened (the front door), two exit doors opened (the front door and the back door) and for the three doors opened (the front door, the back door and the middle door). For every case, the speeds of passengers' motion were 0.2 m/s, 0.3 m/s, 0.4 m/s, 0.5 m/s, 0.75 m/s, 0.95 m/s and 1.15 m/s.

The reason for these speeds was that the aircraft interior purports the lack of space in the form of seats and narrow passage in the middle of the aircraft [20]. The second scenario purported eight different cases, the dependence on the fact that doors (slides) were closed or opened. The total number of potential combinations for eight doors (slides) and the total number of simulations was 255. The speeds of occupants were the same as in the first scenario.

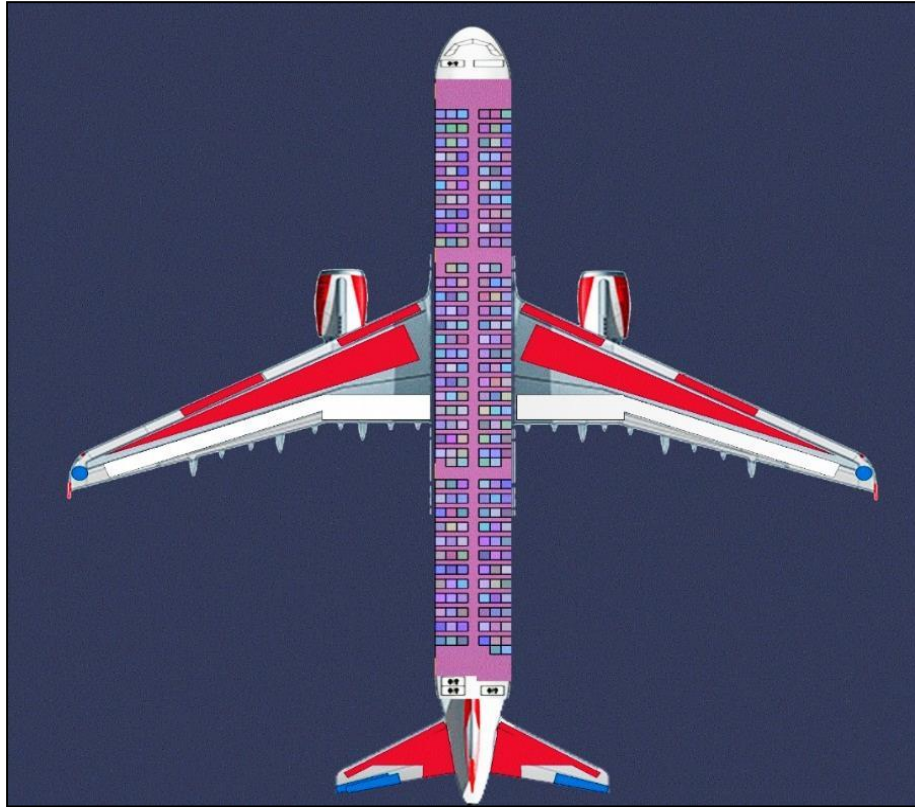


Figure 7: The Pathfinder presentation of the A321 aircraft
(Source: Jevtić, B. R.: Evacuation of aircraft on the land)

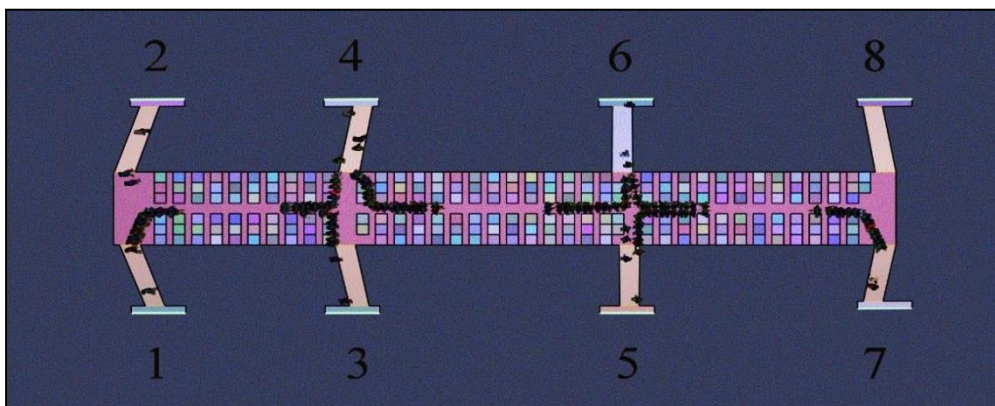


Figure 8: The Pathfinder presentation of the emergency slides of A321 aircraft marked with a number from 1 to 8
(Source: Jevtić, B. R.: Evacuation of aircraft on the land)

The simulation model of aircraft A 321 in Pathfinder software and emergency slides of the aircraft, noted with numbers from 1 to 8, are shown in Figures 7 and 8, respectively. Simulation results for the fastest evacuation case for the first and second scenarios are presented in Figures 9 and 10, respectively.

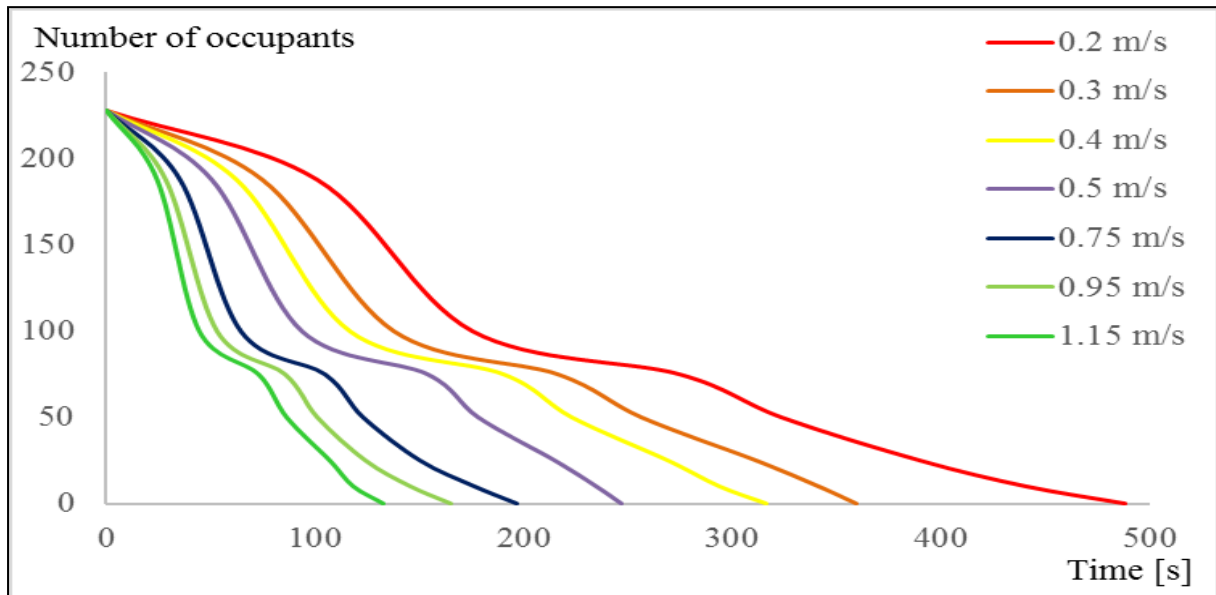


Figure 9: Simulation results for the fastest evacuation scenario for the first case
(Source: Jevtić, B. R.: Evacuation of aircraft on the land)

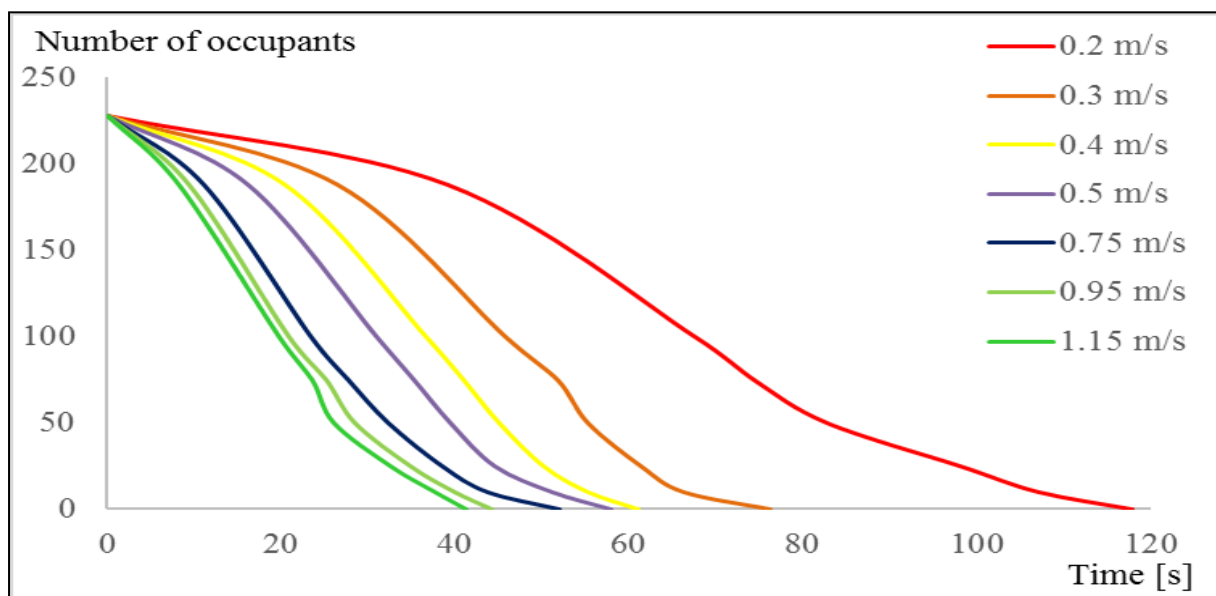


Figure 10: Simulation results for the fastest evacuation scenario for the second case
(Source: Jevtić, B. R.: Evacuation of aircraft on the land)

6. DISSCUSSION

Exposed examples illustrate the use of the Pathfinder software by calculating evacuation times and predicting potential evacuation routes in three types of traffic. The first one, the simulation models display a big traffic jam in the tunnel with different vehicles where the collision was in the middle of the Straževica tunnel. Lower occupants' speed (1.25m/s or 1.5 m/s) implied calm occupants, while higher occupants' speed could imply panic (3.5 m/s or 5m/s). The results presented that, for the chosen occupants' speed, the evacuation time would be shorter for higher occupants' speed; however, it does not mean that a very high occupants' speed would imply a low evacuation time in the case of unpredicted situations. The second one, the simulation models display the railway traffic in the Sozina tunnel. According to the simulation results, the higher speed of the passengers can lead to a jam because the passengers cannot get out of the train quickly.

The passengers' motion is significant because a traffic jam could occur at higher speeds. The simulation results for a lower passenger speed of 1.25 and 2 m/s are more different than for a passenger speed of 2.5 and 3 m/s. Even if there were fewer emergency exits than usual, the total evacuation time is shorter than in the case with no emergency exits. The third one, the simulation models display the land-based aircraft, one of the versions A321. Realised results in the first scenario indicate that the fastest time needed for evacuation of all passengers and crew was for the case of opening three doors when the speed of passengers' motion was 1.15 m/s (132.4 seconds). Realised results in the second scenario indicate that the fastest time needed for evacuation of all passengers and crew was for the case of opening all doors and activating all slides when the speed of passengers' motion was 1.15 m/s (42.9 seconds). As expected, the longest time needed for evacuation of all passengers and crew was for the case of opening one door and only one slide was active (376.65 seconds when the speed of passengers' motion was 0.2 m/s).

7. CONCLUSION

The article provides a thorough review of the research on population evacuation in traffic, with an emphasis on simulation models and their use in the prediction ones, which not only contributes to the development of the theoretical framework for the research but also identifies the knowledge gaps in the assessment of population evacuation in traffic in Serbia. The advantages and great possibilities of the Pathfinder software provide a precise, effective, safe and cheap evacuation prediction and find the best potential evacuation scenario with maximal safety and the fastest evacuation time. The simulation results mostly showed the expected directions, models and time for complete evacuation of the tunnel for both scenarios, with and without an emergency exit. The future evacuation calculation and prediction would include the presence of different obstacles and possibilities to simulate obstacle elimination, the presence of immobile or hardly mobile occupants and their movement in the evacuation process, the incorporation of a variety of evacuation equipment in evacuation software (parachutes, great slides, evacuation bags so on).

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RIGHT TO STRIKE – USE AND ABUSE

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ABSTRACT

The paper is devoted to the right to strike and the method of legal regulation on the territory of the Republic of Serbia, as well as the types of use, violation and abuse of this right. The first part of the paper explains the concept of a strike, its origin and development throughout history and its legal use in accordance with the Labor Law of the Republic of Serbia, as well as the International Covenant on Economic, Social and Cultural Rights. The second part of the paper deals with the violation of the right to strike and abuse of the right to strike, as well as the way these phenomena are regulated in the Criminal Code of the Republic of Serbia. The aim of the work is a scientific and professional analysis and explanation of the problem of the right to strike and abuse of that right by adults in the territory of the Republic of Serbia in the past ten-year period (2012-2021). This topic is permanently relevant for the reason that it is directly related to basic human rights, the right to work, and there are not a few examples in the history of our and world society that global crises are intertwined with this problem. Through a combination of different scientific and professional methods, we came to the conclusion that in the past ten-year period in the Republic of Serbia, no person was convicted of the criminal offense of abusing the right to strike, while for the same period only six of them were convicted of the criminal offense of violating the right to strike. In accordance with the conducted research, we observe that the mentioned criminal acts do not have a high degree of social danger. Regardless of the above, their suppression and prevention should be worked on continuously and non-stop, because the law that is the subject of study in this paper is very important for the formation of the ideal of a free human being freed from the feeling of fear and misery, insecurity.

Keywords: *strike, use of strike, abuse of the strike*

1. INTRODUCTION

The right to work is a constitutional right. The fact that the right to work is enshrined in the Constitution of the Republic of Serbia indicates that the right of the individual to work, create, advance and have a sense of security is exceedingly important for the betterment of society and the nation as a whole. Alongside the Constitution of the Republic of Serbia, these sorts of rights are also regulated by numerous legal acts and subordinate legislature. The matter of the right to work isn't guaranteed solely by state legislature, but by international ones as well. The International Covenant on Economic, Social and Cultural Rights is also concerns with these rights. Alongside the existence of the right to work there also exists the right to strike. Striking represents one of the fundamental rights of workers from the body of economic and societal law. These rights originally developed alongside the awareness of the equality of all persons in the realization and utilization of rights and services.

Economic law enshrines the right to work as one of the core tenant by which any individual, upon equal footing, is provided the right to acquire personal property. Mirroring the right to work there is also the right to strike, heritage of the working class' battle for better work conditions. We see the importance of production, labor, and the necessity of its *de facto* and *de jure* protection even in our oldest legal writings, as the Romans said *Labor omnia vincit* – Work conquers all. That labor is respected and valued across the globe is also attested to by the international holiday dedicated to it. For Labor Day, the first of May was chosen in remembrance of one of the first and largest strikes that took place in 1886, Chicago. Forty Thousand workers gathered and fought for workers' rights, better and equitable work conditions. Then, for the first time, the eight hour workday is mentioned. The strike came to a bloody conclusion after only three days of work stoppages, in a clash between striking workers and the scabs hired to take their place. Since antiquity people have fought for their basic, unalienable rights, so it comes to us, through labor, to see how far we've progressed in that battle to protect our right to work today.

2. THE RIGHT TO STRIKE IN THE REPUBLIC OF SERBIA

The right to work and the closely related right to strike are defined by Articles 60 and 61 of the Constitution of the Republic of Serbia. Article 60 of the Constitution of the Republic of Serbia guarantees the right to work for all citizens of the Republic of Serbia in accordance with the law, and that everyone has the right to choose their occupation freely. The same article also stipulates that to every citizen of the Republic of Serbia all work places shall be available under equal conditions. "Everyone shall have the right to respect of his person at work, safe and healthy working conditions, necessary protection at work, limited working hours, daily and weekly interval for rest, paid annual holiday, fair remuneration for work done and legal protection in case of termination of working relations. No person may forgo these rights" (Constitution of The Republic of Serbia, Article 60). Women, young and disabled persons are recognized as a special category of vulnerable individuals and it are required to be provided with special protection at work and given special working conditions. The right to strike is defined in the following article and is further specified by law and collective agreement. There are also cases where the right to strike is limited according to the nature and type of activity. "The exercise of the right to strike is regulated by the Law on Strikes, as well as by subordinate legislature that determine the minimum work processes in certain occupations during a strike." The Law on Strikes of the Republic of Serbia has 23 articles and has not been amended for more than 10 years. Therefore, some articles (such as Articles 3, 9, 18) mention the Federal Republic of Yugoslavia, whose legal successor is the Republic of Serbia. The law specifies that "the decision to initiate a strike or a warning strike is made by the union body determined by a union general act or by a majority of employees." This act should contain "the employees' demands; when the strike shall commence; the location of the participants' gathering in case the strike involves the assembly of employees; and the strike committee that represents the employees' interests and leads the strike on their behalf." The strike committee is required to announce the strike to the employer by delivering the decision on entering the strike, no later than five days before the day set for the start of the strike, or twenty-four hours before the start of the warning strike. It should be emphasized that "should the strike manifest as a gathering of employees, the place of gathering cannot be outside the workplace premises". The Law on Strikes stipulates that before initiating a strike, an attempt should be made to resolve the inciting issue(s) through negotiations, also strike participants are required to exercise greater mindfulness while striking, to ensure the safety of people, property, and public health. Additionally, the Law warns that participation in a strike is a matter of personal choice, and individuals who participate in a strike must not impede the duties of those who do not wish to participate in the strike, and vice versa.

The strike ends by an agreement between the parties in the dispute or by the decision of the union, i.e. the majority of employees on the termination of the strike. The Law on Strikes of the Republic of Serbia specifically regulates or limits the right to strike for certain professions. Due to the scope of this work, it is impossible to consider striking and its regulation in all professions, but it would be interesting to examine all areas of work and life and how they are regulated by law regarding the right to strike (Koon, 2021). The Law prescribes special rules for organizing and conducting strikes for activities of common good or activities whose interruption due to the nature of the work could endanger the life and health of people or cause significant damage. The Law precisely determines which occupations concern the common good (the electric power industry, water management, transportation, information (radio and television), postal services, municipal services, essential agriculture, health and veterinary care, education, social services and social protection). In addition, jobs related to the defense and security of the Republic of Serbia are listed as occupations of special importance. Occupations whose stoppage, due to the nature of their work could endanger the life and health of people or cause significant damage, are: the chemical industry, steel industry, and black and non-ferrous metallurgy. People employed in these positions are not actually prohibited from striking; rather they have the right to strike, provided that a minimum service is maintained that will ensure the safety of persons and property. What is meant by the term "minimum service" is determined by the founder or director, taking into account the nature of the work and the needs of the citizenry. The Law on Strikes also regards workers who participate in the strike and the protection of their rights. Therefore organizing or participating in a strike under the conditions established by this Law "does not constitute a breach of work obligation, cannot be the basis for initiating disciplinary or compensatory proceedings against the employee, and cannot result in termination of employment." It is interesting to note that certain special professions such as the military and police, laws that directly regulate their jurisdiction, duties, rights, and obligations also define the right to strike. Article 170 of the Law on Police regulates the matter of the police's right to strike, which states that "police officers do not have the right to strike in case of: a state of war, a state of emergency, an emergency situation or a situation of increased risk; violent endangerment of the constitutional order of the Republic of Serbia; declaration of a natural disaster or imminent danger of its occurrence in the territory of two or more police administrations of the Ministry or in the entire territory of the Republic of Serbia; other disasters and accidents that disrupt the normal course of life and endanger the safety of people and property, and in the situation they work in positions where it is not possible to ensure minimum services." In regards to the Serbian Armed Forces and their professional members, the legislature has decided to deny them the right to strike. Article 14 of the Law on the Serbian Army stipulates that "professional members of the Serbian Armed Forces are not allowed the right to strike."

2.1. Types of Strikes

Both in theory and practice, there are several types of strikes. While every author sees the division of strikes differently, the authors of this work emphasize that all types of strike are equally important and are an indication of some form of dissatisfaction, inability to reach an agreement or lack of understanding and cooperation. We can classify all strikes into warning strikes, surprise strikes, wildcat strikes, illegal strikes, sit-in strike, partial, rotating, category strikes, production strikes, solidarity strikes, and general strikes (Brković, Antonović, Milovanović, 2017: 2). Short-term strikes (whose duration is limited by the Law on Strikes of the Republic of Serbia to one hour) are called warning strikes because they serve as a way of drawing attention and indicating an existing problem that needs to be addressed. Strikes that are not pre-planned or organized but rather occur as a sudden reaction of employees to some unfair or illegal behavior of their employer are called surprise strikes.

Illegal strikes are also known as “strikes that are contrary to the obligation to maintain peace“ in Serbian. Such a strike can be legal only if the employer is in violation of their obligations, thus the strike occurs as a form of revolt against these violations and as such is reciprocal in nature. All strikes should aim to solve existing disputes and reestablish normal relations, preserve peace, rather than cause chaos. Workers can strike in different locations (in front of the employer's headquarters, in production plants, etc.) but they can also strike by refusing to leave their workplaces. As such they are not performing their work, but they are also not allowing others to their duties, thus putting a halt on the entire work process. This type of strike is known as a sit-in strike or occupation strike. A partial or selective strike occurs when a certain number of workers join the strike while the remained continue to work. Rotating or circular strikes occur when the work stoppage is carried out alternately in different sectors of the same company, while a category or succession strike is a successive work stoppage by workers from the same occupation or guild (Colliard, 1989). Work stoppages in the most important parts of a company are called "production strikes." Categorical strikes and solidarity strikes have many similarities. Solidarity strikes are organized in order to support other workers to protect their professional interests. If a strike is organized throughout an entire country, all companies with the same or similar activities, same or similar ownership structures, or the like, it is a general strike (Johnston, Hamann, Field, 2022).

2.2. Strike and Similar Phenomena

Phenomena that are often confused with strikes include protests, picketing, and boycotts as special forms of pressure employed by employees in resolving collective labor disputes. The forms of collective action by employees are the right to strike, the right to boycott, and the right to picketing, while the form of collective action afforded to employers is the right to lockout (Bojić, 2020: 75). Protest gatherings organized in open spaces are regulated by the Law on Public Assembly of the Republic of Serbia. In accordance with this law, protests must be announced in advance, without endangering public safety, disturbing the peace, or encroaching on the rights of others. They are commonly organized in the form of rallies, meetings, or demonstrations. Picketing, also known as a worker patrol or union guard, is a form of collective action. It involves the gathering of workers, usually during a strike, at the entrance of their employer's place of business in order to peacefully dissuade other workers from entering and continuing to work. Current legislation in the Republic of Serbia prohibits picketing, in contrast to workers' right to boycott and employers' right to lockout (Ivošević, 2013: 287). Boycott is a form of collective action in a labor dispute directed against the employer. This measure is aimed at business partners and clients of the employer with whom the union is in dispute. It entails unions calling on the employer's partners and clients cease the purchasing of products and halt the use of services provided by the employer during the collective labor dispute, that is to say during the strike. In this way, usually along side a strike, economic pressure is exerted upon the employer to acquiesce to the demands of the union (Ivošević, 2013: 287). "Lock out" is a work stoppage initiated by the employer as a pressure tactic on employees to abandon some or all of their demands for better working conditions or to end a strike or abandon some or all of their strike demands (Simonović, 2013: 127).

3. CRIMINAL OFFENSES AGAINST LABOR RIGHTS

Criminal law provides subsidiary protection to the right to work. In cases where other branch of law, such as labor and social law, cannot provide protection for the right to work, criminal law steps in. Chapter 16 of The Criminal Code regards criminal offenses that infringe on labor rights. Alongside the offenses that are the main subject of this work, chapter 16 also concerns criminal offenses such as: violation of rights on the basis of employment and social insurance, violation of rights while in the process of being hired and during unemployment, violation of

the right to management, abuse of rights from social insurance, and failure to take measures for protection at work. In the following text, we will focus in more detail on violation and abuse of the right to strike in the Republic of Serbia and the criminal responsibility there for.

3.1. Violation of the right to strike

Violation of the right to strike is regulated by Article 166 of the Criminal Code of the Republic of Serbia. The standard form of this offense is defined as follows: "A person who, by force, threat, or other unlawful means, prevents or obstructs employees from organizing, participate in, or otherwise exercising their right to strike in accordance with the law, shall be penalized with a fine or imprisonment of up to two years." In the previous legislature, the definition of this offense was the same, while the prescribed penalty was a fine or imprisonment of up to one year. Furthermore, it is stipulated that the same penalty, i.e. fine and two years' imprisonment, shall apply to any "employer or supervisor who dismisses one or more employees from employment due to their participation in a strike organized in accordance with the law or applies other measures that violate their labor rights." One may exercise their right to strike by organizing a strike, participating, or in some other way. The violation of the right to strike can be committed by obstructing or preventing employees from exercising their right through the use of force, threats, or in some other unlawful way. The obligors are the employees. This means that for a criminal offense to be committed, at least two individuals must participate in the strike. This position of the judiciary is entirely understandable, as the concept of a strike implies a collective work stoppage by employees aimed at achieving their work-related interests. The second form of the criminal offense of violating the right to strike can only be committed by the employer or a supervisor in their service. This form of criminal offense can also be committed against an individual as an organizer or participant in a lawful strike. In practice, this form of criminal offense most often occurs in cases of termination of employment due to participation in a strike. This criminal offense can only be committed with intent.

3.2. Abuse of the right to strike

The criminal offense of abuse of the right to strike is defined by the Criminal Code of the Republic of Serbia, specifically in Article 167. It is determined that a person who "organizes or leads a strike not in accordance with the law or other regulations and thereby endangers the life or health of people or causes large scale destruction of property or if other serious consequences have occurred as a result, if such action does not fall under the domain of another criminal offense, this criminal offense is deemed abuse of the right to strike. The act of committing this criminal offense is organizing or leading a strike not in accordance with the law or regulations. When determining whether a strike is lawful or not, it is necessary to take into account the type of profession in which the strike is to be organized. This primarily refers to professions in which the right to strike is legally limited or prohibited, such as the police (Police Act of RS, Article 170) or the military (Military Act of RS, Article 14). For the charges of abuse of the right to strike to be enacted, the consequence of said act must be in the form of a concrete danger to the life or health of individuals. In addition, property of greater value is protected, and in judicial practice, it is established that large scale property can be considered such when its' value exceeds 1,200,000 RSD. To commit this criminal offense one must organize or lead an illegal strike, not simply participating in the strike itself. This crime must be committed with intent. Were the enacting of this offense were to result in other more serious crimes, leading to greater damages, this charge will take on a subordinate nature, and only the greater criminal offense will be prosecuted. The prescribed penalty for this criminal offense is imprisonment for up to three years.

4. RESEARCH AND DISCUSSION

This paper presents research on criminal offenses of violation of the right to strike and criminal offense of abuse of the right to strike in a ten-year period from 2012 to 2021. More recent data on the research topic are not publicly available at the time of writing. The research concerns arrested, prosecuted and convicted individuals of age, with the intent to discover which phases of criminal proceedings are the most problematic, i.e. which phase of the criminal procedure is inefficient, with the aim of its further improvement. For the entire observed period, the number of arrested individuals was 30. Of those individuals that were arrested, the number of prosecuted individuals was 25, while the number of convicted individuals from 2012 to 2021 was six. That is to say, six individuals were convicted of obstructing or preventing the organization of a lawful strike. For one individual convicted in 2016, they received a suspended sentence under house arrest. For the five individuals convicted in 2014, one was a sentence of one to two years imprisonment, and four were suspended sentences. Of the six convicted individuals, five received a suspended sentence as their verdict.

Year	Arrests	Prosecutions	Convictions
2012	3	1	0
2013	1	1	0
2014	8	16	5
2015	2	0	0
2016	1	1	1
2017	0	1	0
2018	0	1	0
2019	8	2	0
2020	7	2	0
2021	0	0	0
Σ	30	25	6

Table 1: The total number of arrested, prosecuted, and convicted individuals for the criminal offense of violating the right to strike in the territory of the Republic of Serbia in the period from 2012 to 2021.

(Source: Republički zavod za statistiku, Bilten)

The decision of the legislature to, for this offense, prescribe a maximum sentence of up to two years, and the court's decision to impose a suspended sentence in most cases as a warning measure, tells us that these criminal offenses do not pose a high degree of danger. The number of six convicted individuals over a period of ten years indicates a rather low frequency of violations of the right to strike. This information may suggest that either, in the Republic of Serbia all is well in the business world, so workers are very satisfied with working conditions and thus have no need to resort to strikes, or that workers are not fully aware of their right to strike and the way it may be violated, and therefore do not report such violations. When it comes to the crime of abuse of the right to strike, we notice that the number of reported individuals of age over the observed ten-year period is higher than in the case of the crime of violation of the right to strike, and comes to 44 persons. Of the total number of those arrested, only 18% are actually charged, which is to say only eight individuals. What is interesting to note is that none of those charged pleaded guilty during the entire observed ten-year period. This raises the question of the effectiveness and social justification of the existence of this criminal offense. In the last year of the observed period, seven individuals were arrested for organizing and leading a strike not in accordance with the law or regulations, for endangering the life or health of people or property on a larger scale, or other serious consequences resulting from their actions.

However, no verdict was reached for any of them, either because there were no grounds for suspicion or because it was deemed inappropriate and/or ineffective to pursue criminal proceedings.

Year	Arrests	Prosecutions	Convictions
2012	0	8	0
2013	2	0	0
2014	3	0	0
2015	2	0	0
2016	2	0	0
2017	25	0	0
2018	3	0	0
2019	0	0	0
2020	0	0	0
2021	7	0	0
Σ	44	8	0

Table 2: The total number of arrested, prosecuted, and convicted individuals for the criminal offense of abuse of the right to strike in the territory of the Republic of Serbia from 2012 to 2021.

(Source: Republički zavod za statistiku, Bilten)

By comparing the frequency of committing these two investigated criminal offenses, we see that more people are reported for organizing strikes than for participating in them, and at the beginning of this work, we noted that it is necessary to have at least two individuals as participants in order for a strike to take form. So this data bears witness to discrepancies and absurdity regarding the enforcement for both the violation and abuse of the right to strike. Based on official data, we can conclude that very few criminal offenses are committed in this area, and that the legal regulation is appropriate and provides suitable special and general prevention. However, searching through media coverage, we can clearly see that strikes are not uncommon in the Republic of Serbia, thus it is unclear as to why there are so few reports of obstruction or prevention of their organization. There are several possibilities, but the most likely one when it comes to the criminal offense of abuse of the right to strike is precisely its subordinate nature, so very often, when the right to strike is abused, another criminal offense is also committed, which takes precedent over the lesser charge. So, this limited statistical data does not paint the full picture. At first glance, it could be concluded that strikes in the Republic of Serbia do either do not exist or are completely conducted in accordance with the law. However, the reality is somewhat different. It is not uncommon to hear media coverage of strikes organized by teachers, healthcare workers, employees of the Serbian post office, workers of the Electric Power Industry of Serbia, employees of the "Laza Lazarevic" clinic, and others. Analysis of the daily newspapers, shows that, since the start of 2023 to March of the same year, over 10 organized strikes have taken place.

5. CONCLUSION

The constant struggle between unrealistic expectations, on both the part of employers and workers, inevitably leads to the building of dissatisfaction in the labor market. Employers expect workers to turn ever greater profits, while employees expect to be increasingly valued and rewarded for this work. It's a true skill managing to balance and maintaining a healthy organizational and working climate and culture. The greater supply of labor, but also the greater employment opportunities worldwide, has led to a minimal tolerance for inappropriate action by either workers or employers.

Organizations in which business communication and an understanding of the needs of both employers and workers are at a high level have no reason to fear strikes as a form of pressure for resolving work disputes. The legal regulation of the right to strike in the Republic of Serbia needs to be amended and supplemented, in the opinion of the author at least. The current Law on Strikes has not undergone substantial changes for more than a decade. In some articles, the term "Federal Republic of Yugoslavia" is mentioned, and while it can be assumed that most citizens are aware which country is the legal successor of Yugoslavia, some articles mention that one should address the "Appropriate federal authority," which is rather confusing and can easily lead to those that are interested in organizing a lawful strike may not find themselves able due to not knowing the appropriate authority is in this case. Furthermore, during this period of more than ten years of no regulatory amendment, certain changes have been brought about in the business world, so the strike is no longer the only way to resolve labor disputes. There is also the right to picketing, the right to boycott, and the right to lockout, which should be more thoroughly regulated by our legislation. The issue of more detailed regulation of strikes should be of great state and social importance, as history has shown many instances of strikes that have grown into political strikes and taken on large proportions, culminating in major unrest and ultimately leading to a change in social order. In some countries such as Germany, Japan, Argentina, Ecuador, and others, the legislature clearly states that political strikes are prohibited, while in Finland, for example, they are allowed. Changes to the Strike Law of the Republic of Serbia could also address this issue. The results of the research presented in this paper indicate that committing criminal offenses related to the violation and abuse of the right to strike is at a very low frequency, and the authors appeal that the data show that other criminal offenses have subsumed unlawful behavior that occurs during strikes, which certainly contributed to the low numbers. Also, the authors believe that other interested researchers in this field might find it enlightening to focus on the administrative liability of organizers and participants in strikes. This would contribute to creating a more complete picture of the participants and organizers of the strike and the consequences of their activities. In order to improve the working conditions of workers, and thereby protect their economic, labor, and many other rights, as well as increase the standard of living for workers and employers, it is necessary to initiate various changes, express dissatisfaction in a timely manner and thereby contribute to the peaceful resolution of collective problems. As the Romans once said, *ex nihilo nihil fit* - nothing comes from nothing. The authors are of this view as well. If nothing is done, if dissatisfaction is not expressed, and a compromise, nothing constructive can arise from future cooperation. Both interested parties, in the long run, will find themselves at a loss.

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LIBYA'S FOREIGN TRADE IN THE EUROPEAN UNION AND THE IMPACT OF EXPORTS ON ECONOMIC GROWTH

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ABSTRACT

This article aims to evaluate the impact of exports between Libya and the European Union on the economic growth of the two parties. It also sheds light on the nature of economic integration and the importance of the two parties in an attempt to reach results that help economic decision-makers in Libya to build their decisions according to peaceful scientific foundations. The article assumed that there is a positive relationship between The value of Libyan exports to the European Union and the value of the Libyan GDP, and between the value of the European Union's exports to Libya and the value of the European Union's GDP. Infrastructure, industrial, agricultural and tourism sectors, and benefiting from European economic institutions in rehabilitating Libyan products in which Libya has an opportunity for export and to contribute to the diversification of income from the Libyan side. Then the gradient in the stages of economic integration and other.

Keywords: *Exports, the European Union, economic integration, the Euro-Mediterranean partnership, foreign trade*

1. INTRODUCTION

The outbreak of destructive conflicts across the Arab region in the aftermath of the Arab Spring has been a source of great concern to all political actors and international organizations in the region. These conflicts caused severe panic and terror, which first led to a serious blow to political stability, and then to the emergence of violence other than legitimate violence led by the state. This period was characterized by the growth of armed groups and terrorism, which led to the instability and fragility of state institutions in many Arab countries. . Conflicts have also destabilized stability at the political and economic levels, resulting in setbacks in the commitments of the countries of the region to achieve the goals of sustainable development. Conflicts, in addition to their macroeconomic and sectoral consequences, have had devastating effects on regional and global cooperation. Commercial financial flows, investments and transfers were affected by the wars, and this led to a decline in regional and global cooperation with Libya. And if we look at some of the statistics related to economic integration systems and economic blocs in all their forms, we would find that they include about 85% of the world's countries and about 80% of the world's population, and control about 85% of global trade, and we realize the extent of the effects that economic blocs bear on the global economy And his directions. This article focuses on the impact of ending the conflict and establishing peace in Libya on global cooperation.¹ Therefore, this article will shed light on the impact of exports between Libya and the European Union on economic growth in order to reach indicators that help economic decision makers to make their decisions according to scientific bases, and the research problem can be summarized in the following question: What is the reality of exports between Libya and the European Union? What is its impact on the economic growth of the two parties?

¹ Al-Sayed Ahmed Al-Serbiny and Ali Abdel-Wahhab Naga, (2018) Principles of Macroeconomics, Vision Foundation for Printing, Publishing and Distribution, Egypt, Alexandria.

2. THE IMPORTANCE OF THE ARTICLE

The importance of this article comes from the importance of the timing in which it is presented, especially since the Libyan economy is drawing a new way for it based on the liberalization of markets and the removal of difficulties and obstacles of all kinds in front of global goods and services. Between the Libyan state and the European Union, and this article also derives its importance from the reality of the high relative importance in the composition of the GDP, whether for Libya or the European Union².

2.1. Scientific and professional goals of the article

This article aims:

- 1) Studying and analyzing the reality of exports between Libya and the European Union.
- 2) Evaluating the impact of exports between Libya and the European Union on the economic growth of both parties.
- 3) Recognizing the importance, forms and obstacles of economic integration.

3. THE GENERAL HYPOTHESES OF THE ARTICLE

This article states two main hypotheses:

- 1) There is a positive relationship between the value of Libyan exports to the European Union and the value of the Libyan GDP.
- 2) There is a positive relationship between the value of the European Union's exports to Libya and the value of the European Union's GDP.

4. THE THEORETICAL BASIS FOR THE RELATIONSHIP BETWEEN ECONOMIC GROWTH AND EXPORTS

Economic growth is considered one of the most important economic terms dealt with by economic and political researchers in various societies. Economic growth is also seen as one of the most important political goals of governments in various countries of the world, whether developed or late ones. Economic growth is represented by a continuous and rapid increase in income or national product over time, allowing an increase in the per capita share of it over a period of time. Whereas, foreign trade means the process of commercial exchange in goods, services, and other elements of production between several countries, with the aim of achieving mutual benefits for exchange exchanges. The foreign trade sector is of great importance to the economies of developed and developing countries alike, as it is one of the most important means of exploiting the available economic resources and providing the necessary operating requirements for the production of commodities and their shelling in the external local market. International trade also plays a very important role in accelerating the process of economic growth, whether in developed or developing countries. In some small and poor countries, approximately 25% to 40% of the monetary gross national product is obtained from international sales, agricultural products, and other primary raw materials or Primary commodities such as coffee, cotton, cocoa, sugar, palm oil, copper, rubber, etc. For example, especially in the oil-producing countries in the Gulf region and others, their petroleum exports to the countries of the world have reached more than 70% of their national income, and even this percentage may exceed 90% in Some countries like Kuwait. Economic thought and many empirical studies have concluded that the rapid growth in the volume of exports in particular and the volume of foreign trade in general accelerates economic growth faster than what is achieved under the policy of import substitution or any other policies, and the interest of economists has increased in the policy of encouraging exports, and their efforts have focused on researching and analyzing the relationship between export growth and economic growth,

² Mahmoud Abdel-Razzaq, (2020), International Economics and Foreign Trade, Alexandria, first edition, Jordan, Dar Al Masirah.

and clarifying the reasons for this phenomenon.³ To clarify the relationship between economic growth and foreign trade, the Libyan economy can be highlighted as an example, as Libya's possession of a comparative advantage in the production and export of oil enabled it, through the foreign trade sector, to import the required equipment and tools in addition to skilled labor, and then export it to international markets, to obtain revenues. Oil, which will certainly positively affect the volume of public spending and increase investments. If unemployment is ended and production capacity is increased within the economy together, it will eventually lead to an improvement in the lives of individuals, which is expressed in economic growth. Reserves that can be used in development projects.

5. ECONOMIC INTEGRATION

Economic integration between countries is considered one of the most prominent forms that have emerged to facilitate economic relations and international trade between the integrated group of countries in our contemporary world, and the contemplator of the global economy today notices the role played by these economic blocs. The term economic integration generally refers to the process by which all obstacles and barriers that impede the flow of trade between members in any economic integration project are removed, and at the forefront of these obstacles are customs and non-tariff restrictions, in addition to the economic policies pursued by these countries so that their economies become one economy. There are many definitions of economic integration, the most important of which are mentioned below⁴:

- 1) Bandar's definition: it is about removing the gaps between the economic policies of the member states to work on creating and implementing a common policy.
- 2) Pilckmans definition: It is the removal of economic borders between two or more countries.

From the above concept of integration, we find that there is a close relationship between economic integration and foreign trade, so that integration at this stage represents the highest degree in economic relations between the integrated countries, and so that its content is linked to the freedom of movement of all forms and images of these economic relations, and the integrated countries as a whole become an economic unit. It is large and integrated, and its situation is almost like that of one country, through the procedures that achieve this.

5.1. The importance of economic integration between Libya and the European Union

The issue of intra-trade between economic integration countries is considered one of the national issues because it is linked to programs and plans for sustainable economic development, which achieve diversity for countries in sources of income and improve the standard of living for citizens. the following:

- 1) For the Libyan side:
 - Training Libyan elements to raise efficiency and productivity.
 - Access and openness to the international arena, which gives it a greater opportunity to approach and benefit from international institutions, as it is considered an important step to join the World Trade Organization.
 - Encouraging small and medium industries to invest in technology to improve production, localize the industry, and raise the quality and design of products in line with international standards.
 - Increasing the flow of Libyan investments to the European Union countries, which will benefit the Libyan economy by providing cash liquidity and diversifying the production base.

³ Iman Attia Nasef and Hisham Mohamed Emara (2019) Principles of International Economics, first edition, Modern University Office, Egypt.

⁴ Abdel Fattah Abu Habel, (2018) Macroeconomic Integration, First Edition, Dar Qutaiba for Printing and Publishing.

2) For the European Union:

- Opening horizons for European Union countries to invest in the field of new and renewable energy.
- Securing the oil and gas market.
- Opening a new market for European goods and products, which in turn leads to the operation of idle productive capacities and leads to efficient production.

5.2. Obstacles to economic integration

Despite the advantages offered by economic integration between countries, there are some obstacles to establishing such blocs. The following are the most important obstacles to economic integration that may surround the process of economic integration between Libya and the European Union:

- Different levels of economic growth.
- Poor political management.
- Different economic policies
- The lack of clear strategies in the field of export and import for the parties targeted by integration, which negatively affects the rates of trade exchange.
- Lack of basic services such as networks of roads, bridges, ports and airports.

6. VOLUME OF TRADE EXCHANGE

The volume of trade exchange (exports + imports) between Libya and the outside world increased during the period (2018-2021), as its rate during the period averaged about 30.9%. This increase in the volume of foreign trade is due to the growth of the volume of exports, which averaged 53.8%. Where the volume of trade exchange for the year 2021 recorded a remarkable increase of 120.0%, due to the increase in oil exports as a result of the resumption of production and export of crude oil after stopping during the year 2020⁵. In order to determine the extent of the importance of foreign trade in the local economy, the indicator of the ratio of the volume of foreign trade (exports + imports) to the gross domestic product (degree of external exposure) showed that the degree of exposure of the national economy to the outside world continued to rise from 53.5% in 2018 to 60.5% in 2019. Then it decreased to 43.2% in 2020, then increased to 112.0% in 2021, which indicates that the national economy is affected to a large extent by changes and external conditions.

Clause	2018	2019	2020	2021
Exports	30,832.1	29,470.6	9,444.3	31,117.6
Imports	13,352.6	15,513.3	12,313.2	17,040.1
Trade balance	17,479.5	13,957.3	-2,868.9	14,077.5
The volume of foreign trade	44,184.7	44,983.9	21,757.5	47,875.0
Gross domestic product	82,537.0	74,415.0	50,310.0	42,764.0
Exposure (%)	53.5	60.5	43.2	112.0

*Table 1: The volume of foreign trade during the period (2018 - 2021) ⁶ (In million dollars)
(Source: Trade statistics for international business development)*

6.1. Exports

The Libyan economy relies heavily on a depleted natural resource, which is oil as a primary source of income, which in turn is affected by the conditions of the global oil markets, where oil exports constitute more than 90.0% of the total exports, which made the national economy continuously vulnerable to strong shocks as a result of the sudden and sudden changes in the oil sector, whether at the local or international level.

⁵ Central Bank of Libya, (2022) Research and Statistics Department, Economic Bulletin, Volume 62.

⁶ Central Bank of Libya, (2022) Research and Statistics Department, Economic Bulletin, Volume 62.

6.1.1. Geographical distribution of exports

The data related to the geographical distribution of Libyan exports, presented in the table below, showed the relative financial importance of Libyan exports to the European Union countries, as it amounted during the period to an average of about 59.0% of the total exports. To the characteristics of the economies of these countries as industrial countries that depend to a large extent on crude oil, Libyan exports to Asian countries come in the second place, as they amounted during the period on average to about 23.6% of the total Libyan exports abroad.

Countries Group	2018	2019	2020	2021
European Union group of countries	19,866.2	18,052.2	4,579.4	20,420.4
Countries of the League of Arab States	1,063.2	1,945.3	1,108.7	655.8
Asian countries	7,546.2	6,719.7	3,116.1	5,497.6
Other European countries	430.6	307.7	228.7	2,005.5
African countries	20.7	1.2	0.6	0.7
North, Central and South America	1,533.6	1,818.3	250.0	2,249.2
Australia and New Zealand	461.6	626.1	160.8	288.4
Total	30,832.1	29,470.6	9,444.3	31,117.6

*Table 2: Distribution of Libyan exports by country groups during the period (2018 - 2021)⁷
(In million dollars)*

(Source: Trade statistics for international business development)

Exporting Countries	2018	2019	2020	2021
Italy	4,950.4	5,278.3	1,968.7	6,591.8
The UAE	684.3	1,570.4	955.2	477.6
People's China	4,742.3	4,765.7	812.0	2,888.4
France	2,698.0	1,595.3	529.2	2,159.2
United kingdom	833.5	253.5	88.9	1,548.3
Spain	4,029.7	4,274.4	705.2	3,427.2
Holland	381.1	197.6	121.0	1,751.0
South Korea	329.5	225.7	19.7	12.5
Turkey	367.0	483.5	1,674.3	821.8
Singapore	665.3	379.2	198.0	171.2
Malaysia	512.5	293.2	0.6	30.3
Greece	961.9	671.9	58.3	1,032.8
Switzerland	394.8	291.6	144.7	302.1
Indonesia	165.3	0.2	0.7	10.5
United States of America	1,447.6	1,572.5	224.9	2,220.1
Thailand	393.9	483.9	326.8	1,155.9
Germany	4,069.9	4,386.7	849.5	3,602.8
Other Countries	3,199.4	2,747.0	766.6	2,914.1
Total	30,832.4	29,470.6	9,444.3	31,117.6

Table 3: The value of exports according to the most important exporting countries during the period (2018 - 2021)⁸ in Million dollars

(Source: Trade statistics for international business development)

By looking at the above table of the value of exports according to the most important exporting countries, it is clear that Italy was the most important importer, as the proportion of what was exported to it alone amounted to an average of 19.0% during the period (2018-2021), respectively, of the total value of Libyan exports, while the countries of China, Germany and Spain come Among the most important importing countries is Libya, with rates of 12.4%, 12.2%, and 11.5%, respectively, during the period.

⁷ Central Bank of Libya, (2022) Research and Statistics Department, Economic Bulletin, Volume 62.

⁸ Central Bank of Libya, (2022) Research and Statistics Department, Economic Bulletin, Volume 62.

6.2. Imports

The given market depends by more than 85% in meeting the needs of all sectors and individuals of consumer and capital goods such as machinery, equipment, raw materials and intermediate goods needed for the production process, on foreign markets.

6.2.1. Geographical distribution of imports

The European Union countries are the main source of Libya's imports, as their relative importance amounted to an average of about 36.5% of the total imports during the period (2018-2021), as the value of imports recorded 5.3, 5.2, 4.4, 6.1 billion dollars, respectively, during the period, and this is due to the geographical neighborhood Which plays a major role in increasing the volume of trade exchanges between Libya and the countries of the euro zone, while the Asian countries, the countries of the League of Arab States and other European countries accounted for the remaining percentages. The data indicates a weak trade exchange between Libya and African countries, Australia and New Zealand.

Countries Group	2018	2019	2020	2021
European Union group of countries	5,304.6	5,150.9	4,438.4	6,129.9
Countries of the League of Arab States	2,865.8	2,977.9	2,233.7	3,140.0
Asian countries	3,765.1	5,823.2	4,342.9	5,671.5
Other European countries	739.0	626.1	615.2	1,151.1
African countries	8.9	7.4	8.2	10.8
North, Central and South America	608.4	837.6	571.7	867.8
Australia and New Zealand	60.8	90.2	103.1	68.9
Total	13,352.6	15,513.3	12,313.2	17,040.1

*Table 4: Distribution of Libyan imports by country groups during the period (2018 - 2021)⁹
(In million dollars)*

(Source: Trade statistics for international business development)

Countries from which they are imported	2018	2019	2020	2021
Italy	1,426.1	1,390.9	999.8	1,421.9
Spain	713.1	468.7	346.8	366.7
People's China	1,433.0	2,453.9	1,880.6	1,918.7
The UAE	1,445.1	1,354.8	1,003.4	1,505.0
Turkey	1,498.1	2,069.7	1,653.1	2,769.4
France	233.1	210.0	171.3	208.2
Egypt	640.5	830.7	527.8	796.2
Switzerland	161.9	121.1	127.1	216.7
United kingdom	169.3	201.4	147.7	141.1
Holland	391.3	595.3	576.9	532.9
United States of America	243.8	412.0	290.0	295.9
South Korea	425.1	632.1	338.0	428.5
Germany	382.6	484.4	400.8	683.5
Ukraine	325.7	316.9	327.8	425.0
Greece	506.2	451.4	719.4	119.0
Brazil	228.1	279.4	166.4	313.4
Other countries	3,129.0	3,241.0	2,591.0	4,898.0
Total	13,352.6	15,513.3	12,313.2	17,040.1

*Table 5: The relative importance of the distribution of Libyan imports by country groups
(2018 - 2021)¹⁰ (In million dollars)*

(Source: Trade statistics for international business development)

⁹ Central Bank of Libya, (2022) Research and Statistics Department, Economic Bulletin, Volume 62.

¹⁰ Central Bank of Libya, (2022) Research and Statistics Department, Economic Bulletin, Volume 62.

By looking at the above table of the value of imports according to the most important importing countries, it is clear that Turkey, China, the UAE and Italy top the list of the most important importing countries, with an average of about 45.0% of what was imported from them during the period (2018-2021) of the total value of Libyan imports.

7. RESULTS

- 1) The existence of a direct and statistically significant relationship between Libyan exports and the Libyan GDP, as it became clear from the results that the elasticity of exports in relation to the GDP amounted to 65%, meaning that the more Libyan exports to the European Union increased by 100%, which is consistent with the economic theory.
- 2) The volume of exports between Libya and the European Union amounted to about 210.0 billion dollars, as the value of Libyan exports to the European Union (the European Union's imports from Libya) amounted to 112.0 billion dollars, while the Libyan imports from the European Union (the European Union's exports to Libya) amounted to 100.0 billion dollars. Billion dollar .
- 3) Italy accounted for the largest share of the volume of trade exchange with Libya, amounting to 19.0%, respectively, while China, Germany and Spain are among the most important countries that have a share in trade exchange with Libya.

8. RECOMMENDATIONS

- 1) The lack of commodity concentration of Libyan exports enables achieving equal trade deals and raising the level of quality and price stability through bilateral or multilateral agreements.
- 2) Focusing on small-scale industries, especially in the initial stages of industrialization, so that these industries are established on the basis of economic feasibility studies, to become later the basis for industries and exports.
- 3) Improving services and conditions related to export activity, as well as providing packaging, shipping, marketing and other requirements, in addition to providing modern means of communication and means of transport by rail and sea transport, and determining appropriate and encouraging prices for that.
- 4) Holding local exhibitions for national products and inviting foreign importers to visit these exhibitions, as well as participating in foreign exhibitions and focusing on presenting products and commodities that can be exported.
- 5) Establishing and developing joint projects between Libya and the European Union, whether by investing in the European Union countries in Libya, establishing industries between Libyan-European companies, benefiting from technical progress, and training national elements abroad in order to benefit from experiences. Non-oil exports.

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THE IMPACT OF EXCHANGE RATE CHANGES AND THEIR REPERCUSSIONS ON INFLATION RATES IN THE LIBYAN ECONOMY

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ABSTRACT

This article aims to identify the development of local price movement in the Libyan economy, and the extent of the effectiveness of exchange rate changes and their implications for achieving stability in price levels. The article combined the descriptive, analytical and historical approach. The article concluded that the Libyan economy witnessed a rise in price levels during the period 2019-2022, due to a group of factors, the most important of which are the events that Libya went through during the article period. The government authorities took a number of austerity measures and measures that led to a relative decrease in public spending rates, but they did not succeed in limiting the exacerbation of inflationary pressures and achieving stability in local price levels, which indicates that the problem of inflation is not the only problem that the Libyan economy suffers from. It was accompanied by political unrest and military operations, as well as high rates of financial and administrative corruption.

Keywords: *exchange rate change, monetary policies, depreciation of the Libyan dinar, inflation and its repercussions, causes, Libyan economy*

1. INTRODUCTION

Inflation is a chronic economic problem that afflicts the economies of developing and developed countries alike, and its impact on the economies of countries increases whenever the appropriate environment is available for the growth of inflationary pressures, which depend in their impact on a group of factors that contribute to fueling inflationary pressures and pushing local price levels towards a rise. Among the least diversified economies in the world, it depends mainly on the oil and gas sector, and the political unrest and military operations that took place in Libya since 2011 led to a sharp decline in Libya's oil production by up to 70%. As a result, the Libyan economy lost the only source of income in the country, which in turn led to a faltering economic growth and a contraction of the real GDP by 80%. Due to a continuous deficit in the general budget, which prompted it to start depleting its foreign exchange reserves, a rise in price levels, a decline in the value of the Libyan dinar, and the deterioration of its exchange rate against foreign currencies, and in the light of this crisis, it is important to study this phenomenon in order to identify its main factors. Then, the development of appropriate policies to address them, and in this context, this study seeks to identify the most important monetary and financial policies implemented by government authorities since 2011, and then tries to evaluate these policies and their effectiveness in avoiding the economic and social effects caused by inflationary pressures. The problem of the article is also centered around the economic policies that guarantee the reduction of the phenomenon of inflation, especially in light of the events that took place in Libya and the role of the monetary authorities in that. The following are the study questions:

- What are the effects of inflation on the Libyan economy?
- What is the extent of the effectiveness of the fiscal and monetary policies adopted by the government authorities to limit the exacerbation of inflationary pressures and achieve stability in local price levels?

2. THE IMPORTANCE OF THE ARTICLE

The article derives its importance from the phenomenon of inflation, and the study of the factors and causes that contributed to fueling inflationary pressures, and the extent of the effectiveness of fiscal and monetary policies implemented by government authorities to reduce inflation rates in achieving stability in financial price levels.

2.1. Scientific and professional goals of the article

The article seeks to achieve the following goals:

- Research and analysis of the causes and sources of inflation in the Libyan economy.
- Identifying the most important economic effects caused by inflationary pressures in the Libyan economy.
- Identifying the most important financial and monetary policies implemented by the executive authorities and their effectiveness in avoiding the economic and social effects caused by inflationary pressures.
- Coming up with recommendations that contribute to treating the economic and social effects caused by inflationary pressures.

3. THE GENERAL HYPOTHESES OF THE ARTICLE

For the purpose of answering the previous questions raised in the article problem, we assume the following:

- The first hypothesis: The fiscal and monetary policies implemented by the government authorities contributed to alleviating inflationary pressures in the Libyan economy.
- The second hypothesis: The fiscal and monetary policies implemented by the government authorities did not contribute to reducing inflationary pressures in the Libyan economy.

4. CONCEPT OF INFLATION

It is the continuous general rise in the general level of prices, and this does not mean that the rise is in all prices, but rather the general trend must be upward and continuous, and the reason for that is related to the policy-making process¹. Conditioning Prices will stop increasing and the policies that were put in place to stop them will no longer be required. In conditions of inflation, prices will increase indefinitely, and there will be a need for policy-making.

4.1. Types of inflation

It is possible to distinguish between two types of inflation: the first is moderate inflation or creeping inflation, which is a moderate and simple rise in the general level of prices so that it does not exceed (10%) annually. The second is what is known as hyperinflation, which is a continuous and high rate of rise in the general level of prices that exceeds (10%) and in close periods of time². There are other types that are attributed to different and many reasons, including:

- *Demand inflation*: It results from an increase in aggregate demand over aggregate supply, which leads to a rise in the general level of prices.
- *Cost inflation*: It results from the high costs of production factors that lead to a continuous rise in the prices of produced goods and services.
- *Imported regulation*: It is transmitted through imported goods and services, especially when the country is highly dependent on imports and when the exporting country is already suffering from inflation.

¹ Central Bank of Libya, (2018), Studying the phenomenon of inflation in Libya, an unpublished study, p. 52

² Ahmed Mohamed Salah, (2019) The role of financial monetary policies in combating inflation in developing countries, Faculty of Economic Sciences, University of Algiers, multiple pages

- *Combined inflation:* It results from the increase in purchasing power and the volume of liquidity among individuals, while the volume of total output of goods and services remains constant, which leads to an increase in aggregate demand while the aggregate supply remains constant.

5. TRIGGERED INFLATION

Among the most important effects of inflation are the following:

- 1) Money losing its functions, especially its function as a measure and store of value.
- 2) Redistributing the national income among the layers of society in favor of those with variable incomes, while the real incomes of those with fixed and limited incomes deteriorate.
- 3) Redistributing national wealth among the classes of society in a random manner, as savers are often exposed to great losses, while those who embody their savings in, in-kind forms are the beneficiaries of the rise in prices.
- 4) Abandoning the national currency and resorting to a foreign currency that has a more stable value.
- 5) Inflation will soon lead to an increase in the deficit in the balance of payments as a result of the exposure of the local industry to intense competition from abroad, an increase in demand for imported goods and a decrease in demand for local goods.

6. MEANS OF FIGHTING INFLATION

Monetary and fiscal policies are among the basic pillars of the economy and aim to address any imbalance that may occur in the economy. There is a mutual relationship between these two policies and their objectives are intertwined. Both are tools for economic stability, stimulating development and achieving appropriate economic growth rates.

6.1. Fiscal policy and its tools

It is a set of measures taken by the state to intervene in economic activity,³ through financial tools, and within the framework of the general economic policy of the state. It is also a practical art concerned with how the financial system is adapted to the variables of reality in order to develop the current situation to a better one. Fiscal policy aims to maintain the pace of economic growth, achieve full employment of manpower, maintain price stability, and encourage investment. Fiscal policy can achieve its objectives through the following tools:

- **Public expenditure:** It is one of the most important means used to influence the volume of aggregate demand in the national economy. When the state seeks to confront an inflationary or deflationary gap, it uses public expenditure policy, either to increase the volume of aggregate demand or to reduce it, according to the problem it faces. Thus, it uses public spending to influence the volume of economic activity, by increasing or decreasing, according to the existing situation.
- **Public revenues:** The state obtains its revenues in order to cover its expenditures, to achieve a set of goals and to influence economic activity, and to divide the revenues into: tax and non-tax revenues. Rather, it is used to control economic activity and influence investor decisions. As for non-tax revenues, they include mail, communications, postage stamps, insurance, returns and investment profits, bank interest and profits transferred from operating companies, fees, licenses and fines. The percentage of these revenues can be raised by improving the services provided to citizens.
- **Public debt:** It is one of the economic guidance tools to contribute to financing productive projects and advancing development, provided that it is not misused. Financing the deficit

³ Boukhashim, Abdel Nasser Ezz El-Din, and Saleh Rajab Obeida (2017) The role of the government in Libya is a reassessment, and suggested priorities for the reconstruction phase, pp. 24, 7

through public debt is a feasible policy that has advantages for the national economy as long as the economy operates in recessionary conditions, and it has many disadvantages when it is misused as consumer spending.

6.2. Monetary policy and its tools

Monetary policy is defined as a set of measures taken by the central bank to control the money supply, interest rates, and the volume of bank credit, in order to achieve some macroeconomic goals, such as advancing economic growth or reducing inflation, and this is done by using tools practiced by the central bank for that. Monetary policy aims to achieve price stability, monetary stability, contribute to achieving a balanced balance of payments and improve the value of the currency, contribute to achieving the goal of full employment, and participate in achieving a high rate of economic growth. Monetary policy can achieve its objectives through its tools, which it categorizes into direct and indirect tools. Where the direct tools are: determining the liquidity ratio, conditional deposits for import, the central bank carrying out some banking operations, and influence or literary persuasion. While the indirect tools of monetary policy include: the legal reserve ratio, the rediscount rate (the bank rate) and open market operations.

7. THE EFFECTS OF INFLATION ON THE LIBYAN ECONOMY

The successive rises in the local price levels and the accompanying decline in the purchasing power of the monetary unit lead to an impact on the various economic and social aspects related to the lives of individuals and their dealings. The effect of inflation on the balance of payments and the movement of investments in the national economy, which will be discussed successively in this part of the paper, and among these indicators are the following:

7.1. The impact of inflation on deposits with the Libyan banking system:

The impact of inflation on deposits with banks can be studied by studying and analyzing the development of individual and institutional deposits with banks and their ratio to the total money supply during the period 2018-2022. By examining the numbers contained in Table No. (1), it is clear that the deposits of individuals and institutions with the banking system witnessed an increase in value from 38,741.7 billion dinars in 2018 to 55,586.0 billion dinars in 2019, and despite the increase in the value of deposits with the banking system, Its percentage to the total money supply decreased during the period 2018-2022, reaching 83%, 74%, 78%, 80%, and 75%, respectively, which indicates a decrease in individuals' confidence in monetary policies as a result of the rise in annual inflation rates, which led to increase the tendency of individuals to withdraw their cash savings from banks, which contributed to fueling inflationary pressures and pushing up local price levels.

Years	Demand deposits	Term deposits	Savings deposits	Total deposit	Total deposits to total money supply
2017	31,206.5	5,276.9	715.0	37,198.4	84
2018	33,712.2	4,286.4	743.1	38,741.7	83
2019	38,597.0	3,819.9	683.9	43,100.8	74
2020	45,822.6	3,812.5	705.3	50,340.4	78
2021	50,879.5	4,043.6	662.9	55,586.0	80
2022	49,497.7	2,078.0	603.0	52,178.7	75

Table 1: The development of deposits with banks and their ratio to the total money supply during the period (2017-2022)⁴

(Source: The economic bulletin issued by the Central Bank of Libya)

⁴ Central Bank of Libya, (2019) Economic Bulletin, Department of Research and Statistics, Volume 54.

7.2. The impact of inflation on the Libyan balance of payments

Inflation plays an important role in influencing the balance of payments, given the difficulties facing the export process, and at the same time increasing the dependence of the national economy on imports. An increase in the balance of payments deficit. The Libyan economy is characterized as a small economy and is open to the outside to a large extent, which increases the severity of the impact on the balance of payments, especially in light of the increases in imports, with the decline in exports, and the deterioration in the value of the local currency.

7.2.1. The impact of inflation on Libyan imports

The Libyan economy depends entirely on the global economy in terms of importing all its needs of consumer and investment goods, and a large percentage of spending in Libya goes to the consumption of imported goods. Data received from the Central Bank of Libya indicate that the value of imports of goods and services increased from 31,881.0 billion dinars in 2017 to 42,186.6 billion dinars in 2022, an increase of 10,305.6 billion dinars, or 32.3%. This indicates that the decline in the external value of the local currency is consistent to some extent with the increase in the value of imports of goods and services during (2017-2022), and in turn all this is reflected in the rise in the general level of commodity prices.

7.2.2. The impact of inflation on Libyan exports

Oil exports represent the most important export commodities in the Libyan economy, as their contribution to total exports during the period (2017-2022) reached 97%, 98%, 97.9%, 96.5%, and 93.6%, respectively. On the other hand, we find that the value of non-oil exports has witnessed a decline during the past five years, as its value decreased from 1,808.0 billion dinars in 2017 to 1,556.6 billion dinars in 2022. The effect of inflation on Libyan exports becomes clear, as the increase in their prices led to a decrease in their capacity. Competitiveness in the international market, especially in light of the fact that Libya doesn't specialize in the production and export of certain commodities that are of a monopolistic nature and are characterized by increasing global demand for them, regardless of the changes that occur in their prices.

7.3. The impact of inflation on the exchange rate of the Libyan dinar:

Inflation exerts an indirect effect on the exchange rate of the national currency (the Libyan dinar), through the decline that occurs in its purchasing power in light of the rises in local price levels, as the increase in the volume of domestic demand for foreign currencies necessary to finance imports of goods and services leads to Creating an excess demand for foreign currencies, which is reflected in the decline in the purchasing power of the national currency against foreign currencies. The exchange market in Libya is divided into two markets, according to the mechanism for determining the exchange rate, the official exchange market: The Central Bank determines the official exchange rate for the Libyan dinar against foreign currencies, as the value of the dinar ranged between 1.25 and 1.33 dinars per US dollar during the past years. In the parallel exchange market, the value of the national currency against other foreign currencies is determined according to the forces of supply and demand for foreign currencies. The exchange rate in the parallel market has begun to take an upward and gradual path with the increasing demand for foreign exchange for various reasons associated with the limited ability to obtain it from the banking system. Until it reached about 3.0 dinars per dollar, which generated waves of inflation in a country that imports most, if not all, of its consumer and investment needs from abroad. On the rise in the general level of commodity prices received by the consumer.

8. THE ROLE OF FISCAL AND MONETARY POLICIES IN DEALING WITH INFLATION

We will try to review the tools of fiscal and monetary policies used by the executive authorities in Libya in order to reduce inflationary pressures and achieve balance and stability in the working level of current prices.

8.1. Fiscal policy tools to reduce inflation rates

It is known economically that the tools of fiscal policy represented in the tools of spending, borrowing and taxes lie in their effectiveness in periods of inflation by reducing public spending and increasing the proceeds of tax revenues. By looking at Table No. (2), we notice a decline in total public revenues from 61.5 billion dinars in 2016, to 21.5 billion dinars in 2019. This decline is due to political unrest and the continued paralysis of the oil sector, whose revenues have vanished due to the decline in production from about 1.4 million barrels per day. Before the events of 2011 to about 400 thousand barrels during 2016. In addition to the decline in global oil prices⁵.

Years	General Revenue			Public Expenditure				
	Petroleum	Non-oil	Total	Management	The shift	Support and pricing	Other expenses	Total
2015	35,347.0	6,438.0	41,785.0	10,252.9	18,983.9	-	6,440.4	35,677.2
2016	55,713.0	5,790.1	61,503.1	15,121.3	23,729.4	8,019.7	-	54,498.8
2017	15,830.1	982.2	16,813.3	17,850.1	0.0	4,414.4	1,372.0	23,366.5
2018	66,932.3	3,199.1	70,131.4	36,733.0	5,500.0	11,708.6	-	53,941.6
2019	51,775.7	2,987.9	54,763.6	42,598.5	13,276.5	9,408.5	-	65,283.5
2020	19,976.6	1,566.6	21,543.3	26,892.0	4,482.4	12,439.8	-	43,814.2

Table 2: The impact of fiscal and monetary policies on inflation rates in the Libyan economy during (2015-2020)⁶

(Source: The economic bulletin issued by the Central Bank of Libya)

Despite the decline in public spending, spending on subsidies and balancing prices increased from 8,019.7 billion dinars in 2016 to 12,439.8 billion dinars in 2018. Facility expenses also increased from 15,121.3 billion dinars in 2018 to 36,733.0 billion dinars in 2018. The inflation of public spending has exacerbated the deficit in the state's general budget, in view of the change in the structure of public spending in favor of current spending at the expense of development spending. The year 2018 witnessed a deficit of 6.55 billion dinars, and this deficit will continue until 2019, at an amount of 22.271 billion dinars. This is due to the decline in oil production and exports as a result of the worsening general situation in Libya, which led to the closure of oil export ports, in addition to the reduced ability to mobilize and mobilize any alternative financial resources. Within the framework of rationalizing public spending, the government has taken many measures and preventive measures to reduce the deficit in the general budget and the balance of payments and to stop the depletion of the state's reserves of foreign currency. And diplomatic missions abroad, in order to reduce the expenses of the Ministry of Foreign Affairs to the lowest possible extent.

8.2. Monetary policy tools to curb inflation rates:

The Central Bank of Libya is in control of the monetary policy tools, and this means that the possibility of inflation rates depends on the ability of the Central Bank of Libya to achieve

⁵ Mohamed Ratolo Salah El-Din, (2020) Evaluating the effectiveness of monetary policy, Arab Economic Research Journal, Algeria, Issue 66, pp. 89-90.

⁶ Central Bank of Libya, (2019) Economic Bulletin, Department of Research and Statistics, Volume 55

monetary stability by activating its monetary tools. Deposit at the level of 3.0%, 1.0% and 0.85% each, respectively, in order to limit the repercussions of these factors on the economy. In the same context, the Central Bank of Libya took many measures, as it initiated new procedures to address personal demand for foreign exchange for the purpose of study and treatment, by reducing the annual ceiling for selling foreign currency with prepaid cards to about five thousand dollars, or its equivalent in foreign currencies. Opening documentary credits to suppliers for commodities regularly according to the real consumption of the individual and the community, as well as production requirements and operating materials for factories, and ensuring the organization of payment of dues and expenses for students and workers abroad, and the Central Bank spends on the general budget, with regard to the first statement related to salaries, and the second related to support for a number of products Commodity, operating expenses, overseas treatment and student grants. As a result of the decrease in oil production to a third from the normal rate before 2016, due to the closure of oil fields and ports, the Central Bank was forced to withdraw from foreign currency reserves, which decreased from (113 billion dollars) in 2016 to 76 billion dollars at the end of 2018, especially after the decrease in revenues The Central Bank of foreign exchange due to the decline in the global oil price and the country's low oil production. This undermined confidence in the national currency (the dinar), which led to its devaluation and the prosperity of the black market. This directly affected the general level of prices, as the Central Bank of Libya printed a new currency and pumped it into the market to address the liquidity shortage crisis resulting from the increasing withdrawal of Libyans for their deposits in local and foreign currencies from banks, for fear of the outbreak and recurrence of the events of 2011⁷.

9. RESULTS

- 1) Estimates related to the index show that there is an increase in the general level of prices estimated at about 50% during the five years, and this increase was accompanied by an increase in all components of the consumer price index, and it was not limited to the prices of some commodities without others.
- 2) The imbalance of the relationship between money supply and demand for it, as well as the incompatibility between both the change in the money mass and the change in the gross domestic product, indicates the role played by the increase in the amount of money in the Libyan economy, resulting from the excessive monetary authorities in the volume of their monetary issues, in feeding Inflationary pressures push up price levels.
- 3) Despite the increase in the value of deposits of individuals and institutions with the banking system, their percentage to the total money supply decreased. This indicates an increase in the tendency of individuals to withdraw their cash savings from banks, which in turn contributed to pushing up local price levels.
- 4) An increase in the value of imports of goods and services. On the other hand, the value of non-oil exports decreased, which indicates a decline in the external value of the local currency consistent with the increase in the value of imports of goods and services.
- 5) To reduce inflationary pressures and ensure price stability, the government authorities took a number of austerity measures and measures, which led to a significant decrease in public spending rates during the study period, estimated at 10,684.6 billion dinars. Despite this, these decisions were unable to maintain the general level of prices. , which indicates that the problem of inflation is not the only problem that the Libyan economy suffers from, but was accompanied by political unrest and military operations, in addition to high rates of financial and administrative corruption.

⁷ Ahmed Mohamed Salah, (2019) The role of financial monetary policies in combating inflation in developing countries, Faculty of Economic Sciences, University of Algiers, multiple pages

10. RECOMMENDATIONS

Through what has been mentioned, we propose some recommendations, which are as follows:

- 1) Enhancing cooperation among the executive authorities (Central Bank of Libya, Ministry of Finance, Ministry of Economy) and this is within the framework of drawing up the general economic policy of the state (financial, monetary, and commercial policies).
- 2) Rationalizing public consumption spending and working on activating the tax policy and controlling and collecting sovereign fees, thus contributing to reducing dependence on oil revenues.
- 3) Diversifying the monetary policy tools used by the Central Bank of Libya, such as conditional deposits for imports, increasing the legal cash reserve ratio in commercial banks, and selling bonds to the public in order to absorb the surplus from the money supply.
- 4) Work to increase the use of identity cards to be used inside and outside the country, in order to reduce the amount of money supply.
- 5) The general situation in Libya worsened and the closure of oil ports, in addition to the decline in global oil prices, led to a significant decline in public revenues, accompanied by a deficit in the state's general budget, over the past five years.
- 6) Taking some measures that will restore confidence between depositors and the banking system.

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(UN)SUSTAINABLE FOOD SYSTEM AND HEALTHY ENVIRONMENT

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ABSTRACT

Climate change and the phenomenon of global warming, whether caused by man or nature, are the subject of scientific and political debates around the world. The whole world, including Europe, is dealing with increasingly frequent and demanding environmental challenges. The ecological transformation of the EU economy to a climate-neutral continent by 2050 is the primary goal of the European Green Deal. First of all, it is a transition from a linear type of management to a circular economy, for example by changing the production and necessary models, reducing the production of emissions in transport, industry, agriculture. Agricultural production is one of the areas within the European Green Agreement where the environmental footprint is to be reduced. The main goal of agricultural production is to ensure a sufficient amount of high-quality and healthy food. Greenhouse gas emissions from agriculture have been stable since 2005, but are set to decrease by 10% by 2030. Greenhouse gas emissions in agriculture in the Slovak Republic have decreased by 59% since 1990. The main reason was, above all, the decrease in livestock numbers. In the article, we analyze household spending on food, examine the possibilities of changes in eating habits and the attitude of Slovak consumers towards the impact of purchased food on the environment. In the countries of the European Union, households spent more than €956 billion on food and non-alcoholic beverages in 2021, which represents 6.8% of the Union's GDP. This represents 13% of total household expenses per month. Food expenditure of households in Slovakia was 20.5%. By monitoring the development of household expenditure on food in the Slovak Republic, we can conclude that households in the Slovak Republic spend the most on the purchase of meat, bread, milk and dairy products. Mitigation of the environmental footprint of food systems is related to the transition to a sustainable food system.

Keywords: *Agriculture, Ecological transformation, Healthy environment, Household food consumption*

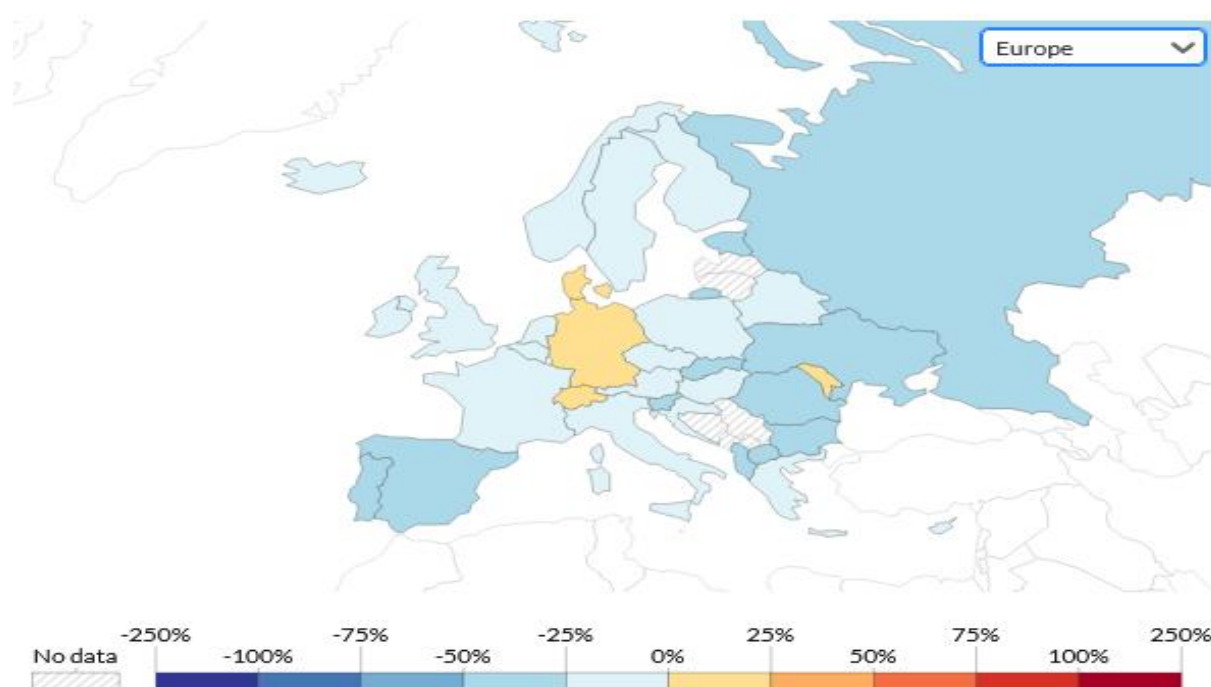
1. INTRODUCTION

However, the agri-food chain ensures food security for more than 400 million EU citizens and is an important economic sector a vital service and source of income. The current push to reduce emissions in the food model is also having a detrimental effect on people's health, with more than 50% of adults in Europe overweight. The EU is trying to change the way food is produced and consumed and to prevent the creation of waste, because almost 30% of produced food becomes waste. The ecological transformation of the EU economy to a climate-neutral continent by 2050 is the primary goal of the European Green Deal. Agricultural production is one of the areas within the European Green Agreement where the environmental footprint is to be reduced.

2. ENVIRONMENT AND SELF-SUFFICIENCY IN FOOD PRODUCTION

Reducing the environmental footprint of agriculture and food systems and improving the environment and ensuring healthy and affordable food are to be achieved in the countries of the European Union through the Farm to Fork strategy. The creation of a favorable "food environment" that facilitates the choice of healthy and sustainable eating can have a positive effect on the health, quality of life of consumers, reduce social costs related to health, production and consumption of food.

The EU food system ensures fresh and safe food for all Europeans. Soil is the foundation of our food security as it provides 95% of the food we eat. The EU's 2030 Soil Strategy, adopted on 17 November 2021, sets out a vision for all soil to be in a healthy state by 2050 and for soil conservation, sustainable use and restoration to become the basic norm. Soil contains more than 25% of the world's biodiversity, is the largest terrestrial carbon store on the planet, and plays a key role in the circular economy and adaptation to climate change. However, around 60-70% of EU soil ecosystems are unhealthy and suffering from degradation. It is estimated that land degradation costs the EU approximately 50 billion. € per year. Halting and reversing current land degradation trends could bring up to €1.2 trillion annually in economic benefits. However, sustainable land management and its restoration requires the involvement of a wide range of economic and social entities. Policies must focus on proactive efforts to protect biodiversity by reducing the demand for agricultural land, so as to eliminate threats and losses while contributing to a healthier diet for the population. Williams et al. (2021) investigated how soil degradation can be prevented. According to them, it is the reduction of food waste, the transfer of agricultural production from ecologically vulnerable countries to countries with higher agricultural productivity, or the reduction of the consumption of meat and dairy products (but not the complete exclusion of all animal products), in rich countries and in middle-income countries.

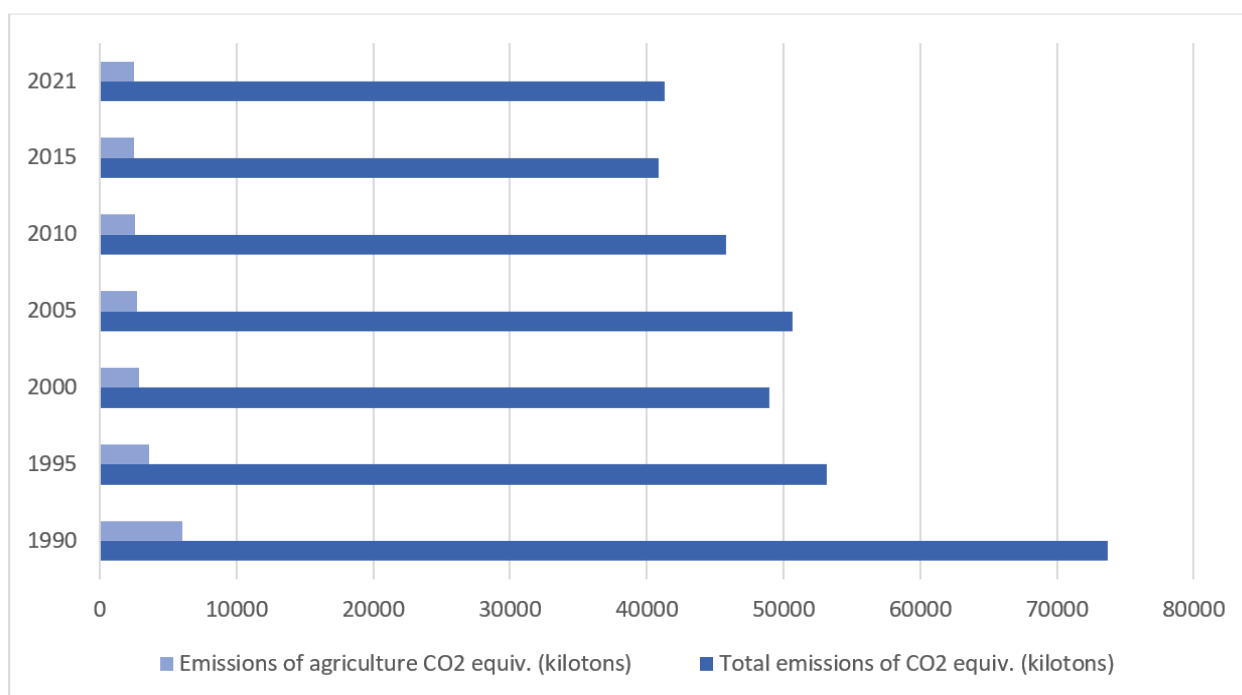


*Figure 1: Projected change in cropland area by 2050 under a scenario where consumer food waste and food losses in supply chains are reduced by 25% by 2030 and 50% by 2050.
(Source: Williams, et. al., (2021))*

3. SUSTAINABLE FOOD SYSTEM

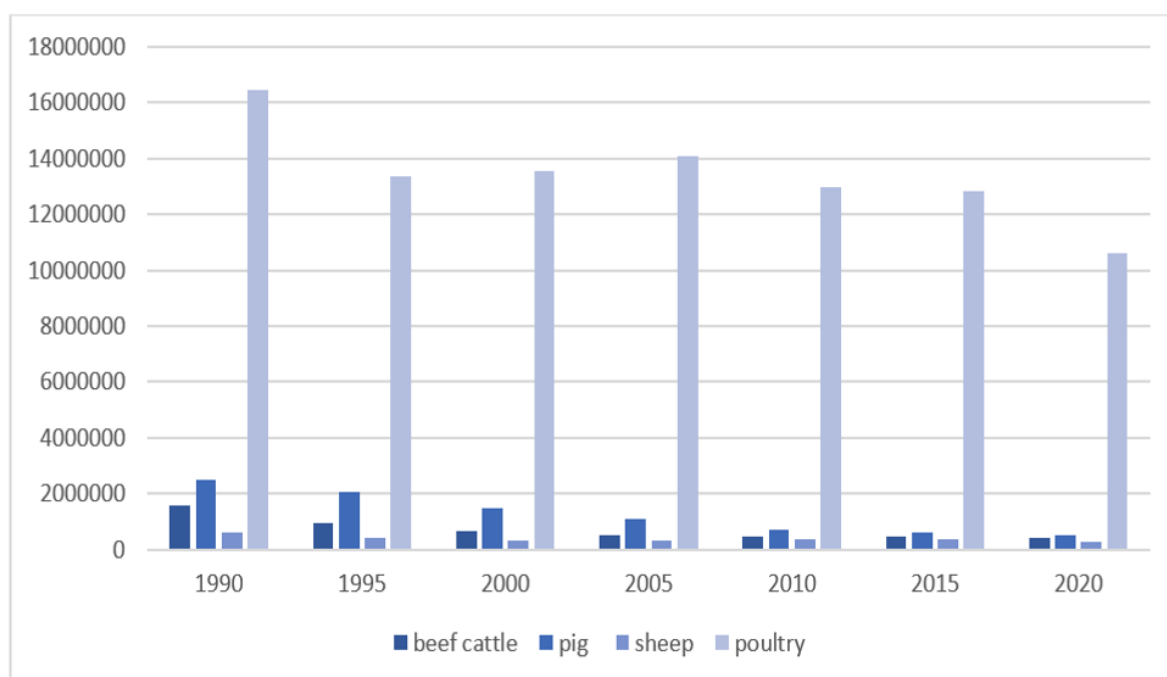
The main goal of agricultural production is to ensure a sufficient amount of high-quality and healthy food. Food is one of the essential goods that satisfy the basic needs of the population. Healthy and high-quality food is a requirement for most consumers. The food system is affected by globalization, which on the one hand affects economic growth, but also poverty and environmental degradation. In agriculture, predicted climate changes will affect crop yields and their geographical distribution, as well as livestock breeding (Smatana - Macák, 2022b). Due to the increasing intensity of extreme weather fluctuations, the risk of crop failure will increase

(Bernard, et., al., 2023). The consequences of climate change will also affect the soil - the amount of organic matter in it will decrease, which is a decisive factor in its fertility (Blanc, 2011, Liang et. al, 2017). Food production is increasing significantly to meet the needs of the population in countries where the income of the population is increasing. However, future developments have encountered disruptions in global supply chains. At the same time, the possibility of satisfying the demand for food is limited, as the area of land for production is limited, the number of inhabitants is increasing. The trend of satisfying needs will have to change both in production and consumption. Continued expansion and intensification will affect resources, which will affect the food system. The preservation of ecosystems and the future well-being of the human population are centrally dependent on the structural transformation of the food system towards a sustainable and resilient state (Olshanska, et. al., 2022). A sustainable food system is essential to achieving climate and environmental goals. It can help protect Europe's nature and biodiversity, as the Farm-to-Fork strategy is also aligned with the EU Biodiversity Strategy until 2030, as biodiversity is of fundamental importance for food security and people's well-being. The goal is to protect nature, reverse the degradation of ecosystems and reduce emissions in all areas. This also applies to agricultural production. In every activity related to food production, greenhouse gases are released into the atmosphere. Agricultural activities primarily release a large amount of two very effective greenhouse gases – methane and nitrous oxide (Smatana, - Macák, 2022). In Slovakia, agriculture accounts for a smaller share of emissions than in the EU. While in Slovakia the sector is responsible for 7% of total emissions in the Union, it is 11%.



*Figure 2: Total emissions and emissions from agriculture in the Slovak Republic
(Source: own processing)*

Greenhouse gas emissions from agriculture have been stable since 2005, but are to be reduced by 10% by 2030. This is a goal that is also for the agricultural sector in Slovakia. Greenhouse gas emissions in Slovak agriculture have fallen by 59% since 1990. The main reason is, above all, the decrease in livestock numbers.



*Figure 3: Development of aggregated animal numbers in the Slovak Republic
(Source: processed according to Drapáková, Koreň, 20/02/2022)*

Reducing animal husbandry, according to Greenpeace, could reduce emissions by 8,000,000 kg of CO₂ per year by 2050. Mitigation of the environmental footprint of food systems is related to the transition to a sustainable food system. In the EU Around 20% of produced food goes to waste, but around 33 million people cannot afford quality food and food aid is a necessity for part of the population and more than half of the adult population is currently overweight due to poor eating habits, increasing health costs care. Consumers decide on the choice of individual types of food primarily on the basis of prices. In the countries of the European Union, households spent more than €956 billion on food and non-alcoholic beverages in 2021, which represents 6.8% of the Union's GDP. This represents 13% of total household expenses per month. Households in Romania had the highest expenditure on food, more than 25% of total expenditure, in Lithuania 20.2% and in Estonia 19.3%. Food expenditure of households in Slovakia was 20.5%.

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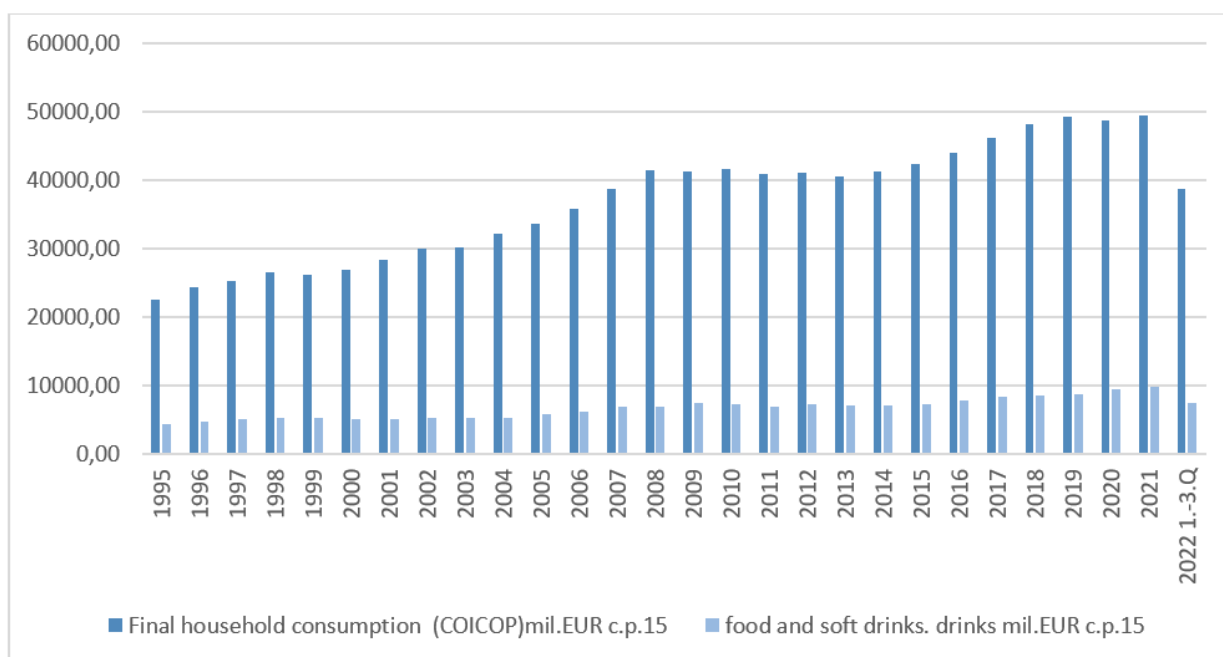


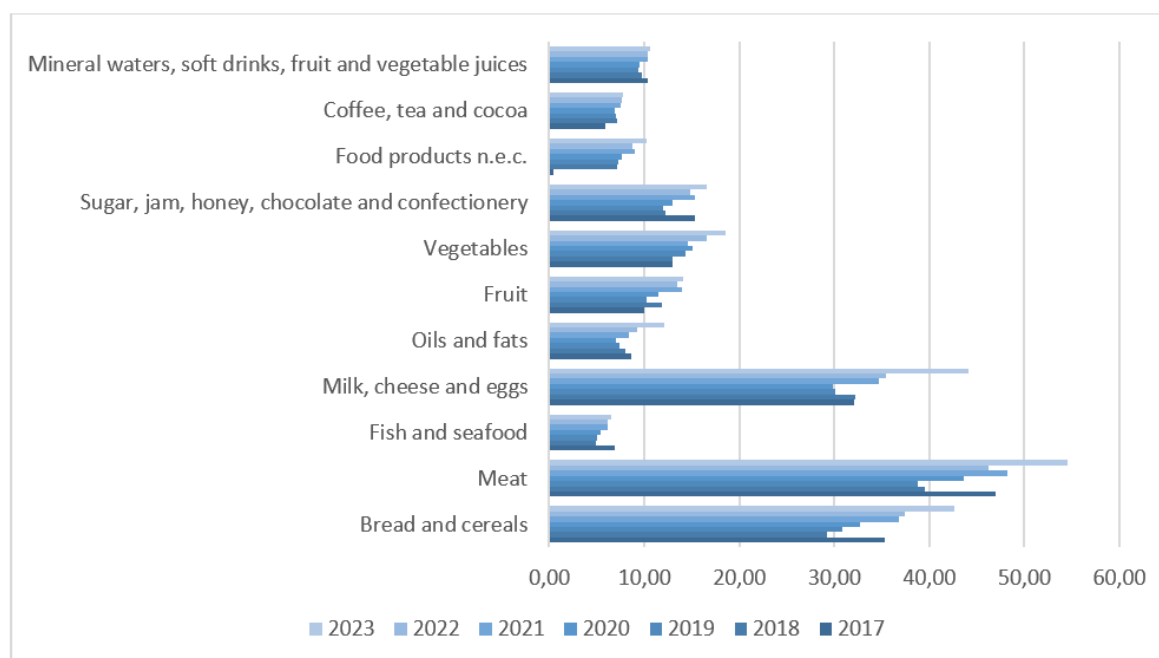
Figure 4: Development of final household consumption and development of expenditure on food in the Slovak Republic (million €, s. c. 2015)
(Source: own processing based on datacubestastic data)

4. FOOD AND ITS (NON)CONSUMPTION IN THE SLOVAK REPUBLIC

In 2021, compared to 2020, decreased mainly the consumption of alcoholic beverages (9.5%), sugar (7.8%), non-alcoholic beverages (5.1%), cereals (4.8%) and fats and oils together (3.2%) in the Slovak Republic. The increase in consumption was mainly manifested in milk and milk products (4.9%), fruit and fruit products (2.2%) and meat in total (1.7%). Meat consumption (in value per bone) has seen a sustained increase over the past 10 years. In 2020, only 69.9 kg of meat was consumed in the Slovak Republic, and in 2021, the total consumption of 71.1 kg of meat was 1.2 kg (1.7%) higher than in 2020 and up to 13.2 kg higher than in 2017. Poultry meat, whose consumption increased by 16.8% compared to 2017, and pork meat, with an increase in consumption compared to 2017, contributed the most to the increase in consumption by 10.9%.¹ In December 2022, food prices increased by 28%. The biggest impact on household expenses was the overall increase in the prices of meat by more than 18%, followed by milk, cheese and eggs by more than 20%, as well as bread and cereals, which increased by approximately 21% over the year. The prices of oils and fats rose most dynamically by more than 42%, but these are goods with a lower weight in the spending basket. Fruits were 10% and vegetables 20% more expensive than the average in 2021. The consumption of vegetables and vegetable products in 2021 decreased by 2.5 kg (2.3%) compared to 2020 and amounted to 104.5 kg. The consumption of fresh vegetables also decreased by 4.2 kg (4.8%) and was 71.1 kg. Compared to 2020, the consumption of fruit and fruit products increased by 1.5 kg (2.2%) to 71.1 kg.

¹ From the available data of the countries of Central Europe in 2020, Austria (90.8 kg) and Germany (84.2 kg) had a high consumption of meat per capita. The Czech Republic recorded a consumption of 84.0 kg, Poland 77.6 kg and Hungary 72.5 kg. When comparing meat consumption in the Slovak Republic with the above-mentioned countries, it is necessary to take into account possible differences in national methodologies for calculating meat consumption. Austria and Germany in the consumption of pork, which is included in the total consumption of meat, for example, also include the amount of back bacon immediately attached to the carcass of the pig, unlike the national methodology of the Slovak Republic. Regardless of the methodological differences used in the calculation of meat consumption within the aforementioned countries, Slovakia is characterized by a lower level of meat consumption. In 2020, only 69.9 kg of consumption was recorded in the Slovak Republic, and in 2021 it was 71.1 kg per inhabitant.

Compared to 2020, the consumption of tangerines (up by 1.2 kg), oranges (up by 1.0 kg) and bananas (up by 1.3 kg) contributed the most to the increase in consumption. Conversely, a lower consumption of 2.5 kg was recorded for apples.² The average family of four in Slovakia with two dependent children under the age of 14 spends more than €330 per month on food and soft drinks. People spend more in regional cities than in smaller towns and villages. The high growth of food prices was mainly influenced by the increase in energy and fuel prices, as some foods are imported to the Slovak market from abroad due to their low share of production in domestic consumption. This is related to food self-sufficiency. The degree of food self-sufficiency is one of the most important indicators reflecting the state of the economy as a whole.



*Figure 5: Weights of selected items in the consumer basket
(Source: own processing based on datacube static data)*

Slovakia's food self-sufficiency is constantly decreasing, which is also due to the decrease in animal breeding, as we mentioned above (compared to 1990, the number of cattle decreased by 72%, pigs by 79%, sheep by 51%, poultry by 36%, horses by 56 %). In terms of food self-sufficiency, Slovakia only achieves approximately 40%. Every food that we can produce at home, but we import it, is disadvantageous for us, despite the fact that it is sold at a low price (Smatana - Macák, 2022a). It is paradoxical that the production self-sufficiency of Slovakia between 2025 and 2020 is at the level of 99%.

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² In the countries of Central Europe in 2019/2020, Germany had a consumption of 70.8 kg, Austria 76.2 kg and Poland 58.0 kg. In the calendar year 2020, consumption in the Czech Republic was 87.8 kg per inhabitant.

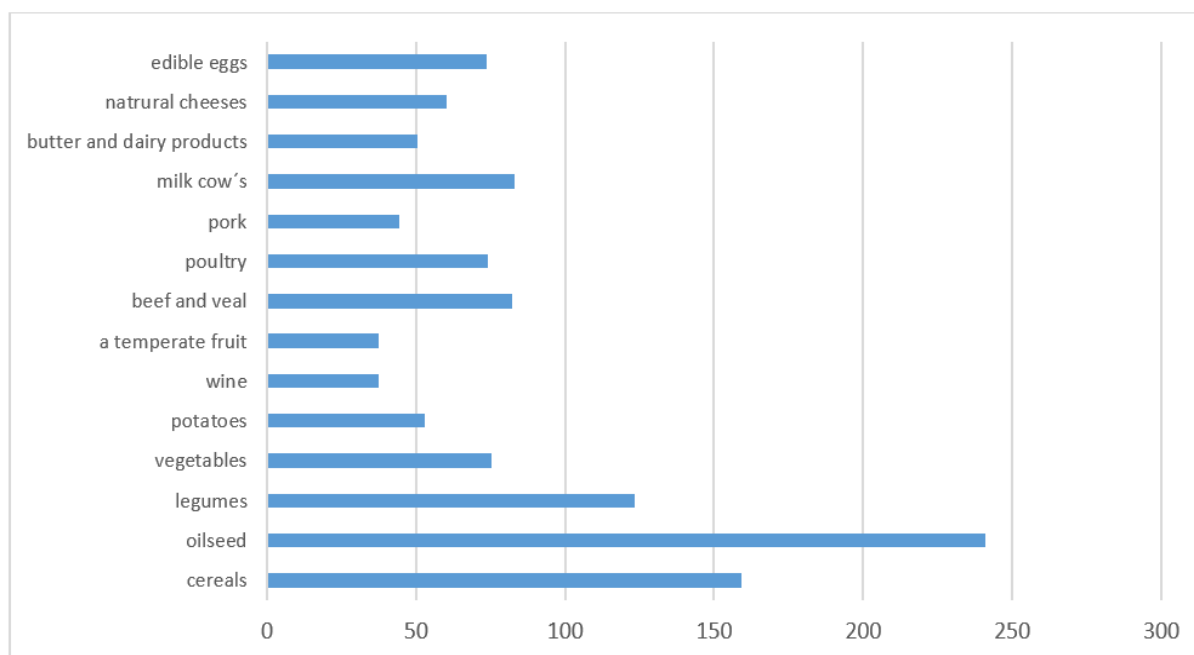


Figure 6: Production self-sufficiency of Slovakia in 2021 – selected commodities
(Source: <https://www.mpsr.sk/>)

5. CONCLUSION

Replacing the current model of production and consumption, which is based on constant growth and increasing consumption of resources, is essential. The intensive use of natural resources in recent decades has put pressure on their replacement by other materials. When they began to be used, no one thought that we would be enemies of our planet and endanger the lives of its inhabitants. The reason for the transition to a new production model within the economic system is to increase the efficiency of resources in order to achieve a balance between the economy, the environment and society. In conclusion, we can state that the goal of agricultural and food production in several countries, and especially in Slovakia, is to ensure food security, increase domestic diversification and produce quality food in a sustainable manner. It is necessary to effectively use the available resources for the production of quality crops, in the required quantity, and also to support the competitiveness of agriculture in Slovakia. vegetables or cereals. However, this requires the cooperation of institutions at the regional, national and European level.

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STRATEGIC EMPLOYMENT MANAGEMENT IN PUBLIC ADMINISTRATION

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ABSTRACT

*Tendencies in the movement of unemployment rates and other indicators of the level of economic and social development largely depend on the success of the results of employment policy and its measures at the local level. The author of this paper analyse the legal framework, situation and role of local governments in the field of employment policy in the Republic of Serbia, and try to contribute to a better understanding of the need for more efficient policy making in the process of accession to the European Union. Therefore, the author attention is especially focused on emphasizing the importance of local self-government participation in the application of European regulations in this area, which have already been transposed into national legislation, as well as the *acquis communautaire*, which will become part of Serbia's legal order. This is especially important given the fact that a large part of regulations and regulations (more than more than half) in the field of employment in EU member states are implemented at the local level. The importance of this topic stems from the fact that it is about a quarter of the national income of each economy goes to employees in the form of wages, and that the main part of the national income is not received as capital owners (profit, rent, interest), but in the form of wages. From this it is clear that labour is, quantitatively, the most important economic resource, and an adequate employment policy can positively but also negatively affect its use.*

Keywords: *public administration, employment, local governments*

1. INTRODUCTION

The employment policies of a country, in addition to being a job creation program, should be included in the consideration of social and economic issues and thus have an impact, not only on the field of labour and employment, but also on all other parts of the economy. Combining different measures, programs and institutions, employment policy affects the supply and demand for labour, as well as the functioning of the labour market (Bradas, 2018, 1). The European Union (EU) has been actively dealing with the issue of employment for the last few decades, and especially intensified its efforts after the global economic crisis in 2008, through the coordination of various policies, programs and accompanying funds (Ruzic, 2016). Holders of employment policy in the Republic of Serbia, in the institutional sense, are the Ministry of Labour, Employment, Veterans and Social Affairs and the National Employment Service. The Law on Ministries (Law on Ministries, 2020) defines the mandate of the said ministry and its role in the process of creating and implementing employment policy. It is the bearer of labour market policy creation and supervises the implementation of planned measures. The National Employment Service, on the other hand, is responsible for implementing labour market policies. Deindustrialization spurred by the transition and privatization process and a lack of investment in the real sector have caused a general decline in employment and increased unemployment, especially in less developed regions of Serbia that have traditionally relied on manufacturing and less skilled labour. In the previous period, this led to an even greater deepening of the differences between the region and local self-governments, so their capacities for conducting active employment policies are quite different. Since the situation regarding socio-economic inequalities in the region is very pronounced, Serbia is one of the countries that necessarily, in parallel with the development of innovative economic and employment policies, must develop

the field of social policy (Bosanac et al. 2017, 7). Challenges and requirements facing local governments in the process of European integration include the establishment of appropriate capacities to enable greater decentralization of the management system in the field of employment. The ability of local governments to respond to these challenges and demands will largely determine the possibility of improving the quality of life and standards of the local community.

2. SOURCES OF LAW IN THE FIELD OF EMPLOYMENT

Among the sources of universal international labour law are the instruments of the United Nations and the instruments of the International Labour Organization. Thus, the Universal Declaration of Human Rights (1948) contains a corpus of basic human rights, including the right to work, as well as protection against unemployment. The International Covenant on Civil and Political Rights contains a corpus of the so-called first generation rights (protection of privacy at work, freedom of association). The International Covenant on Economic, Social and Cultural Rights (1966) also contains provisions on labour rights (forced labour, prohibition of discrimination, freedom of association). In addition to these three United Nations instruments, four other ILO instruments are particularly important in this area: 1. The Declaration of Philadelphia (1944) - affirms that "all human beings, regardless of race, creed or sex, have the right to seek material prosperity and spiritual development in conditions of freedom and dignity, economic security and equal opportunity"; 2. Declaration of Fundamental Rights and Principles (1998) - singles out eight conventions of fundamental importance, as a corpus of fundamental human rights; 3. Declaration on Social Justice for Fair Globalization (2008) - emphasizes the need for a social dimension of globalization; 4. Conventions and recommendations - the most important general acts whose content consists of international labour standards, and their goal is to achieve social justice and stabilization of (international) peace, with an appropriate impact on international competition (Lubarda, 2012). The sources of European labour law can be seen as instruments of non-community law and instruments of community law. Among the instruments of non-communitarian law, two instruments are particularly important: the European Convention for the Protection of Human Rights and Fundamental Freedoms (1950) - contains two provisions on fundamental rights (prohibits forced and slave labour and proclaims and guarantees freedom of association) and the European Social Charter (1961); The revised European Social Charter (1996) - a kind of "Social Constitution" of the EU, contains a number of principles and labour rights (the 1961 Charter contains 19, and the 1996 Charter 31 principles guaranteeing these rights). Instruments of Community law can be divided into primary and secondary (rules or regulations and directives or instructions) sources of law, as well as written and unwritten (general legal principles of Community law), with the case law of the European Court of Justice. European collective agreements, in accordance with the principle of subsidiarity, appear as a special source of law, by gaining legally binding force by adopting a directive (which takes over the content of the collective agreement) or by implementing national collective agreements within the national framework. In the analysis of the sources of labour law of domestic origin, we start from the highest legal act - the Constitution, which, among other things, determines the concept of economic and social system and the issue of distribution of competencies in the field of labour law. Constitution of R. Serbia (2006) is based on elements of the social market economy. Namely, as stated in it, Serbia is "based on the rule of law and social justice ... and European principles and values" (Article 1), and proclaims social dialogue between unions and employers as a method of harmonizing social and economic status employees in a market economy (Article 82, paragraph 3). Within the basic principles of human freedoms and rights, the Constitution proclaims the prohibition of discrimination, and allows the so-called positive discrimination. With regard to individual labour law, it guarantees the right to work, safe and healthy working conditions, the right to limited working hours, daily

and weekly leave, paid annual leave, the right to fair remuneration and the right to protection in the event of termination of employment (Lubarda, 2012). In Serbian positive labour law, the basic law is the Labour Law, which applies to all employers and all employees (Labour Law of the Republic of Serbia, 2018). Although the general law regulates the whole of individual and collective rights and obligations of employees and employers, i.e., their associations, special laws regulate individual rights and obligations (Law on Employment and Unemployment Insurance, Law on Safety and Health at Work, Law on Prevention of Harassment at Work, Law on Records in the Field of Labour ... Of particular importance for the implementation of legal regulations in this area are bylaws (numerous decrees and regulations), as well as collective agreements.

3. COMPLIANCE OF EMPLOYMENT REGULATIONS WITH EU REGULATIONS

The Republic of Serbia is facing great challenges in the process of harmonizing labour legislation with EU regulations. By signing the Stabilization and Association Agreement, it undertook the obligation to harmonize national legislation in this area with the *acquis communautaire*, as well as the obligation to implement them. Changes that occur in production (and in the market) leave consequences on employment and the perception of employment (Dzafic et al., 2020, 635). The National Employment Strategy, as the main goal of the employment policy, determines that an efficient, stable and sustainable employment growth trend is established in Serbia and that the employment policy, as well as labour market institutions, are fully harmonized with the EU *acquis*. The priorities of the employment policy for achieving the basic goals are increasing employment, investing in human capital and social inclusion (Government of the Republic of Serbia, 2021). The adoption of the new Strategy was preceded by an *ex post* analysis of the effects of the previous Strategy (Aleksic et al., 2020), as well as an *ex ante* analysis of the effects that the next policy planning cycle could have on the labour market in Serbia (Ognjenovic et al., 2020). Serbia has largely based its priorities in the field of employment policy on the common framework of European policies, bearing in mind the aspiration towards EU accession, but it has also taken into account specifics, primarily related to the development of local and regional labour markets and raising employability of more difficult employable categories. Of the four priorities envisaged by the National Employment Strategy 2021-2020, two were realized to a good extent (employment incentives and local employment policies; human capital and social inclusion), while the remaining two were only partially achieved (institutional capacities and active labour market policy measures; reducing duality in the labour market) (Aleksic et al., 2020). If it is difficult for EU member states to achieve the goals set by the EU agenda, Serbia will have an even more difficult and ambitious task of achieving convergence with them by reducing the gap in employment rates. The difference in key labour market indicators between the Republic of Serbia and the EU is so pronounced that it represents one of the biggest essential obstacles in meeting the accession criteria. Convergence towards EU goals will require faster average annual economic growth than the EU average, with the same or higher labour intensity of growth. The European Social Fund is the main financial instrument through which the EU supports the implementation of its employment strategy and contributes to social inclusion efforts. Serbia does not have a Social Fund that would be equivalent to this fund. Preparations in this area are still ongoing, the line ministry has reorganized the employment sector and provided training for all employees. Local self-government, which has adequate capacities for adopting and implementing practical employment and social policies, has a high degree of autonomy, is efficient, up-to-date and close to citizens is one of the key carriers of European integration and success factors in this process. Its active involvement and participation in this process implies access to various EU funds and partnership through various cooperation programs. Success in acquiring and effective use of opportunities provided by these funds and cooperation programs is one of the factors for

balanced and sustainable economic and social development of local communities. Therefore, it is necessary to meet the organizational preconditions, take appropriate preparatory actions at the local level and achieve good cooperation with the central government.

4. LOCAL GOVERNMENTS IN THE CREATION AND IMPLEMENTATION OF EMPLOYMENT POLICY

After the EU regulations become part of the internal legal order of Serbia, the question arises of the manner of their implementation, i.e., the creation of a mechanism that will ensure either their voluntary compliance and application, or forced application. The development and improvement of human capital is essential for employment strategy and policy. This is one of the priorities defined by the National Employment Strategy, which estimates that raising the quality of the workforce through education and training and social inclusion of individuals and groups in social exclusion can contribute to local economic and social development (Government of Republic of Serbia, 2021). Decentralization of decision-making, which would improve management, simpler functional organization with significantly higher participation of employees in basic functions, working directly with clients, proactive relationship in contacting employers and finding vacancies, work on improving performance indicators are challenges before the creators of local employment and social benefits policies. The process of decentralization of employment policy inevitably requires strengthening local self-government institutions that should have the capacity to create active employment policy measures and other measures respecting the characteristics of the local environment, to find the necessary financial and other resources, to monitor and evaluate the effectiveness of measures, etc. (Pavlovic, 2012). Local self-government, which has the appropriate capacity to adopt and implement practical policies in the field of employment and social policy, has a high degree of autonomy, is efficient, up-to-date and close to citizens, is one of the key drivers of European integration and the factor of success of the process. The ability and possibility of local self-governments to get involved in the accession negotiations will largely determine in what timeframe and with what success the local level will start to fully implement the *acquis communautaire* in the field of employment. Their active involvement and participation in the European integration process includes access to various EU funds that support employment and local initiatives and partnerships through various cooperation programs. The success in obtaining and using funds from these resources, however, is not guaranteed only by the simple fact that local governments have the opportunity to participate in them. In order to receive these funds, local governments must strategically plan their development, create partnerships at different levels of government and continuously build their capacities. This job is not easy and equally requires political support, but also a clear shared vision of the future among all actors within the community of which they are a part, as well as the determination to implement the necessary activities. The importance of local government capacity is particularly important, given that it is necessary to:

- 1) provide an institutional framework for consultation with local governments during the accession negotiations under Chapter 19 (employment and social policy);
- 2) timely inform the institutions involved in the accession negotiations under Chapter 19 on the consequences of the application of certain EU *acquis* in the field of employment at the local level and the necessary capacity for their implementation (institutional, administrative, i.e., financial);
- 3) involve local governments in accession negotiations when formulating negotiating positions that represent the interests of local governments and objectively defined transition periods for the application of certain standards in the field (Lazarevic et al., 2013).

Given the experience of the EU, local governments in the Republic of Serbia should focus on contributing to four key priorities in the field of employment:

- 1) Better functioning of the labour market. Structural, high unemployment rates represent an unacceptable loss of human capital: they discourage workers and lead to premature labour

market abandonment and social exclusion. Flexicurity policies are the best instrument for modernizing the labour market: they must be taken into account and adapted to the post-crisis context in order to accelerate reforms, reduce labour market segmentation, support gender equality and make it possible to change jobs and other labour market transitions.

- 2) Better trained workforce, able to contribute to and adapt to technological change with new forms of work organization. This is a significant challenge, given the rapidly changing skills required, as well as the persistent skills mismatch in the labour market. Investing in education and training systems, skills needs projections and mediation and guidance services are key factors in increasing productivity, competitiveness, economic growth and, ultimately, employment rates.
- 3) Higher quality of jobs and working conditions. Quality and quantity of jobs are not mutually exclusive: high levels of job quality should be accompanied by equally high labour productivity and activity levels. Working conditions and physical and mental health of workers must be taken into account in order to meet the requirements of today's professional careers, which are characterized by increased turnover of workers in more intensive and demanding jobs and new forms of work organization.
- 4) Stronger policies to encourage job creation and labour demand. It is not enough to ensure that people stay active and acquire the right skills to find a job. Development must be based on growth that creates new jobs. Selective reductions in non-wage labour costs or well-targeted employment subsidies can be an incentive for employers to hire the long-term unemployed and other workers excluded from the labour market. Policies to use key resources to create new jobs and promote entrepreneurship and self-employment are also essential to increase employment rates.

In order to achieve positive results in these priority areas, it is necessary to coordinate all activities in the field of employment, contribute to all actors and their participation (cooperation at local, regional and national level - among social partners, public employment services, social institutions, education and training institutions) and civil society organizations), as well as the use of EU funds as a lever to support these priorities. That the quality of the presence and involvement of local governments in the accession negotiations is directly related to the quality of these negotiations has undoubtedly been shown by the experiences of countries in the region that have gone through the same process. The application of standards and values of EU policies through local policies is essential for ensuring sustainable socio-economic development of the local community and improving the lives of citizens. EU membership for local governments implies the acceptance of a new framework for participation in the process of creating practical policies and decision-making in the field of employment and social policy. The role that local governments will play during the accession negotiations is essential for the results of the negotiations and the success in the implementation of the EU acquis in this area in the domestic practical and political framework. Local self-governments with Serbia's full membership in the EU are becoming part of a complex, multidimensional system of creating employment policies based on goals, logic and management instruments at several levels of government, for which it is not easy to find a single framework. Progressive, successful and sustainable employment reforms must take into account the values and goals shared by EU Member States. Such reforms should be based on the values and principles that characterize European society: full respect for human dignity, recognition and enforcement of fundamental rights, social justice, solidarity, non-discrimination, equal opportunities and social inclusion. The debate on employment policy reform should be not only transparent, but also open to suggestions and successful experiences of individual local governments. Smart assessment of successful policies, good practices and creative imitations can be a very useful strategy. In addition, demographic changes, such as low reproductive rates, especially in some devastated regions and local governments, should not be

seen as a threat to society, economic development and the sustainability of the social protection system. They only require thinking in advance about the amount of working time, retirement years, productivity and quality of work, the relationship between using the experience of the elderly and the desire for change and innovation of young people and the like. (Ristic, 2014).

5. CONCLUSION

At the national level, the most important and extensive part of the preparations for negotiations with the EU in the field of employment is related to the complicated process of analysis and adjustment of national laws and other legal acts to EU requirements. This, of course, refers to what is often referred to in the professional public as "the application of the *acquis communautaire*", i.e., the adoption of the *acquis communautaire*. The experience of other countries, EU members of today, has shown that some laws, due to the nature of the area to which they relate, have found easier application at the national level, while other laws have had a greater impact at the local level. In addition to the implementation of the *acquis* in the field of employment and social policy at the local level, the most important preparatory actions at the local level should focus on the following:

- 1) Initiation and implementation of training programs with the aim of acquainting employees in local self-government with the basic principles of the functioning of the EU and legal instruments used in European regulations in the field of employment. There is a need to raise awareness of the possible consequences of EU membership, including general information on structural change, regional policy and accompanying measures to support employment and social policy.
- 2) It is of great importance that trained experts at the level of local self-governments develop excellent mutual communication, as well as communication with neighbouring local self-governments, regional chambers of commerce and other regional employers' associations (the so-called horizontal communication). Further, the importance of developing successful vertical communication should not be neglected, i.e., communications with relevant line bodies, such as the National EU Accession Office, line ministries and the Government itself. In order to establish effective vertical communication, it would be desirable for experts from the local level to be acquainted with the national strategy of development, employment, as well as national action plans.
- 3) Formation of appropriate professional staff (teams) at the local level. These teams should be further trained, in line with the local economic and social development strategy, to prepare project documentation and follow the procedures for applying for EU funds. The mentioned teams would, if necessary, identify external expert associates (due to very limited financial possibilities of local governments to employ such people, but also legal restrictions for their employment), who could help them in fulfilling numerous planning procedures, data and methodologies, which are a necessary precondition for the approval of EU-funded projects.

Local employment policies and local government activities can make a significant contribution to improving the labour market situation. Economic development and labour market development, social, educational and structural policies are closely linked at the local level. The success of local government strategies depends very much on the extent to which they see themselves as part of a comprehensive network of actors, as well as whether they learn to develop and control these networks, and to use their resources and specific competencies effectively.

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BEHAVIOR OF MANAGERS IN CONDITIONS OF UNCERTAINTY

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ABSTRACT

The first twenty years of the 21st century are characterized by unprecedented uncertainty, which manifests itself in economic crises, trade disputes, conflicts between countries, terrorist actions, extreme migrations, pandemics and the consequent interruption of well-established supply chains, stoppage of production, dismissal of employees and the decline of almost all economic indicators. In conditions of uncertainty, organizations cannot work according to classical economic principles but must find new ways of acting in a turbulent market. The greater the turbulence, the greater the responsibility of managers in organizations. In this regard, it should be emphasized that the leadership methods from the 20th century are no longer effective for managers to behave rationally and make effective business decisions. In the paper, the example of organizations for foreign trade in arms and military equipment shows what problems and obstacles they face and how they must solve and overcome them. Armaments and military equipment are specific products and business principles (supply, demand, procurement, transparency) characteristic of cars, equipment, machinery, textiles or agricultural products cannot be applied to them. The specificity of trade in arms and military equipment lies in the extremely emphasized security aspect, defined legal business frameworks, confidential information, closed channels of communication, and personal contacts. This activity carries certain political, economic, and especially security risks, which makes the job of managers in organizations difficult. Since the duration of crises and uncertainties cannot be accurately determined, managers are required to be inventive and have a sense of foresight and responsibility for the realization of set business goals. Any delay has negative consequences for the organization, so managers must responsibly look at the external and internal environment of the organization (employees, relationships and contacts, legal regulations, barriers, and obstacles).

Keywords: *Behavior of managers, Crises, Traffic in arms and military equipment, Turbulent times, Uncertainty*

1. INTRODUCTION

The complexity of the modern world, as well as numerous dangers and risks, put states and organizations in front of great challenges to which traditional management models do not have an adequate response. Globalization has extended the influence of transnational threats to numerous actors, without the possibility to stop the spread of risks and threats, that is, to reduce the feeling of increasing insecurity and uncertainty. Today, it is increasingly difficult to recognize dangers and risks because they are becoming temporally and spatially unpredictable and complex. The consequences of their influence extend through different systems, without the possibility of comprehensive and effective control, because they are multiple intertwined

and multi-dimensional. They are political, economic, security, technological, health, and environmental, and require a multicentric perspective towards risk management, prevention, and control. All the more, the challenges, risks, and threats that marked the beginning of the 21st century expose all the weaknesses of current policies and institutional mechanisms for dealing with them. Epidemics, migration, the challenges of terrorism and conflict, climate change, genetic engineering, artificial intelligence, and numerous future challenges include a wide range of insecurities that we face today, and they inevitably affect states, societies, organizations, and individuals. The crises that marked the first decades of the 21st century, apart from being of a wide range and different origins, also show a trend of exponential frequency and intensity, with dramatic consequences for the state and the economy. Precisely because of the changing nature of contemporary challenges, it is essential to collect and consolidate new knowledge and create solutions to respond to complex challenges. Otherwise, any delay can cause unpredictable consequences for organizations and individuals.

2. DIMENSIONS OF TRADE IN ARMS AND MILITARY EQUIPMENT

Arms trade between states is a multi-dimensional, multi-agency, geographic, and historical practice. It is multidimensional because economic, political, and military aspects are always in the foreground. The economic dimension of the arms trade includes microeconomic and macroeconomic elements. Potential technological spin-offs and lower production costs per unit of output due to additional demand created by arms exports are good examples of microeconomic effects. A higher volume of arms trade can also affect employment in the military industry and the national trade balance, which are macroeconomic elements. The political dimension of the arms trade mainly consists of the domains of domestic and foreign policy. In terms of domestic politics, arms imports can be used in national security rhetoric, while arms exports can be the subject of political bargaining between armed lobbies and governments. The practice of international arms trade can pave the way or consolidate alliances and partnerships. Conversely, it can initiate or intensify opposing relationships. The military dimension of the global arms trade is as important as the other dimensions. By delivering or receiving high-tech weapons platforms, states can improve deterrence capabilities or power projection, thus changing the strategic conditions in different regions of the world. The international arms trade has a significant geographical dimension. Thanks to rapid advances in transportation technologies in the 20th century, intercontinental arms transfers became possible. This fact has allowed leading economic and military countries to interfere in distant parts of the world through arms exports. Furthermore, the different dynamics of the international arms trade cause an uneven distribution of weapons systems around the world, making certain regions centers of armaments. For example, South and East Asia, the Middle East, and Africa have been epicenters of international arms imports and rivalries for years. Finally, the global arms trade is a set of historical practices. International arms trade activities acquire different characteristics in different periods. International arms traffic in the entire post-World War II era can be studied in two different historical episodes - the Cold War period and the post-Cold War period. Since the historical conditions of these periods are mutually different, it is possible to discover essential economic, political, strategic, and geographical differences between them. Also, the time from signing the contract to delivery can last up to ten years, which is another time characteristic of the arms trade.

3. ARMS AND MILITARY EQUIPMENT MARKET

At the end of the 1990s, with the end of the Cold War and the decades-long state of potential conflict between the Western and Eastern blocs (NATO and the Warsaw Pact), the arms and military equipment market acquired completely different dimensions. During the Cold War, equipping the Western Allies with weapons and military equipment was limited to the

acquisition of state-of-the-art systems from the USA, Great Britain, Germany, or France. In those countries, there were highly developed research and development and production capacities, so their armies were equipped with weapons from the domestic military industry, and some systems were procured from other member states. The countries of the Eastern Bloc, which consisted of the Soviet Union, Poland, Czechoslovakia, Hungary, Bulgaria, and Romania, had developed research and development and production capacities, but most of the weapons were obtained (or stationed on their territories) from the Soviet Union. The political and military entanglement of the two sides indicated the possibility of escalation of the conflict outside of Europe, so the equipping with modern weapons systems spread to Japan, Australia, India, China, South Korea, Brazil, Argentina, and African countries. The military industry around the world made huge profits, and the political solutions to the strained relations were seen only in the acquisition and disposal of large quantities of weapons. With the fall of the Berlin Wall and the unification of the two Germanys, the collapse of the Soviet Union and the Warsaw Pact, and the independence of the former Soviet republics, there was even greater polarization. The former members of the Warsaw Pact became politically and economically independent from the Soviet Union, and most of them decided to join their former opponents - the countries of the NATO pact. All the weapons and military equipment that their armies had were not compatible with NATO standards, so it was necessary to equip them with Western weapons systems. This required the sale, giving away, or destruction of existing stocks, and the acquisition of new weapons (Radić, 2014). The end of the Cold War directly affected international arms transfers as it called into question the purpose of enormous military budgets (Gilby, 2009). In 1991, total world military expenditures dropped sharply by 8 percent. In the same year, there was a sharp decline in the financial volume of arms trade agreements - from a record high of \$71 billion in 1985 to \$32 billion in 1991. As a result of the downward trend in global arms trade since the late 1980s, its share of total world trade fell from 2.2 percent in 1981 to 0.7 percent in 1991 (U.S. Arms Control and Disarmament Agency, 1994). More broadly, the world's total defense budgets fell by 35 percent, while from 1989 to 1999, the size of global armed forces declined by approximately 25 percent (Bitzinger, 2009). The volume of military aid in the form of conventional weapons also began to decline in the mid-1990s (Wezemen, 2017). Between 1992 and 2002, there was a further decline in demand for major conventional weapons for two reasons. First, countries preferred to upgrade their stockpiles rather than buy new ones, which rapidly increase costs due to the use of expensive technologies. Second, the potential danger of an occupation in which a rival camp (the Warsaw Pact) could use conventional weapons no longer existed. Moreover, the end of the already low military aid of the Soviet Union to the countries of the so-called In Third World, continued arms sales by Russia, and the debt spiral of Third World countries have reduced both international demand and supply of major weapons (Klare, 1996). Only the rapidly developing Asian countries could sustain the demand for combat systems until the end of the 1990s. But the Asian financial crisis of 1997 disrupted this trend. The lowest level in terms of global arms deliveries occurred in 2002. However, from that year onwards, the fluctuating upward trend continued until 2019. The persistence of the upward trend in international arms trade has been analyzed in the literature (Wezemen, 2017). In almost all studies, a consensus has been reached on the fact that the terrorist attacks on the USA on September 11, 2001 (9/11) were a turning point in the global arms transfer (Hartung, 2008). The US call for a global "war on terror" and a corresponding increase in the military budgets of key Western countries have encouraged arms transfers. The US invasion of Afghanistan in 2001 and Iraq in 2003 was also legitimized through the anti-terrorist discourse and these wars contributed to the further momentum of the arms trade. For example, to rearm the reorganized Iraqi army, the US and EU lifted the arms embargo that had been in place on Iraq since the Gulf War about a year after the US intervention (Wezeman & Bromley, 2005).

Moreover, the volume of international military aid, which had declined sharply in the post-Cold War era, has risen again, especially in the early years of the anti-terrorist campaign (Wezeman, 2017). The rise of the international arms trade after September 11, 2001, was interrupted by the global economic crisis in 2008. The annual growth rate of the world economy fell to 1.8% and -1.6% in 2008 and 2009, while in 2007 it was 4.3% (World Bank, 2020). Nevertheless, world military spending continued to grow - although not rapidly - until 2012, because of high military expenditures in the period 2008-2011. were already planned in the mid-2000s. Of course, there could have been a faster reduction in military spending. However, the goals and activities of key capitalist countries led to the relative maintenance of defense budgets during the crisis years (Fleurant & Tian, 2017). Instead of a faster one, these countries considered a slow and gradual reduction in military spending, so the regression and stagnation of world military spending occurred in the early and mid-2010s (Perlo-Freeman, 2018). Usually, an economic crisis affects the arms trade at least several years after the start of the crisis, because the delivery of orders takes time (Thurner et al., 2019). For example, the impact of 9/11 on weapon system delivery trends was barely felt in 2003. However, the 2008 crisis was so severe that the international arms trade quickly entered a recession between 2008 and 2010. If counted in three-year periods, the growth in arms transfers from 2005-2007 to 2008-2010. is only 1.5%. The same ratio was 15.1% between 2008-2010 and 2011-2013. (SIPRI, 2014). The immediate effect of the 2008 global economic crisis was felt in the military industry during 2008–2010 when international arms trade stagnated. For example, world military spending made almost no progress in 2011 and steadily declined between 2012 and 2015 (Thurner et al., 2019). However, the military spending of some regions and countries showed the opposite trend during these years - most of the big Asian countries continued to increase their defense budgets. This fact was an important opportunity especially for China in its systemic rivalry with Western capitalist countries (Perlo-Freeman, 2018). Meanwhile, in addition to the USA, Russia, Germany, Great Britain, France, South Korea and Sweden, Turkey, Singapore, South Africa, Norway, Ukraine, the United Arab Emirates, Saudi Arabia, Jordan, China, India, Brazil, and others. The market has become oversaturated with different weapons at different prices, procurement conditions, and buyer-supplier relationships. Restrictions, embargoes, or export bans are increasingly imposed on certain countries and producers, with the justification of concerns about terrorist activities, support of non-democratic regimes, and escalation of conflicts to other countries and regions. In particular, the USA and Great Britain stand out in this, which together with other Western "partners" want to rule the world market of weapons and military equipment. The United Nations is often involved in the imposition of various restrictions, which, although the most important international organization, often gives in under the pressure of the US and its allies. By passing numerous resolutions, the transfer of weapons to certain countries-regions is prevented, which enables the control of transfers from one country to another under the direct influence of the USA, so there is no way to end the decades-long mechanism of bans, blockades, or delays in the transfer of weapons. Simply put, the USA dominates the world scene in that domain, so Russia's current military operation in Ukraine suits them very well. The export of weapons and necessary military equipment to Ukraine is not allowed by any other country except NATO members and countries that in principle support their positions. On the one hand, the US and its allies supply Ukraine with the requested weapons and military equipment and do not think about a peaceful resolution of the conflict. On the other hand, Russia and its alliance with China and other countries that have not imposed sanctions on Russia are declared a threat to world peace, a violation of international law, calling for genocide, payment of war damages to Russia, etc. In the period 2017-2021. In 2008, the USA was the largest exporter of weapons and military equipment in the world, along with Russia, France, China, and Germany, with the volume of exports being around 100 billion dollars (SIPRI, 2022).

Among the ten most famous military companies in the world, the first five are from the USA, one from Great Britain, and three are from China. Among the top twenty countries, eight are from the USA, one from Great Britain, seven are from China, two from France, one from Italy, and one from Trans-European. It should be noted that the first German company on the list of the 100 most famous military companies in the world (not only by name but also by export) Rheinmetall is ranked 31st. Companies from the USA participate in exports with about 51.6%, China 18%, Great Britain 6.8%, France 4.9%, one trans-European 3.2%, Russia 3.0%, Italy 2.8%, Israel 2.0%, Germany 1.6%, Japan 1.5%, South Korea 1.2 and all others with 4.0%. Arms sales of the top 100 manufacturers in 2021 totaled \$592 billion, an increase of 1.9% in real terms compared to 2020. Total arms sales of 40 of the 100 US-based companies decreased by 0.9% to \$299 billion in 2021. The combined arms sales of the eight Chinese companies in the top 100 were \$109 billion, an increase of 6.3% compared to 2020. The total arms sales of the 21 companies from Asia and Oceania in the top 100 list increased by 5.8% to reach \$136 billion in 2021. This is significantly more than the combined arms sales of the 27 European companies in the top 100, which exported \$123 billion worth of arms in 2021. Due to a lack of data, in the top 100 companies in 2021, six Russian companies were listed, which is three less than in 2020. The combined arms sales of these six companies in 2021 increased by 0.4% and reached \$17.8 billion (SIPRI, 2022). Certainly, the biggest event in the last twenty years that has disrupted the arms and military equipment market the most is the Covid-19 pandemic. There's no doubt that the pandemic has tested the creativity and imagination, resilience, and flexibility of supply chain leaders globally as they scramble to maintain at least basic operations. The pandemic also proved to be a true test of corporate values. Consumers, investors, governments, and communities could assess how organizations are responding to this period of disruption. With the virus still a threat and many regions and economies in isolation, while others emerge into a very different world, disruption to supply chains remains severe. Once economies are fully operational again, the supply chain will be critical for the rapid and safe supply of goods and services. Business leaders must make quick decisions and take immediate actions to maintain business operations, serve consumers and communities, and protect and support their employees (Radić & Radić, 2022). With the pandemic, fundamental changes in consumer behavior, supply chains, and routes to market are throwing organizations off balance. The response to the pandemic has highlighted the need for leaders to accelerate the adoption of agile ways of working and the transformation of value chains to help overcome uncertainty. Because a pandemic is not a typical risk event, the scale of its impact dwarfs anything most supply chain leaders have faced before.

4. MANAGERS AS ENTREPRENEURS

Organizations that operate in the field of armaments and military equipment must behave completely differently than organizations that sell cars, household electronics, textiles, or agricultural products. Since the conditions in the arms market often change and the situations and conditions on the market have political and military connotations, analytical observation of the external and internal environment by managers and employees is a condition for a successful business. This especially applies to small organizations, not only in terms of the volume of exports achieved but also in terms of the number of employees in them. Also, this especially applies to small countries and their producers, who operate in a demanding market characterized by a large number of actors, a large selection, different product quality, tradition, and, of course, price. The planning function in the organization is the most important and includes the activities of determining business goals and organizational development, then forecasting and defining future tasks, as well as the conditions in which tasks should be performed and goals achieved. It is a managerial function within which the choice of course of action is made for obtaining, allocating, using, and replacing the resources of a specific organization. In this sense, planning

is the basis for performing other managerial activities, such as organizing, hiring, leading, and controlling (Radić, 2018). By planning, the company's activities are conceived in such a way that they lead in the direction of achieving its goals. Therefore, planning decisions must be made in advance, and they relate to the jobs that should be done, when they should be done, as well as who should do them. Since the organization's business is a continuous process, planning must also take place continuously. At the same time, the planning process includes not only the making of planning decisions but also the determination of management measures in the direction of the execution of the planned tasks, that is, the achievement of the organization's goals (Radić, 2018). In carrying out the planned tasks and achieving the organization's goals, the manager acts as an entrepreneur. The concept of an entrepreneur becomes clearer when the terms are considered from a business, managerial and personal perspective. Today, the concept of entrepreneurship from a personal perspective is particularly explored and emphasized. In almost all definitions of entrepreneurship, there is a common ground that it is a behavior that includes taking the initiative, organizing and reorganizing social and economic mechanisms and resources for practical purposes, and accepting risks or failing (Avlijaš & Avlijaš, 2013). Therefore, entrepreneurs respond to change, but at the same time, they create change through entrepreneurial action, which takes place in an atmosphere of the uncertain final result. Entrepreneurship represents a complex, multidimensional "framework", which emphasizes the individual, the environment, the organization, and the entrepreneurial process itself. The entrepreneurial process is broader than solving problems in the usual managerial position. An entrepreneur finds, evaluates, and develops an opportunity, against the forces that prevent the creation of something new. The entrepreneurial process is the process of working on a new venture - either marketing new products to existing markets, existing products to new markets, or creating a new organization. It consists of the identification and assessment of the opportunity, the development of a business plan, and the provision of the necessary resources for the management of a new enterprise (Radić, 2018). Although entrepreneurs can differ significantly among themselves, certain qualities are common to all entrepreneurs and which are the reason for their success. The key characteristics of an entrepreneur's personality are self-achievement, self-confidence, independence, risk-taking, creativity, innovation, and vision. Self-achievement is considered by many authors to be a key feature of successful entrepreneurs. Individuals with a strong need for self-achievement want to achieve success that is not a result of chance, they want success to be their merit. Ready to work better and more efficiently than others and strive to overcome obstacles on the way to success. Also, many authors consider self-confidence to be one of the most important characteristics of an entrepreneur. A high degree of self-confidence and belief in one's abilities is an important characteristic of an entrepreneur because it affects the mobilization of resources, the motivation of others, and change. Individuals with a high degree of self-confidence believe in themselves and their ability to face the challenges that surround them. These entrepreneurs do not give up easily, they are characterized by persistence and perseverance, as well as the desire to work hard. Entrepreneurs want to achieve their personal and business ambitions independently. The independence of an entrepreneur is reflected in autonomous decision-making and personal control. Independence leads to satisfaction, which is the result of personal achievement, encourages initiative, creativity, and flexibility, but also brings greater risk, greater responsibility, and a lot of work. In addition to the listed, key characteristics of an entrepreneur, market orientation and the desire to compete, flexibility and adaptability, realistic optimism, the ability to communicate, willingness to make big sacrifices, and total dedication to work, etc., are also significant. Entrepreneurs believe that they are successful as much as they manage to keep existing and create new customers. Entrepreneurs are characterized by a competitive spirit and enjoy the challenge of starting a business and competing in the market. Competition is a very important landmark for an entrepreneur that shows him his position in the market and his comparative

advantages and disadvantages. A successful entrepreneur is always a good planner. A business cannot start without a well-made business plan. Although a business plan may be carefully formulated, new circumstances arise that require some changes to the business plan. For this reason, it is necessary to make corrections whenever significant changes occur in the environment. The most successful entrepreneurs are precisely those who are flexible and quickly react to changes in the environment, which can affect business (Radić, 2018). From the aspect of entrepreneurship, optimism is also important because it enables the entrepreneur to overcome the obstacles he faces in the realization of the job. An optimist sees the failure of a business not as a destructive phenomenon, but as a significant experience that enables another attempt, but on different bases and strategies. This feature can be seen as a mechanism for harmonizing ambitions and realistic possibilities. An entrepreneur must possess the qualities of a good communicator. The ability to communicate is important to him to "sell" his ideas and products to potential financiers, customers, or partners. Communication skills refer to the entrepreneur's ability to adapt to a certain situation.

5. RISK AND UNCERTAINTY

Risk represents the possibility of unforeseen and unwanted consequences and is present in all types of organizations, regardless of their size. Risk is a challenge and must not be a hindrance. Taking risks is a way for the organization to discover its capabilities and provide management with greater self-confidence. If management is not willing to take risks, it will never be able to exploit its potential. Entrepreneurship requires a culture of risk-taking, which is very important to realize entrepreneurial potential. Risk consideration is an integral part of all business activities and the possibility of failure is always present. With the expansion of business, the problems faced by management become more and more numerous and complex. Deciding on whether to choose a riskier or a more conservative alternative depends on the attractiveness of each option, the probability of success or failure that each option implies, the level of loss that the organization is willing to bear, the degree to which the organization's efforts can minimize the probability of failure, i.e. maximize the probability of success. When talking about risk and risk management, it is inevitable to mention the factors that arise during the business process and contribute to the mention of risk. Risk is characterized by three key factors: the risk event, the probability of the event, and the size of the stake (Jovanović, 2005). A risk event is an occurrence, activity, or event that may have negative consequences for the organization's operations. The risk probability represents the probability of the occurrence of a certain risk, and the stake size is the size of the loss that can occur if a risky event occurs. Risk exists when the outcomes are uncertain, but when the probability of the outcome can be predicted on an objective basis. Uncertainty exists when the probability of the outcome cannot be calculated on an objective basis, but the probability of the outcome is made on a subjective basis. Since in the case of risk, the outcomes can be predicted with a certain degree of probability, i.e. on an objective basis, the risk is insurable. Since risk is insurable, the risk is a cost. Profit, therefore, is not the result of risk. Profit arises as a result of events that cannot be predicted, i.e. events whose outcomes cannot be calculated on an objective basis, which is uncertainty. Uncertainty creates a chance, that is, the chance for profit arises from uncertainty. When the chance is predictable, then there is no opportunity for profit. An entrepreneur can be anyone ready to take the risk of starting a new business. He cannot be insured against business failure, because the outcome of the business cannot be predicted. This means that an entrepreneur is an individual who is bold enough and bold enough to make decisions, the effects of which cannot be predicted, at the moment they are made, and the reward for that is profit. Tolerating risk and uncertainty is an important characteristic of an entrepreneur. However, until now, researchers have not paid the necessary attention to the problem of risk management in small entrepreneurial organizations.

Due to the importance of entrepreneurship in today's conditions, and to minimize business risks, it is necessary to investigate in more detail how entrepreneurs assess, accept and diversify risk. The life of an entrepreneur is not easy - he has to risk his capital to sell or deliver products and services, and he spends more energy on innovation than the average businessman. Despite daily stress and other problems, an entrepreneur can establish a balance between ethical demands, economic feasibility, and social responsibility, which is different from the point at which a business manager takes a moral stance (Freeman, 2002). Managers' views on corporate responsibility are based on the organizational climate, which for them is such that it supports the law and the professional code of ethics. Although they rely more on their value system, entrepreneurs are very sensitive to peer pressure and the general social norms of the community, as well as competitive pressure. Entrepreneurs from different countries and communities reflect the general values and norms of the community in which they work, especially when it comes to urban and rural areas. The significant growth of organizations with an international orientation affects the growth of interest in the specifics of business attitudes and practices in different countries. This area was partially explored in the context of culture, and today it is considered within the individual concept of ethics, although culture and ethics are partially connected. Ethics generally refers to the study of anything good for human beings, while business ethics examines business practices through the prism of human values. Ethics is a broad field of study that explores the general nature of morality and the specific moral decisions that an individual makes in interaction with others. Therefore, although there is evidence of the use of the entrepreneurial process to exploit others for profit, it is important to realize that this process can be an important tool that helps exploit stakeholders and establishes a stable business. The entrepreneurial process should be seen as a means to effectively achieve favorable results for all parties, and not at the expense of others. Ethics is not only a general topic, but a significant concern of business people.

6. CONCLUSION

In the domain of trade in arms and military equipment, a large number of factors can have negative consequences for the operations of organizations. Organizations in this domain mean small ones, not only in terms of trade volume but also in terms of the number of employees. Most of these organizations are privately owned, with different forms of organization - limited liability companies, agencies, joint stock companies, partnerships, etc. Political situations in individual countries and regions have the greatest influence on the possibility and scope of business, as well as the security of obtaining jobs. The task of managers in organizations is to establish contacts with foreign partners, find out their requirements, and find opportunities for concluding a deal and its implementation. Personal contacts, recommendations, and already completed jobs help the most in this. A correct relationship with foreign customers requires a realistic assessment of delivery deadlines and overcoming possible regulatory problems that can slow down, or even stop a specific business. Knowing that managers in organizations invest their funds, that they are liable with their assets, and that they bear a certain risk in the implementation of their work, they are faced with the task of choosing employees who have certain knowledge and skills, as well as the necessary routine in solving problems. If the situation in the world is more or less suitable for the realization of the export of weapons and military equipment, managers in organizations must establish good relations with domestic suppliers, to satisfy their requirements (in terms of quantities, quality, delivery terms, and price). When these requirements are agreed upon, contacts with foreign partners are made within the time specified by the legal regulations valid in the specific country. Permits for the export of weapons and military equipment are issued by certain ministries, and within the roadmap, the steps and activities that must be implemented to obtain the permit are precisely defined.

In that process, the checks of competent bodies-institutions are prescribed. If, during the security and other checks, it is established that the realization of the export may have harmful consequences for the country of the supplier, then the further procedure is stopped and the work is not approved. Therefore, many problems in the implementation of the work agreed upon in principle can stop its start and final implementation. Uncertainty about the implementation of the work puts the manager of the organization in a position to invest his funds, time, and resources, without being able to realize the work agreed upon in principle. This can have a negative impact on the acquired reputation because foreign partners have a large choice of potential suppliers in the world. The decision to do it with a specific supplier is based on the quality of the product, tradition, and above all the price. Since starting a business with foreign partners is a personal decision of the manager of the organization, he is also responsible for the flow and implementation of the work. Successful implementation requires numerous activities, agreements with domestic product suppliers, organization of transport, customs and other formalities, bank guarantees, etc. Apart from the monetary ones, these activities are tied to the flow of time, so they must be planned. A realistic assessment of one's capabilities and prediction of possible events during the implementation of the work is the key to success. Knowing that the business is legal and that it has legal cover for its implementation, an agreement with domestic and foreign partners is a guarantee of the success of the business. Managers must have organizational and communication skills and knowledge, which will ensure the smooth implementation of work. Decisions they make must be based on facts, and risks and uncertainty must be minimized. Therefore, it is necessary for managers to have a certain knowledge of risk management and to effectively evaluate each activity or phase of work, from the beginning to the end of implementation.

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CORPORATE ENTREPRENEURSHIP IDENTITY IN THE CORE OF TURNAROUND STRATEGY: THE CASE OF SERBIA

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ABSTRACT

The main objective of this study was to create a new identity of entrepreneurship, which is a key factor of the turnaround strategy in the Serbian national culture. and achievements as a basis for the sustainable development of the Republic of Serbia. Since the early XX century, the concept of identity has been included, but a century later, Akerlof and Kranton (2000) bring this concept back into the focus of researchers. The theoretical framework of this study consisted of the Dialogical Self-theory, Emotional intelligence, and key factors of entrepreneurship. The correlation analysis included the relationship between gender, age, education, work experience, leadership position, and type of ego positions with competencies (i.e., emotional intelligence and four core competencies) and business economic performance. The proposed economic model was statistically tested using the sequential explanatory method. The research instruments were the EQ Goleman Competencies Model and the Corporate Entrepreneurship Assessment Instrument (CEAI). The most recent study showed that certain types of corporate entrepreneurship identities are involved in strategic turnaround decisions (Kuratko et al., 2021). The preliminary results show a positive correlation between four of the five key factors of entrepreneurship, i.e., management support, work discretion, rewards, organizational boundaries, and emotional intelligence of corporate entrepreneurs in the Serbian context. Emotional intelligence can help managers survive crises and is a source of renewal and resilience. For top managers, this means that they should incorporate corporate entrepreneurship identity into turnaround strategy. At the national level, the results can be used for the National Growth Strategy and transformation of the energy sector.

Keywords: *corporate entrepreneurship, turnaround strategy, corporate entrepreneurship identity, Serbia*

1. INTRODUCTION

The main objective was to create a new entrepreneurial identity that would be a key factor of the turnaround strategy in the Serbian national culture and the achievements as a basis for sustainable development of the Republic of Serbia. The general objectives of this study are:

- 1) To focus the corporate identity based on the Dialogical Self-Theory;
- 2) To analyze the process of construction of corporate identity;
- 3) To analyze the relationship between gender, age, education, work experience, leadership position and type of ego positions with competencies (e.g. emotional intelligence, 4 core competencies) and corporate economic performance;

- 4) Investigate the relationship between key factors of corporate entrepreneurship such as management support, work discretion, rewards, time availability, organizational boundaries, and 4 types of I- positions.
- 5) Creation and evaluation of the agenda for the formation of a balanced corporate entrepreneurship identity.

Theoretical basis of the research is two interrelated theories: the Dialogical Self-Theory and Emotional intelligence. The process of identity construction describing the transformation from "corporate manager" to "corporate entrepreneur" has been investigated in relevant studies (Ashforth et al., 2008; Ashforth, 2001; Falck et al., 2012; Biniari, 2010). This study seeks to bridge the theoretical gap between the construction of an entrepreneurial identity within an organization by managers who re-evaluate their ego positions at a particular point in time and the development of an entrepreneurial identity. We hypothesize that by focusing on the transformation process of organizational members into entrepreneurial entrepreneurs, higher returns can be achieved as an economic outcome. The paper aims to analytically conceptualize three aspects, namely entrepreneurial climate, ego position, and emotional intelligence, and assess their influence on entrepreneurial identity and economic outcomes. The paper begins with a literature review of entrepreneurial corporate identity from two theoretical perspectives, Dialogical Self Theory and Emotional Intelligence competencies. Then, the organizational factors of entrepreneurship are included. The methodology section presents the sample, statistical methods, and research instruments. It is proposed that the projection of an entrepreneurial identity by these individuals causes the formation of entrepreneurial practices that can be recognized and adopted by other organizational members. Two empirical cases are used to demonstrate how two organizational members became corporate entrepreneurs at a particular point in their lives and participated in two corporate venturing programs, developing entrepreneurial practices that were adopted by other organizational members because the parent companies of the two programs had no prior entrepreneurial experience. The results section develops appropriate hypotheses and presents an economic model to study corporate entrepreneurial identity. The paper concludes with a discuss the analytical and methodological implications of the proposed model and guidelines for policymakers in Serbia and other Western Balkan countries regarding Entrepreneurship Strategy and innovation policy.

2. LITERATURE REVIEW

The idea of including the concept of identity as an important element of entrepreneurial strategies in economics dates back to Akerlof and Kranton (2000). The authors noted that "Identity is also useful because it gives us a way to think about how behavior should vary across types. Associated with social categories are particular norms for behavior. The combination of identity, social category, norm, and ideal allows parsimonious modeling of how utility functions change as people adopt different mental frames of themselves—that is, as they take on different possible identities." Identity choices affect personal interactions and economic outcomes of the firm, which include gender discrimination in the workplace, the economics of poverty, social exclusion, and the division of labor in the household (Akerlof & Kranton, 2000). In addition to introducing identity into economics, the authors also examined identity and schooling (Akerlof & Kranton, 2002) and identity and the economics of organization (Akerlof & Kranton, 2005). In addition, they proposed two research foci: 1. analysis of identity across sectors and 2. analysis of identity across space and time. Based on the relevant studies, Radu-Lefebvre et al. (2022) proposed the model shown in Figure 1.

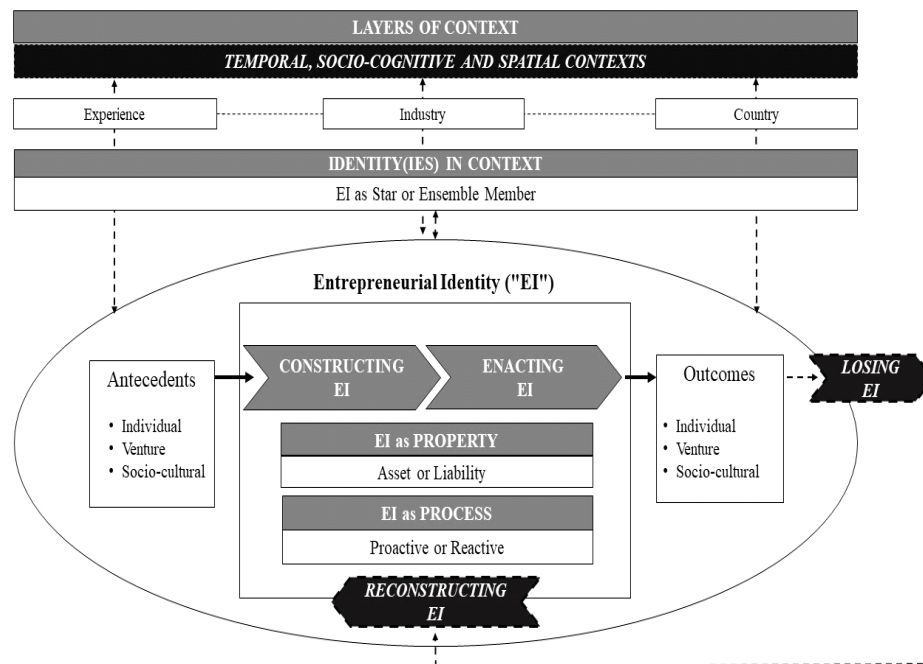


Figure 1: Model for entrepreneurial identity research
(Source: Radu-Lefebvre et al. (2022))

To construct our model, the Dialogical Self Theory and Emotional intelligence are examined along with organizational factors of entrepreneurship.

2.1. Dialogical Self Theory

In entrepreneurship, the study of the influence of identity on employee behavior and economic outcomes originated in the early XX century (Schumpeter, 1939; Knight, 1921). The four most common types of entrepreneurial I- positions are as follows (Valencia, 2019):

- 1) Innovator (Schumpeter, 1939) has innovative thinking and creates new products and services.
- 2) Leader focuses on his team - the creator and implementer of a vision and strategy that is aligned with the needs of the team (Lackeus et al., 2016).
- 3) Opportunist always looks for market opportunities (Garfield, 1986).
- 4) Fighter trusts only himself and prefers strategies that are hierarchically oriented (Mils&Pawson, 2012).

I-positions are presented as a combination of concepts, strategies, and personal feelings according to Dialogical Self Theory. One area where the influence of identity on behavior and economic outcomes is likely to have additional explanatory power is the field of entrepreneurship. Research in this area owes much to the seminal contributions of Schumpeter (1939) and Knight (1921), who collectively identify the key characteristics of an entrepreneur: Innovativeness, recognition of opportunity, and acceptance of some risk (Baumol 1968). In short, Schumpeter sees the independent entrepreneur as the ultimate source of economic development because he is the one who recognizes the potential of an invention and introduces it to the market. Through his innovation, the entrepreneur sets in motion a process of creative destruction in which the new continually displaces the old. Over time, this ongoing process of displacement guarantees that resources are reallocated to the most productive sectors. As to what drives the entrepreneurial spirit, Schumpeter rather romantically describes it as “the will to conquer,” “the dream and the will to found a private kingdom,” and “the joy of creating, of getting things done” (Schumpeter, 1939: 93).

From a standard economic perspective, the Schumpeterian motivation for entrepreneurial action—conquering, founding, and creating—that helps the entrepreneur overcome the Knightian (1921) uncertainty inherent in the endeavor seems rather lyrical than theory-driven. Arrow (1962) provides some weightier economic reasoning when he argues that, under uncertainty, information becomes a commodity with economic value, implying that those individuals who find a way to overcome uncertainty can appropriate a pioneer rent that is in itself an incentive to engage in entrepreneurial action (Hamilton 2000). According to this field, many factors, including optimism, self-assessment, autonomy, and overall job satisfaction, influence the ideal that an individual will try to live up to (Wu & Knott 2006). Thus, choosing an entrepreneurial identity means that an individual mentally frames certain situations as being entrepreneurial and then adjusts his or her behavior accordingly. The individual tries to live up to, or emulate, a real or imagined character, for example, Bill Gates or the Schumpeterian entrepreneur, who is a personification of the entrepreneur he or she would like to be. Consequently, the would-be entrepreneur suffers a loss in utility if his or her behavior strays from this ideal. One of the first definitions of “identity is a way in which organizational members are continuously engaged in forming, repairing, maintaining, strengthening, or revising the constructions that are productive of a sense of coherence and distinctiveness” (Sveningsson & Alvesson, 2003: 1165). There are three groups of identity (Ashforth, 2001), such as organizational factors, employees’ performance, and employees’ behavior. The newest study aimed to determine whether certain types of identities are more likely than others to be present before and during business growth (Kuratko et al., 2021).

2.2. Emotional intelligence

The concept of emotional intelligence was introduced by Goleman (1995). He found that effective leaders had high levels of emotional intelligence. Emotional intelligence is defined as the ability to understand and manage your own emotions as well as recognize and influence the emotions of those around you. The first competency model consists of six core competencies (Goleman, 1998): 1) Self-awareness is the ability to recognize what you are feeling, to understand your habitual emotional responses to events, and to recognize how your emotions affect your behavior and performance; 2) Managing emotions requires the ability to stay focused and think even when experiencing powerful emotions; 3) Motivating oneself is the ability to use your deepest emotions to move and guide you towards your goals. 4) Empathy means to understand and respond to what other people are feeling; 5) Self-awareness is essential to having empathy with others, and 6) Social skill is the ability to manage, influence, and inspire emotions in others. Over the years, many models of emotional intelligence have been developed. Therefore, Goleman and Boyatziy (2017) identify twelve emotional intelligence competencies in four domains: self-awareness, self-management, social awareness, and relationship management. Self-awareness has the same meaning as in the first model of Goleman (1998). Self-management includes managing emotions and motivating oneself. Social awareness has a broader meaning than empathy and includes how this crisis impacts the businesses, people, and systems involved in correcting the problem. Social skills are a precondition of relationship management, which is the ability, through inspiring others, managing conflicts, fostering teamwork, and other competencies, to move people in the direction you desire (Goleman & Boyatziy, 2017). These four domains can help managers face any crisis, regardless of its form or intensity. Emotional intelligence can help managers survive crises as well as be a source of renewal and resilience. In particular, research indicates that when their businesses face challenges, some entrepreneurs find energy and continuity by holding on to parts of their identity while letting go of others to match changed conditions in their environments (Kuratko et al., 2021).

2.3. Organizational factors of corporate entrepreneurship

When the entrepreneurial process takes place within the boundaries of an established organization, researchers label it “corporate entrepreneurship (Stevenson & Jarillo, 1990; Covin & Miles, 1999). The organizational context is a significant moderator in influencing the formation of organizational members’ entrepreneurial intentions and beliefs regarding whether they can be entrepreneurs and how to become entrepreneurs (Harper, 2003). A supportive top management team and corporate culture toward entrepreneurial behavior, the existence of available resources, and prior organizational experience in entrepreneurial activities are considered contributors to enhancing organizational members’ entrepreneurial traits and facilitators for the execution of entrepreneurial plans (Kuratko et al., 2014). The essence and nature of organizational factors in corporate entrepreneurship are as follows (Kuratko et al., 2014):

- Top management support can be explained as “the extent to which one perceives that top managers support, facilitate, and promote entrepreneurial behavior, including the championing of innovative ideas and providing the resources people require to take entrepreneurial actions” (Kuratko et al., 2014, p. 39). Like the other authors, in addition to motivation, encouragement, and support, he includes various elements of the organizational context in the management support, such as rewards, structural arrangements, and resources.
- Work discretion is also a complex factor, which Kuratko, Hornsby & Covin (2014) include not only autonomy in the workplace, but also a delegation of authority as well as error tolerance: “The extent to which one perceives that the organization tolerates failure, provides decision-making latitude and freedom from excessive oversight, and delegates authority and responsibility to lower-level managers and workers (Kuratko et al., 2014, p. 39).
- Reward and reinforcement include not only rewards for entrepreneurial behavior but also the reinforcement of behavioral activities through appreciation and encouragement and the provision of resources needed for its implementation (Kuratko et al., 2014). For this reason, this factor includes a factor that other authors call resource availability.
- *Time availability* can be defined as “the availability of unstructured or free time can enable would-be corporate innovators to consider opportunities for innovation... the workload schedules ensure extra time for individuals and groups to pursue innovations” (Kuratko et al., 2014, p. 39). This factor completely coincides with the same factor that other authors have identified under the same name.
- *Organizational boundaries*. Some other authors call this factor the organizational structure. However, most authors consider that entrepreneurial organization should contain “flexible organizational boundaries that are useful in promoting entrepreneurial activity because they enhance the flow of information between the external environment and the organization, as well as between departments/divisions within the organization (Kuratko et al., 2014, p. 39). This factor also includes reducing the uncertainty faced by employees in performing their tasks in the organization. The assumption is that the process of creating a new venture will be most effective when the uncertainty in the organization is kept under control (Kuratko et al., 2014).

3. METHODOLOGY

3.1. Sample

To select a representative sample of Serbian companies we include the following criteria: market share in industry, total revenues, and number of employees. The research took place from January to July 2022.

The sample consists of 776 respondents from various Serbian companies. Socio-demographic variables include:

- Gender: female/male,
- Age: 21 to 30 years / 31 to 40 / 41 to 50 / 51 to 60,
- Educational level: secondary education/college/university degree/master/master of science/Ph.D.
- Work experience: less than 1 year/1 to 3 years/3 to 5 years/6 to 10 years/11 to 20 years /over 20 years, and
- Hierarchical level of work: I am not a manager/middle management/senior management.

3.2. Research instrument

Data were processed by appropriate statistical procedures. The applied procedures and their sequence of application have their place in scientific research work. Special care should be taken to minimize the loss of information obtained during the survey. The order of application of the procedures is of utmost importance both for the conclusion and for the timely elimination and inclusion of certain features, which will enable better research. A proposed economic model will be statistically tested using Sequential Explanatory Method.

3.3. Statistical methods

Data were processed by appropriate statistical procedures. The applied procedures and their sequence of application have their place in scientific research work. Special care should be taken to minimize the loss of information obtained during the survey. The order of application of the procedures is of utmost importance both for the conclusion and for the timely elimination and inclusion of certain features, which will enable better research. A proposed economic model will be statistically tested using Sequential Explanatory Method.

4. RESULTS

Based on extensive literature and relevant study reviews, as well as the proposed methodology, we will examine the relationship between variables tested in the study using three independent variables through data obtained from questionnaires. The independent variables are entrepreneurship climate (X_1), I-position of top managers (X_2), and emotional intelligence (X_3), while the dependent variables are corporate entrepreneurial identity (Y_1) and economic performance (Y_2). Also, we intend to test the following propositions:

- H_1 : Managers' perceptions of the entrepreneurial climate have a positive effect on corporate entrepreneurial identity.
- H_2 : The identity work practices corporate entrepreneurs use to construct their corporate identity are perceived as corporate entrepreneurship practices by other organizational members.
- H_3 : In the existing organizational context, managers tend to exhibit higher levels of emotional intelligence.
- H_4 : There are significant differences between female and male managers regarding the corporate entrepreneurial identity construct.
- H_5 : The higher level of emotional intelligence of managers implies higher economic performance.
- H_6 : The starting I-position determines the corporate entrepreneurial identity.

5. CONCLUSION

We bring together two streams of theory - Dialogical-Self Theory and Emotional intelligence to propose that the construction of a corporate entrepreneurial identity by organizational members has a mediating role in the development of entrepreneurial practices within an

organization. One area where the influence of identity on behavior and economic outcomes is likely to provide additional explanatory power is the field of entrepreneurship. There are three groups of identity (Ashforth, 2001) such as organizational factors, employees' performance, and employees' behavior. The newest study aimed to determine whether certain types of identities are more likely than others to be present before and during business growth (Kuratko et al., 2021). Goleman and Boyatziy (2017) identify twelve emotional intelligence competencies in four domains: self-awareness, self-management, social awareness, and relationship management. The Emotional Competence Inventory 2.0 (ECI) will be used as one of the research tools. In addition to theoretical and empirical research, Kuratko et al. (2014) have developed an instrument for measuring the degree to which the identified factors of corporate entrepreneurship are present in the organization named the Corporate Entrepreneurship Assessment Instrument (CEAI). In this study, CEAI served as a measure of the entrepreneurial climate in the observed companies. We chose a representative sample of Serbian companies regarding the following criteria: the market share in industry, total revenues, and a number of employees. The research took place from January to July 2022. The sample consists of 776 respondents from selected Serbian companies with different socio-demographic variables including gender: female/male; age: 21 to 30 years/31 to 40/41 to 50/51 to 60; educational level: secondary education/college/university degree / master/master of science/Ph.D.; work experience: less than 1 year / 1 to 3 years / 3 to 5 years / 6 to 10 years / 11 to 20 years / over 20 years, and hierarchical level of work: I am not a manager / middle management / senior management. Based on extensive literature and relevant study reviews, as well as the proposed methodology, we will examine the relationship between variables tested in the study using three independent variables through data obtained from questionnaires. The independent variables are entrepreneurship climate (X_1), I-position of top managers (X_2), and emotional intelligence (X_3), while the dependent variable is the corporate entrepreneurial identity (Y_1), and economic performance (Y_2). The proposed economic model will be statistically tested using Sequential Explanatory Method. Guidelines for policy-makers in Serbia and other Western Balkan countries can be summarized as follows:

- Does the model of Akerlof and Kranton (2002) provide a model for the transformation of the Police and energy sectors?
- Our research data can be used in the process of strategy formulation for the Ministry of Education and Science, the Ministry of Gender Equity, the Ministry of Youth, and the Ministry of Energy.
- The construction of a corporate entrepreneur identity along with an Entrepreneurship strategy and Innovation policy creates a basis for achieving sustainable development of the Republic of Serbia.

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LEGAL AFFAIRS AND INDUCTION TO VERIFY FALSE CONTENT

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ABSTRACT

The purpose of this paper is the analysis of legal affairs, the frequency and quality of their conclusion depending on the credibility of the content of the documents. In the first part of the paper, we explained the concept and types of legal affairs. The second part of the work is dedicated to null and voidable legal affairs and their appearance due to the existence of documents with untrue content. The third part of the paper deals with the concept of the criminal offense of inducing the verification of untrue content and the way of legal regulation of this problem in the Criminal Code of the Republic of Serbia. In the fourth part of the paper, we analyzed the data from the Statistical Office of the Republic of Serbia, which concern the criminal offense against legal traffic. It is about the criminal offense of inducing the verification of untrue content. The research carried out in the paper covered the entire territory of the Republic of Serbia in a ten-year period, and it refers to the adult perpetrators of the investigated criminal act. Based on the most up-to-date data available to the public, trends and tendencies concerning the observed phenomenon have been established. The aim of this paper is a causal analysis of the observed criminal offense with the aim of discovering the causal relationships and links between the number of reported, accused and convicted persons for the observed criminal offense, in order to determine the degree of "crime loss" and to take systemic measures to reduce it to a reasonable extent, in accordance with standards of developed countries. The scientific and professional analysis of this topic is very important from the aspect of the development of the legal framework of economic and social development, but also from the aspect of legal security for each of us. Modern processes of globalization can develop only if each country makes efforts to weave justice and truth into the core of legal system.

Keywords: *legal affairs, certification, untrue content, verification of untrue content*

1. INTRODUCTION

Legal affairs and their legal establishment and implementation are very important for the survival of the state and society. There are various types of legal affairs in the legal system of the Republic of Serbia that can be established for different reasons and between different entities, and hence the increased need for supervision of their establishment and implementation. Only those legal transactions that are established in a legal way, based on legally relevant facts, can be implemented and valid. All other legal transactions that are based on untrue facts will be invalid or null and void. It is of great interest to society to suppress activities that lead to invalid legal transactions, because their consequences can carry a great deal of danger and cause unfathomable consequences. These consequences can occur on property, but what is even more important for the object of the attack, can also have a person's life or some segment of it. The subject of research work is legal affairs and the influence of documents with untrue content on their establishment and realization, but also the introduction to the authentication of documents with untrue content. By the term legal affairs means declarations that produce some legal effect.

By the term document, means a written act on which some thoughts are recorded in a letter that provide information about facts. We divide documents into public and private. A public document is a document issued in a prescribed form by a authority within the limits of its jurisdiction, and a document issued in such a form by a company or an individual in the performance of a public service. Among them we include verdicts, decisions, permits, approvals, certificate, etc. There are also documents that are private. These are documents issued by an individual or a company that does not perform business on the basis of public authority. However, their probative value consists only in the fact that its issuer made the statement contained in the document. Private documents include: contracts, promissory notes, wills, etc. There must be truth in all this. Legal affairs, but also documents, whether public or private, cannot be valid if they are based on untruths or if they are false. In this sense, a distinction should be made between lies and untruths. Those two terms are not the same. A lie is just one type of untruth. If a person communicates wrong information, and then another person is convinced that the information is true and accurate, then we cannot say that a person is lying, but that he is telling a untruth. However, a person who lies, intentionally tells some incorrect information in order to mislead one or more people, knowing that the information he conveys is incorrect. When it comes to lying, there is always an intention to act fraudulently, that is, to mislead or deceive a person. In legal theory and practice, an opinion has been established that telling someone to tell a untruth is not offensive and there will be no criminal offense of insult, but telling someone to lie is a legally impermissible act.

2. LEGAL AFFAIRS

Under the term legal affairs can be considered a declaration of will that produces some legal effect. It cannot be any declaration of will, but a declaration originating from a person who has business capacity, who is free, in accordance with the law and social and moral norms. The will of a subject can be expressed in different ways, including explicit statements, but also tacit statements. By the term express declaration we mean the communication of will with words, while by the term tacit declaration of will we mean the communication of will by actions. The most common division of legal affairs is the division into unilateral and bilateral legal affairs, legal affairs between the living and in the event of death, burdensome and charitable, informal and formal legal affairs, causal and abstract legal affairs (Stanković, Vodinelić, 2007: 161-166). Unilateral legal transactions are transactions that consist of the expression of the will of only one party. The best example of this type of legal work is a will or a public promise of reward. Legal transactions that were created by the agreement of two wills are called bilateral legal transactions. Such deals are contracts of any type (lease, sale, gift, etc.). Legal transactions, for the conclusion of which no compensation is requested and no compensation is given for what is obtained, are called charitable legal transactions. In contrast to them, there are burdensome legal jobs, where a certain compensation is always given for what is obtained from such work. An example of the first deals is a gift contract, and an example of other deals is a sales contract. *Inter vivos* (legal affairs among the living) and *mortis causa* (legal affairs in case of death) are legal transactions that produce their legal effects during the lifetime of the creator of the transaction or after the death of the creator of the legal transaction. An ideal example of the first type of legal business is a contract of sale, while the most adequate example for *mortis causa* legal business is an inheritance contract. Depending on whether a special form of declaration of will is required for concluding a legal transaction, legal transactions are divided into formal and informal. Formal legal affairs are those in which the legislator prescribes a specific form of declaration of will. It can be either an explicit written declaration of will or a declaration of will before witnesses. When the legislator does not prescribe the manner of declaration of will, be it written, oral, without or with witnesses, then there will be informal legal affairs. According to the generally accepted rule, all affairs are mostly of an informal nature, except when it comes

to establishing a marriage, testament, etc. If it is clear from the content of the legal affairs whether both parties commit themselves and what the obligations of the other party are, there will be causal legal transactions, and if such information is missing, an abstract legal transaction has been established. For example, bills of exchange are pure abstract affairs, while contracts of sale or lease are the best examples of causal legal affairs. To establish any type of these businesses, certain documents are necessary, as well as their certification by notaries. By using documents with untrue content, legal affairs and their legality are in question. Insisting on verification of untrue content can lead to nullity or invalidation of legal transactions.

3. PREPARATION AND VERIFICATION OF DOCUMENTS

Since 2014, the Republic of Serbia has entrusted the certification of documents to notaries. Until then, verification was usually carried out by court and municipal authorities. Due to reasons of inefficiency, but also too many omissions in the work, but also due to the synchronization of the legal system of the Republic of Serbia with the legal system of the developed countries of the European Union, notaries were introduced into the legal system of the Republic of Serbia. According to the Law on Notaries, Article 2 "a notary is an expert in the field of law, appointed by the minister responsible for justice, who accepts declarations of will from the parties and gives them the necessary written form and issues documents that have the character of official documents, keeps originals of those documents and other entrusted documents, issues copies of documents, confirms facts, gives advice to the parties on issues that are the subject of his activity and undertakes other actions and performs other tasks specified by law. Due to further research needs, we will also state what the Law prescribes regarding notarial documents. "Notary documents are documents on legal affairs and statements made by notaries (notary records), records of legal and other actions performed or attended by notaries (notary records) and certificates of facts witnessed by notaries (notary records) certificates), non-public documents certified by notaries (notary solemnization), as well as non-public documents where a notary certified the signature, i.e. certified the authenticity of the transcript, translation or extract (notary certification)". All the above-mentioned documents can be subject to misuse, so the legal affairs based on such documents really needs greater protection. However, it should be emphasized that the subject of document abuse does not have to be only the certification of documents, but also the creation of documents, their falsification, changing their original content, etc. In the following part of the paper, we will also list examples of document abuse for a better understanding of the subject of our research.

4. INDUCTION TO VERIFY FALSE CONTENT AS A CRIMINAL OFFENSE

According to the currently valid Criminal Code of the Republic of Serbia, inducing the verification of untrue content is defined as a criminal offense against legal traffic in Article 358. certify anything untrue in the book that can serve as evidence in legal proceedings". This type of behavior is punishable by a prison sentence of three months to five years. In addition, the same penalty, i.e. a penalty of three to five years in prison, will also be imposed on a person who uses such a document, record or book in legal proceedings to exercise a right or avoid an obligation, even though he knows that they are untrue. For the existence of the first form of this criminal offense, it is necessary for the state body to be in error and certify something untrue in a document, record or book. The content to be verified must be intended for use in legal traffic. The most common way of committing this crime is the use of a falsified document, so in practice there is often a dilemma as to whether the criminal act of falsifying a document is committed or the criminal act of inducing one to certify untrue content, or whether there is a concurrence of acts. In most cases in practice, the judges took the position that there will be a criminal offense that is being investigated in this work, and not a criminal offense of falsifying a document.

If the inducement to verify untrue content was not done by misleading, but in some other way, this criminal offense would not exist, but there is incitement to the criminal offense of falsifying an official document. Attempting the criminal offense of inducing the authentication of untrue content is punishable and will exist if the document was not authenticated, but an official was misled to perform the authentication. On the subjective level, there must be intention.

4.1. Research and discussion on the criminal offense of inducing verification of untrue content

The criminal offense of inducing verification of untrue content was observed in the period from 2012 to 2021. More recent data on reports, accusations and convictions of this criminal offense are not available to the public. The data processed in the paper are taken from the Statistical Office of the Republic of Serbia and include adult perpetrators of criminal offenses in the territory of the Republic of Serbia. In the investigated ten-year period, there were a total of 5,570 persons reported for criminal offenses against of inducing verification of untrue content. The total number of accused persons was 2,198, while 1,835 of them were convicted. We can state that about 33% of the reported persons were convicted.

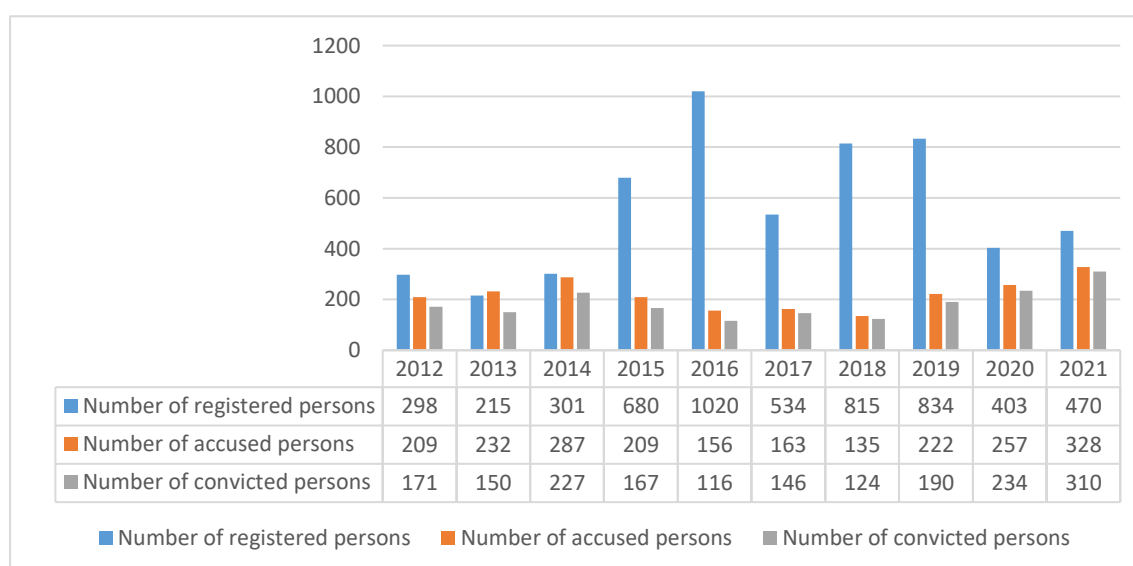


Figure 1: The total number of reported, accused and convicted adults for the criminal offense of inciting to verify untrue content in the period from 2012 to 2021 in the territory of the Republic of Serbia

(Source: Statistical Office of the Republic of Serbia, Bulletin)

In the first year of the investigated period, 57% of the reported persons received a conviction. When the analysis of the structure of criminal sanctions is carried out, we conclude that judges most often decide on conditional sentences, as many as 149 times, that is, in 87% of cases. Twenty-two short-term prison sentences were imposed in 2012 for the criminal offense of inducing to verify untrue content. The following year, out of 215 registered persons, 150 were convicted. Of those 150 convicted persons, 137 received a suspended sentence, and 13 received a short-term prison sentence. In 2014, 227 persons were convicted for the criminal offense under investigation. The total number of registered persons that year was 301. This year, the degree of crime loss was very low. Out of a total of 227 convicted persons, 191 were sentenced to a suspended sentence (84%), one to a fine and 35 to a prison sentence. Prison sentences in judicial practice were also of a very short-term this year. In 2015, 680 persons were reported, but one third of those persons were charged. This year, 167 people were convicted. In 148 cases, the judges decided that the adequate sanction was a suspended sentence.

For the first time, the punishment of house-arrest appears in two cases. No fine was imposed this year, and in 2015, the court imposed a prison sentence - 17 times. A record number of registered persons occurred in 2016. For the criminal offense of inducement to verify untrue content, limited investigations initiated proceedings against 1,020 adults. However, only 15% of the reported persons received the status of an accused person. This year, 116 people were sentenced for the criminal offense under investigation, 98 of them to a suspended sentence, 16 to a short-term prison sentence and two to house-arrest. The following year, in 2017, the number of reported persons was 534, and of that number, 27% were convicted. The structure of the imposed criminal sanctions was as follows: 14 prison sentences, three house-arrest sentences. Of the warning measures, a suspended sentence was imposed 128 times or in 88% of cases, and a court warning was issued only once. During 2018, 815 adults were reported for committing this criminal offense against legal traffic. At the end of the court proceedings, 124 of them received the verdict that they were guilty of committing the crime. Of these, in 84% of the cases, a suspended sentence, one fine and one house-arrest sentence were imposed, while in 18 cases, a prison sentence was imposed, but as always extremely short-term. In 2019, approximately the same number of persons were registered as in the previous year (834). Only 23% of that number were convicted. In 2019, judges imposed prison sentences in 18 cases for the criminal offense under investigation, and in 4 cases they decided on house-arrest. One fine was imposed on this occasion in 2019, while there were the most suspended sentences, as in every previous year, at 167. Of the 403 registered persons, 234 of them received a conviction for the criminal offense of inducing the verification of truthful content during 2020. When we look at the structure of the imposed criminal sanctions, we see that again the most dominant is a suspended sentence, which was imposed in 92% of cases. In 2020, a total of 13 people were sentenced to prison for this crime. On the same occasion, two fines and four house-arrest sentences were imposed. In the last year of the observed period, 310 adults were convicted for the investigated crime against legal traffic. 287 of them received a suspended sentence, and 18 of them received a prison sentence. There were no fines this year for the criminal offense of inducing the verification of untrue content, and 5 house arrest sentences were imposed. This year, too, the judges decided to impose the most conditional sentences and decided that this was an adequate sanction in as many as 93% of cases.

4.2. Review of court practice for the criminal offense of inducement to verify untrue content

A review of court practice is the best indicator of whether practice and theory match and how what the legislator has determined in the Criminal Code of the Republic of Serbia as a criminal offense of inducing the verification of untrue content is applied in the daily functioning of the courts. In addition, if there is a lack of understanding of the legal description of the criminal offense, examples from practice provide a clearer insight into which life situations the investigated criminal offense includes. According to the opinion of the Appellate Court from Kragujevac in the judgment KŽ.1 no. 3304/10 of 27.05.2010., the Court took the position that "by the judgment of the Municipal Court in Čajetina, the defendant P.B. is based on Art. 355 point. 2 of the Criminal Code, acquitted of the charge that he submitted a request to the Security Center in Bijeljina for the issuance of an identity card in the name of P.B, submitting to the same request, photographs and false evidence of his identity, and that he led authorized officials of the Security Center in Bijeljina to issue and certify his identity card in the name of P.B. on which there was his photograph, and then used the untrue public document in legal proceedings, thereby committing the criminal offense of inducing the attestation of untrue content from Art. 235 paragraph 2 in connection with paragraph 1 of the Criminal Code of RS (Article 358 paragraph 1 in connection with paragraph 1 of the Criminal Code ("Official Gazette", No. 72/09 of September 3, 2009)).

The judgment further states that "the criminal offense of inducing the certification of untrue content, according to paragraph 1 of Article 235 of the RS CC, would exist if the perpetrator misleads an official body into certifying something untrue in a document. In paragraph 2 of the same article, the use of a document in which untrue legally relevant facts are certified in the manner referred to in paragraph 1 is provided as a special criminal offense. In other words, the criminal offense referred to in paragraph 1 of Article 235 of the RS CC is the previous stage of the commission of the offense referred to in paragraph 2 of the same article. When the same person misleads an official body to certify something untrue in a document, and then uses it according to the principle of subsidiarity, he will be responsible for one criminal offense, where it is necessary to establish beyond doubt that it is the same person, since are two criminal acts that do not coincide if they are committed by the same person". In the end, "as in the specific case the first-instance court could not reliably determine the decisive fact (misleading the competent authority by the defendant), it was correct, bearing in mind that in case of doubt the decision must be made in favor of the defendant, it concluded that the defendant should to be acquitted of criminal charges". The Supreme Court passed judgment Kzz 138/2021 of February 17, 2021, which was adopted at the session of the Criminal Division on March 22, 2021, and concerns the attempted criminal offense under investigation. "With the Request for the protection of legality, the defense attorney points out that the final verdicts violated the criminal law from Article 439, item 2) of the CC, because the defendant was declared guilty of a completed criminal offense from Article 358, paragraph 1, of the CC, although there is no finding in the sentence that in the specific case the authority certified any document. The criminal offense of inducing verification of untrue content referred to in Article 358, paragraph 1 of the CC is completed when the authority verifies a document, record or book, and if this has not happened, and the act of inducing verification by misleading is taken, there will be a punishable offense attempt. From the factual description of the sentence, it does not follow that the Police Department certified a duplicate driver's license, so the criminal offense in question remained an attempt, and according to the correct application of the law, the defendant had to be declared guilty of an attempted criminal offense, and not of a completed criminal offense. The Supreme Court adopted as a well-founded request for the protection of the legality of the defendant and changed the judgments regarding the legal assessment of the crime, by legally qualifying the actions of the defendant as a criminal offense of inducing the verification of untrue content from Article 358, paragraph 1 of the CC in an attempt, in relation to Article 30 of the CC, and made a decision in terms of Article 492, paragraph 1, item 2) of the CC." The Supreme Court in the judgment Kzz 176/2019 of 27.02.2019. rejected as unfounded the request for the protection of the legality of the defendant AA, submitted against the judgments of the Second Court in Belgrade 10K No. 1310/17 dated 03.21.2018. and the High Court in Belgrade Kž1 No. 390/18 dated November 21, 2018. year as unfounded. "By the verdict of the Second Court in Belgrade 10K No. 1310/17 of March 21, 2018. year, the defendant AA was found guilty of the criminal offense of inducing the certification of untrue content from Article 358, paragraph 1 of the Criminal Code, for which he was sentenced to three months' imprisonment. By the same verdict, on the basis of Article 87 of the Criminal Code, the security measure of confiscation of the item - the travel document of the Republic of Serbia - was pronounced against the defendant. AA's defense attorneys in the request for protection of legality point to a violation of the criminal law from Article 439, item 1) of the Criminal Code, by pointing out that the actions of the defendant cannot be qualified as the actions of committing a criminal offense, leading to the verification of untrue content from Article 358, paragraph 1, of the Criminal Code, given that the object of the commission of this criminal offense must be a false document or an original document with false information, and in the specific case the document in question is neither false, nor did it contain any false information, which is why, according to the defenders' position, his actions have the characteristics of a misdemeanor from Article 50,

paragraph 1, item 2 of the Law on Travel Documents, because the defendant in the specific case used someone else's travel document as his own, which is a sign of a misdemeanor, not a criminal act. The Supreme Court considers the stated claims for protection of the legality of the defendant's attorneys to be unfounded for the following reasons: The offense referred to in Article 50, paragraph 1, point 2 of the Law on Travel Documents is committed by a person who gives his travel document to another person to use it or uses someone else's travel document. Therefore, the mentioned Law does not prescribe misleading the border police to certify in a document anything untrue that can serve as evidence in legal proceedings, and in this particular case it follows from the sentence of the final verdict that the defendant misled the border police to certify in the document anything untrue in the way that at the road border crossing Horgoš, when leaving the Republic of Serbia, he legitimized himself with someone else's travel document of the Republic of Serbia in the name of BB, which is a legal feature of the criminal offense of inducing the certification of untrue content from Article 358, paragraph 1 of the CC, for which the defendant was declared guilty".

5. CONCLUSION

Due to the increasing level of development of society, technique and technology, opportunities for falsification, cheating, manipulation, lying, the legal system of every country, including the Republic of Serbia, is facing a great challenge. On the one hand, it is necessary to create legal security in the country, to protect its citizens as much as possible from attacks and abuses of any kind, but on the other hand, to threaten both citizens and foreigners and present them with legal sanctions if they decide to any form of manipulative behavior in legal affairs. The state does everything in its power, but all of us as responsible citizens, friends, neighbors, acquaintances, and finally people should contribute to the suppression of such phenomena. By amending the legislative regulations, the state tries to keep pace with developed countries, but as always, the implementation of these regulations hinders progress. The paper presents data related to court practice and the investigated crime. It is easy to notice that almost all perpetrators of a criminal offense are sentenced to a suspended sentence for inducing them to verify untrue content. This criminal sanction absolutely dominates and always takes part in over 85% of all pronounced criminal sanctions. In second place are short-term criminal prison sentences which, with their duration of only a few months, cannot help and contribute to the resocialization of criminals. That is why the authors of the paper appeal to change the way of thinking and understanding that only a suspended sentence is a suitable criminal sanction and that judges take into consideration other types of criminal sanctions that can better achieve resocialization. Also, we think that the time has finally come to emulate the developed countries of the world and replace all short-term prison sentences with fines of larger amounts. The investigated crime is a crime of high social danger, because just one document with untrue content that can be used several times in legal transactions can cause great damage, both material and non-material. Material damage is of a property nature and can be compensated, while other types of damage that can be caused by this type of crime sometimes cannot have a proportional compensation. Let's just remember an example that recently happened in our country, which attracted a lot of public attention. The person was declared insane with the help of this criminal act, and the documents were used to obtain custody of two children. Untruth and lies are not good in whatever sphere of life and work they appear. They are not suitable for conducting legal traffic and they are not good for the functioning of society either. In the end, we will use the words of the respected Patriarch Pavle to open the minds of all readers of this work: "Truth, justice, love and goodness, have a being, an existence, an essence. On the other hand, lies, untruth, injustice, violence and hatred have no existence in themselves. Their entire existence is in the denial of truth, justice and love. There is no lie without truth, but there is truth without lies."

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PROFESSIONAL BURNOUT AMONG THE NURSES: ANALYSIS OF THE EXAMPLE AT HOSPITALS IN LATVIA

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ABSTRACT

In the face of growing human resource shortages, the management of human capital plays an important role in nursing. The number of nurses per 1000 inhabitants in Latvia is on average twice as low as in the European Union (OECD, 2022). The proportion of nurses above the age of 45 is 71.8%. Additionally, 25% of nurses are of pre-retirement age, but human resources are not technologically simulated. Patient care is a helping profession characterised by direct communication with people in crisis situations in hospital healthcare. The nursing profession is thus associated with heightened personal risks to nurses' psychoemotional well-being. Professional burnout is a complex syndrome of emotional exhaustion, depersonalisation, and reduction of personal accomplishment (Maslach, Schaufeli, Bakker). Several studies have shown that the working environment in inpatient care significantly contributes to nursing burnout. Research has associated nurse burnout with reduced care performance and quality. The aim of the study is to analyse the levels of nurse burnout syndrome and the associated experience in nursing clinical practice. The study uses the Maslach Burnout Inventory (MBI) as an empirical research method.

Keywords: burnout, human resource management, nursing, well - being

1. INTRODUCTION

Nowadays technology shifts to be more available and by that means reduces as an origin of competitive advantage. Human capital is much more challenging to imitate for competitors (Macey et.al., 2009, Turlais, 2020). The central resource of each organisation is the people. Organisation is a moral and social phenomenon – without people, the existence of organisation becomes meaningless (Drucker, 2006). Management is about people - human capital. In today's context, the impact of psychosocial factors in the work environment on employee health and overall quality of life (well-being) is increasing. The impact of the factors most significantly affects helping professions. These professions are responsible for providing help and support to people especially in crisis (health, well-being, disorders). They are characterised by intensive, direct, emotional, cognitive, and physically close-distance communication (Hawkins, Shohet, 2006). Thus, the term helping professions refers to professions based on interpersonal relationships. Nurse is classified as a helping profession. The nursing paradigm (in the context of the article's research topic) consists of the following key concepts:

- person (client, nurse),
- health,
- environment (hospital, outpatient care facility, home care),
- the process of care (in the context of the article, the nurse's health self-care, behaviour).

Nursing is a multidimensional and holistic process. In contemporary nursing theories, health is defined as well-being, a universal concept that symbolises the process of personal development towards self-improvement, including the professional development of the nurse. Health depends on a person's capacity for self-care and intrinsic motivation. Peplau H. *Interpersonal Relations in Nursing Theory* is founded on the insight that health is directly related to the external environment, above all to interpersonal relationships. Peplau is building on the experience of hospital nursing (Peplau, 1997; Callaway, 2004). Orem D. notes the need to prevent conditions that may be damaging to human health, well-being, the necessity to stimulate the realisation of one's opportunities in the social environment (i.e. the work environment). An important aim of Orem's D. *The Self-Care Deficit Nursing Theory* is to promote the development of nurse's personal resources and self-care capacity (Fawcett, 2001). In the context of management theory, it is important to note that the culture of the organisation (hospital), the internal climate (interpersonal relationships with clients, colleagues, management) is the professional external environment of nurses. The term "health culture" exists in management theories and research. It is a positive culture that reduces psycho-emotional risks. The culture of an organisation is compared to "the personality", the "soul of the organisation" (Dubkevics, 2019). The set of conditions in the external environment influences the psycho-emotional risks of nurses. The most relevant are environmental diversity, complex situations, high compliance situations, limited opportunities, insufficient pay, which result in emotional, cognitive and physical overloads. The problem is aggravated by insufficient resources of nurses in health care in Latvia. Ultimately, the nursing profession is at high risk of chronic stress and burnout syndrome.

2. THEORETICAL BACKGROUND

Burnout syndrome is considered to be one of the major health problems of the 21st century. In the research field, burnout is most often associated with the helping and feminist professions. The term burnout is introduced by Freudenberger H.. Freudenberger H. defines burnout as a loss of motivation to achieve desired work goals and work relationships, with a price to be paid for achievements, including personal well-being, health impairments (Maslach, Leiter, 2016). The issue of burnout syndrome is a broad thematic issue: related to it are the concepts of the internal environment of the organisation (the culture, climate, leadership and management), the motivation, work/job engagement, concepts of work stress. In this study, the authors address these issues in the context of the theme. Job burnout is response to chronic emotional and interpersonal stressors on the job and is defined by three dimensions – exhaustion, cynicism, sense of inefficacy (Maslach, 2003). Maslach C., Schaufeli W. and Leiter M. define dimensions of burnout as follows:

- 1) Exhaustion – the basic individual dimension of burnout, which refers to being depleted of one's own physical and emotional resources. Emotional exhaustion is characterized by emotional overload, unrealistic expectations, and disappointment, indicating significant disturbances in affective well-being. Compassion fatigue or secondary traumatic stress also characterizes emotional exhaustion. Compassion fatigue was discovered by studying burnout syndrome specifically in nurses. Smith P. described it as a state of extreme fatigue that arises from caring for people who experience pain and suffering. There are studies that demonstrate a higher risk of emotional exhaustion when caring for seriously ill patients with chronic progressive diseases and patients after traumatic events - stress (Circenis, 2013).
- 2) Cynicism (depersonalization) – the interpersonal dimensional, which is related to excessive detachment from various aspects of a job. Maslach C. characterizes it as an indifferent attitude towards work, patients, and colleagues. Patients are perceived as objects (manipulation, procedure) (Maslach, Leiter, 2016).

- 3) Inefficacy – the self-evaluation dimension (feeling of incompetence, lack of achievement and productivity at work). The self-evaluation is influenced by the assessments of both patients and colleagues, as well as leaders (Maslach, Schaufeli and Leiter, 2001).

Burnout is defined as the result of chronic work stress. Lazarus R. and Folkman S. define stress as any situation in which internal or external demands, or both together, exceed the adaptive capacity of an individual or group. Stress is most often caused by everyday events, trivialities, and related conflicts (Folkman, Lazarus, 1980). The relationship between the external environment and health in the context of stress is discussed in Neuman B. *System Model-Nursing Theory*. All stress is based on overload – emotional, intellectual and physical. Overloads (their quantity, duration) overwhelm a person's self-protective levels and upset the balance between the internal and external environment (the system). As a result, individual self-care capacities are reduced. The ultimate consequence is chronic work stress and burnout. Neuman B. introduces the concept of the created environment, which unconsciously exists within each person and is activated when there is a threat to the balance of the internal environment. Perception is adjusted to increase subjective well-being while unconsciously ignoring the reality of the situation. In this way, it is possible to maintain the balance of the system – the “normal” state – even if only at an illusory level. The created environment is a kind of reserve resource for self-defence. Under chronic (prolonged) and severe stress, this protective line is not sufficiently effective. The theory as a whole focuses on reducing stress (overload) in the broad sense of the word and in the field of labour relations – the nursing practice environment. Stress is the result of emotional, cognitive, physical overload (Neuman, 1989). Accordingly, occupational stress leads to burnout. In the two-dimensional (activity and pleasant) model of subjective well-being, burnout is characterised by low activity and an unpleasant state: depressed, lethargic, fatigued. Job engagement, on the other hand, is characterised by high levels of activity and pleasantness (Bakker, Oerlemans, 2011). Work/job engagement theories (Kahn, 1990; Schaufeli, Bakker, Salanova, 2006) and burnout concepts (Maslach, Schaufeli, Leiter, 2001) describe job engagement as a positive counterpart to burnout. Schaufeli's W. work engagement theory emphasises the psychological aspects of engagement and divides it into three dimensions:

- Vigor – a high level of energy and mental resilience in the performance of work tasks,
- Dedication – engagement characterized by pride, inspiration, enthusiasm, a sense of the importance of one's work, high intrinsic motivation for challenges,
- Absorption – being fully focused on one's work (time passes quickly) (Schaufeli, Bakker and Salanova, 2006).

The research literature distinguishes between two types of employee disengagement:

- Non engagement employees – passive type of disengagement. Employees do just enough to keep their jobs. These employees are essentially checked out.
- Active disengagement – these employees acting out their unhappiness and disengagement to other colleagues (Byrne, 2015).

The core dimensions of work engagement (vigor, dedication, absorption) are negatively correlated with the dimensions of burnout (exhaustion, cynicism, inefficacy).

Burnout is characterised by low engagement and intrinsic motivation. Intrinsic motivation depends on employees' subjective interpretation of work environment factors – the belief that these actions and behaviours are self-determined (Ryan, Deci, 2001). Work/job engagement is social identity and psychological identification with one's social role without losing touch with the self. Engagement is characterised by high energy levels, psychological resilience, and a sense of personal significance (Maslach, Schaufeli, Leiter, 2001).

In the context of the mentioned problems, burnout prevention is particularly relevant, primarily as an internal environment, organisation culture, climate and leadership issue. According to Schein E. and Denison D., every organisation - system is the result of dynamic interactions, and its leaders and employees are both architects and "hostage" of this system (Schein, 2010; Denison, 1996). In this regard, it is important for organisations to recognize professional burnout among their personnel and implement measures to reduce it.

3. EMPIRICAL RESULTS

3.1. Materials and methods

The aim of the research is to analyse the levels of nurse burnout syndrome and the associated experience in nursing clinical practice.

Research questions:

- 1) Is there a statistically significant correlation between nurses working in therapy and intensive therapy units and burnout dimensions.
- 2) Is there a statistically significant correlation between nursing workload and burnout dimensions.

Research hypothesis: there is a statistically significant correlation between nurses' professional burnout dimensions. Research theoretical and methodological basis: the theoretical framework of the study is based on Maslach's C. burnout theory, Kahn's W.A. and Schaufeli's W.B. theory of job/work engagement. Empirically, the study is based on an updated version of MBI-HSS by Maslach C., Jackson S.E., Leiter M.P in 1996 acc. to Aispure S., 2012 (Circenis, 2013) and was used here to operationalize the three dimensions of occupational burnout: emotional exhaustion (EE, nine items), depersonalization (DP, five items), and personal accomplishment (PA, eight items). The standardised questionnaire is composed of 22 items and answered with a 7-point Likert scale (0 = never, 6 = every day). Emotional exhaustion (EE) subscale is designed to identify emotional exhaustion and overwork caused by work, the depersonalization (DP) subscale measures an impersonal and callous attitude towards care recipients, while the personal accomplishment (PA) subscale is intended to determine feelings of competence and successfulness. Higher scores in the emotional exhaustion and depersonalization subscales indicate a more pronounced burnout syndrome, while lower scores in the personal accomplishment subscale indicate a more pronounced burnout syndrome. Subtotals of each dimension are computed separately by summing the corresponding items. For the EE and DP dimensions, higher scores indicate more high burnout level, but the PA dimension does the opposite. Scores of ≥ 27 on EE, ≥ 10 on DP, or ≤ 33 on PA were indicative of high burnout for the associated dimension (Maslach et al., 1996). Research period: survey of nurses in the public hospital sector in Latvia was conducted in January to March 2023.

Research limitations:

- 1) The study covers nurses working in the public hospital sector.
- 2) The study looks at organisations as a whole, without analysing individual hospitals.
- 3) Time limitation (research period).

3.2. Data collection and analysis

According to data from the National Health Service of the Republic of Latvia as of January 1, 2023, there were 5252 nurses working in Latvian public hospital sector (National Health Service Republic of Latvia, 2023). A total of 390 nurses from Latvian hospitals completed the MBI-HSS, which means that the sampling reliability is 0.05, and therefore the results of the study are statistically significant (Kristapsone, 2020). To evaluate the empirical distribution of the obtained data in relation to the normal distribution, the Kolmogorov-Smirnov coefficient

was calculated for the entire sample, and as a result, it was found that the scales do not fit the normal distribution ($\text{Sig} < 0.05$). Therefore, the Spearman's correlation coefficient was used to determine the correlation in the entire sample. The following indicators were calculated during data processing: arithmetic means (M), standard deviations (SD), minimum and maximum scores of the scales, Spearman's correlation coefficients, Pearson's correlation coefficients, Analysis of Variance and t-test. Internal reliability of each subscale of MBI was calculated using Cronbach's alpha coefficient. For emotional exhaustion subscale $\alpha = 0.92$, for depersonalization subscale $\alpha = 0.78$, for personal accomplishment subscale $\alpha = 0.75$, this indicates a sufficient level of internal consistency.

Participant characteristics:

Of the 390 nurses who completed the study, several unit types (such as surgery, therapy, and pediatrics) were represented. Table 1 shows the percentages of gender, age, number of workplaces, and job experience for these nurses.

Participant characteristics	Percentages (%)	Participant characteristics	Percentages (%)
Gender		Number of workplaces	
Male	1	1	67.4
Female	99	≥ 1	32.6
Age (years)		Job experience (years)	
≤ 25	3.4	≤ 10	23.1
26-35	13.3	11-20	17.9
36-45	21.5	21-30	25.1
46-55	40.5	≥ 30	33.8
56-65	20		
≥ 65	1.3		

*Table 1: Percentages of demographic and work-related characteristics of the nurses (n = 390)
(Source: Produced by the authors)*

Respondents' education level: secondary professional nurse education 19.2% of respondents; first-level professional higher nurse education 15.6 %; bachelor's degree in nursing 53.3%; master's degree in nursing 11.8% of respondents. As shown in Table 1, there is a trend of ageing among nurses, as 40.5% of the respondents are aged between 45-55 years. The results of the research also indicate that the majority of nurses work overtime, as 43.6% of the surveyed nurses work up to 40 hours per week, 44.9% work between 40-60 hours, and 11.5% work more than 60 hours. Analysing the number of patients cared for by a nurse during one working day, it can be noted that only 17.7% of nurses care for up to 10 patients, 12.6% care for 11-15 patients, 18.2% care for 16-20 patients, while 35.9% care for more than 20 patients. Additionally, 15.6% of the respondents indicated that they care for a different number of patients. These results confirm a high workload for nurses in Latvian hospitals.

3.2.1. Comparison of research indicators across the entire sample

The results of the study indicate a low level of emotional exhaustion in 14.4% of nurses, a moderate level in 21.0%, and a high level in 64.6% of the surveyed nurses. Levels of depersonalization among nurses: analysis of scores reveals 22.8% with low, 32.8% with moderate, and 44.4% with high level. Reduced work ability is reported by 46.9% of nurses, while 36.2% have a moderate level, and 16.9% have good work performance and professional achievements. Table 2 shows the descriptive statistics indicators for MBI Subscales.

	Emotional exhaustion	Depersonalization	Personal accomplishment
Minimum scores	1	1	1
Maximum scores	54	27	47
Mean	27.62	10.17	30.66
SD	10.35	5.52	5.90

Table 2: Descriptive statistics indicators for the MBI subscales (n = 390)

(Source: Produced by the authors)

The arithmetic mean indicates a high (≥ 27) level of emotional exhaustion, a high (≥ 10) level of depersonalization, and a high (≤ 33) level of personal accomplishment. To determine if there is a correlation between MBI subscales in the entire sample, Spearman's correlation coefficient was calculated (Table 3).

MBI Subscales/ Spearman's correlation coefficients	Emotional exhaustion		Depersonalization		Personal accomplishment	
	rs	p	rs	p	rs	p
Emotional exhaustion			0.72	0.00	-0.52	0.00
Depersonalization	0.72	0.00			-0.40	0.00
Personal accomplishment	-0.52	0.00	-0.40	0.00		

Table 3: Spearman's correlation coefficients for the MBI subscales (n = 390)

(Source: Produced by the authors)

It was found that the negative correlation ($r_s = -0.52$) between emotional exhaustion and personal accomplishment subscales is statistically significant. Similarly, the negative correlation between depersonalization and personal accomplishment ($r_s = -0.40$) is also statistically significant, indicating that the higher the emotional exhaustion scores, the more pronounced the devaluation of personal accomplishment. A statistically significant, strong, positive correlation ($r_s = 0.72$) exists between the emotional exhaustion and depersonalization subscales, indicating that as emotional exhaustion increases, depersonalization and detachment from colleagues and patients also increase.

3.2.2. Comparison of MBI scores among nurses in therapy and intensive therapy units

When comparing the average scores of MBI subscales between intensive therapy unit nurses and therapy unit nurses, slightly higher scores were observed for the therapy unit nurses (Table 4).

MBI Subscales	Unit types	N	Mean	SD
Emotional exhaustion	Intensive therapy	30	26.93	11.86
	Therapy	29	29.79	10.11
Depersonalization	Intensive therapy	30	8.87	5.64
	Therapy	29	12.00	5.53
Personal accomplishment	Intensive therapy	30	32.60	5.77
	Therapy	29	30.07	6.13

Table 4: Means and Standard Deviations for the MBI Subscales for nurses who work at Intensive Therapy and Therapy Units (n = 59)

(Source: Produced by the authors)

To investigate whether there are correlations between MBI subscales in these groups of nurses, Pearson's correlation coefficient was calculated. A positive statistically significant correlation was found between emotional exhaustion and depersonalization ($r=0.79$) in the intensive therapy unit nurses group, indicating that as emotional exhaustion increases, depersonalization and alienation from colleagues and patients intensify for these nurses. Similarly, a moderately strong negative correlation ($r=-0.42$) was found between depersonalization and personal accomplishment in this group of nurses, indicating that as depersonalization increases, personal accomplishment is devalued for nurses working in intensive therapy. Regarding the therapy unit nurses, it was found that in this group of nurses, there is a positive statistically significant correlation between emotional exhaustion and depersonalization ($r=0.69$), indicating that nurses in these units also experience increased depersonalization and disengagement from colleagues and patients with increasing emotional exhaustion. Similarly, a moderately strong negative correlation ($r=-0.46$) was observed between depersonalization and personal accomplishment in this group of nurses. There is also a moderately strong negative correlation ($r=-0.50$) between emotional exhaustion and personal accomplishment. These MBI subscale scores indicate that increasing depersonalization and emotional exhaustion among nurses in therapy units leads to a decrease in personal accomplishment. Continuing the analysis of MBI subscale scores for these units' nurses, a t-test was used. It was found that there is a statistically significant difference between these nurse groups on the depersonalization subscale ($t = -2.153$, $p=0.036$), with nurses in the intensive therapy units showing a mean score of 8.87 on the depersonalization subscale, while nurses in the therapy units showing a mean score of 12. There were no statistically significant differences in the level of personal accomplishment between the mentioned nurse groups ($p=0.108$), however, the mean score on the personal accomplishment subscale was 32.60 for nurses in the intensive therapy units, and 30.07 for nurses in the therapy units (Table 4). In general, the study results (Pearson's correlation coefficient and t-test) indicate that the burnout level of nurses in therapy units is evaluated higher than the burnout level of nurses in intensive care units.

3.2.3. Comparison of MBI scores with the number of hours worked, work experience, and number of patients

To determine whether there is a relationship between MBI subscales and hours worked, Spearman's correlation coefficient and Analysis of Variance were calculated. The correlation between MBI subscales and number of hours worked revealed a weak but statistically significant positive correlation between personal accomplishment and the number of hours worked per week, with $r_s = 0.13$, indicating that an increase in the number of hours worked is associated with an increase in personal accomplishment devaluation. Analysis of Variance showed the influence of the number of hours worked on personal accomplishment at the trend level. No other significant relationships were found between the number of hours worked, work experience, number of patients, and MBI subscales.

4. CONCLUSION

The research results indicate a high level of burnout among the respondents - emotional exhaustion, depersonalization, and personal accomplishment devaluation are at a high level. The research hypothesis is confirmed: there is a statistically significant correlation between nurses' professional burnout dimensions. As the level of emotional exhaustion increases, so does the level of personal accomplishment devaluation, as well as the intensification of depersonalization and detachment from colleagues and patients. The results of the research provide a confirming answer to the first research question that there is a statistically significant correlation between nurses working in therapy and intensive therapy units and burnout dimensions. The level of burnout is higher for nurses in the therapy units.

This can be partially explained by the specific nature of the work of nurses in the therapy units, who face unresolved or partially resolved problems and have longer communication with patients, with the result not immediately visible, compared to the intensive therapy units, where communication is brief, and the result is visible earlier. The results of the research provide a partially confirming answer to the second research question, that there is a significant correlation between nursing workload and burnout dimensions, as there is a positive relationship between personal accomplishment devaluation and the number of hours worked per week. Partial workload is associated with nurses working in multiple workplaces as well as in a single workplace. The study did not confirm a correlation between age, greater professional experience and lower burnout levels. Separate studies on burnout syndrome in educators also do not confirm a correlation between age, greater professional experience, and lower burnout levels (Zakrizevska, 2015). Long-term work stress can go unnoticed in daily life (Allen, 2006). Just like burnout. The methodology and instrument used in the research only confirm subjective perception, and thus the results of the research are of limited nature. A broader contextual analysis of burnout syndrome should be researched, and questions about organisational culture, climate, leadership, motivation, job/work engagement, and work stress should be included in studies.

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RECONSIDERATION OF EARLIER RESEARCH OF NEW PUBLIC MANAGEMENT AND ENTREPRENEUR STATE AND ITS TODAY VALUE

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ABSTRACT

In the last three decades, public administration was struck by a wave of unprecedented reforms. The traditional model has come under the strike of strong criticism by citizens and the private sector, as well as theorists of governance. Basically, the reform lies upon the conclusion that the state has become too large and with too many responsibilities, and that the market offers superior mechanisms for more efficient delivery of public goods - and services. Therefore, political leaders found themselves under pressure from the public and the industry to increase the efficiency of government, reduce government spending and taxes, while maintaining a high level of public social services. Programs of public administration reform which have made a strong impact on the international administrative policies are rooted in Westminster systems (Australia, New Zealand, UK and Canada) and the United States, countries which are rightly considered the main representatives of the "New public management". A wave of administrative reforms actually started in the United Kingdom when in this country, a radical change was made in the program and methods of government activity and its administration so as to reduce the role of the government in economic life, which led to a substantial consideration of the practice and concept of the existing system of public administration.

Keywords: *public management, public sector, reinventing of government, entrepreneurial country*

1. FROM TRADITIONAL ADMINISTRATION TOWARDS A NEW PUBLIC MANAGEMENT

The reforms quickly spread in other countries, with the support and guidance of Bretton wood institutions that propagated the new public management, in order to reduce the role of the state in the production of goods and provision of service sit. The non-existence of a state government that achieves satisfactory results was - considered a barrier to participation in the global economy, so the administrative reforms should provide a new system for the state, which would allow it to be properly globalized. The starting point was the premise that a strong, democratic state and globalization go together (Group of authors, 2002/03). Reforms included in this approach were aimed at reducing the number of administrative bodies and employees in the public administration, the elimination of the role of the state as a producer of goods and provider of services, promotion of privatization, deregulation and decentralization, and fundamental changes in the nature of business of the government. A policy that was initially put the emphasis on maintaining macro-economic stability, stopping inflation, reducing budget deficits and public spending turned into a campaign for "reducing" and diminishing the state organization,

and thus its impact on the economy and society. The huge costs of social programs in Western Europe questioned the significance and sustainability of the welfare state that had been promoted and that had to be redesigned. The need to improve efficiency in the public sector and to reduce public expenditure was accompanied by a package of measures which had the character of the introduction of market mechanisms in the public sector (Vujaković Klincov T., Ristić K., (2015)). Although success varies from country to country, these principles, however, can be regarded as the world trend. This trend was probably influenced by the value system whose construction was significantly impacted by multilateral organizations, the media and civil society. Improvement of human resources in the public sector and the strengthening of institutional capacities of administration are not given equal attention as the liberalization of the economy. Experience also points out the limitations of such a strategy. It has become obvious that macroeconomic programs are not sufficient to solve the fundamental problems of public administration. Moreover, the net effect of the adjustment policies was the neglect and weakening of strategic institutions, primarily of personnel systems in public administration, particularly in countries where the process of "state-building" is not over yet. The applicability of different models of the state raised the question whether the new global paradigm of public management is being developed: New Public Management and the so-called "reinventing" government are the exact tools used in the process of improving public sector efficiency and reduction of costs "

2. NEW ADMINISTRATIVE PUBLIC SECTOR ENVIRONMENT

A hundred years ago the word 'bureaucracy' had a positive connotation: it signified the rational and advanced doctrine, i.e. the type of organization that was supposed to replace the arbitrary power of autocratic regimes. Bureaucracy introduced the same logic in state government, as the continuous production line introduced in factories. Hierarchical management and functional specialization, made it possible to effectively undertake such complex tasks. The bureaucratic model has functioned for a long time because it disabled basic problems that people then wanted to be resolved. It provided security from unemployment, which was characteristic of the previous period, stability, trust in the fairness and impartiality of the administration, standardized services that are suitable for all, which people needed and which they expected from the industrial era. Today, it does not exist anymore. We live in a time of global market which represents an enormous competitive pressure on economic institutions. We live in an information society in which citizens obtain information almost as quickly as their politicians. We live in a knowledge-based economy in which educated workers do not put up with being commanded and demand autonomy in their work. Today, consumers are educated and aware of the quality standards of products and services and choices they have. In such an environment, bureaucratic organizations developed during the industrial era, both public and private, are letting us down. Today, organizations are turning to the specific needs of the consumer, offering a wide variety of non-standardized services. They guide consultation and incentives, which gives employees a sense of control, and even of "ownership". They develop an approach that would rather "empower" citizens, than to simply "serve" them, by giving them right and the ability to participate in the process, not just passively use services (Vujakovic Klincov T., Ristic K., (2015)). "Empowerment" of citizens is a central motif in the managerial - doctrine. The hypothesis is that citizens are "damaged" by bureaucratic rules that limit choices and access to quality services. Moreover, it is assumed that the privatization, "the foreign supply" of public services and de-bureaucratization lead not only to greater satisfaction of citizens/consumers, but also to greater freedom and fuller democracy. In other words, "managerism" in terms of more efficient, entrepreneurial and results-oriented public sector management, opposes to administration bounded by rules (Papaioannou, T., 2020.). Today, most state institutions still perform very complex tasks in a competitive environment that is rapidly changing, with

consumers who demand quality and choice. In their iconic book "Reinventing government", David Osborne and Ted Gaebler stress out the following (Group of authors, 2002/03): "In a sense, this is a symptom of progress - a devastating crash that occurs when a new reality is faced with old institutions. Our information technology and our knowledge economy give us a chance to do things we never dreamed of fifty years ago. However, to take advantage of this opportunity, we need to clear out the ruins of our institutions from the industrial era and to build new ones. The origins of an activist, bureaucratic state, are practically the phenomenon of the twentieth century. The characteristics of the bureaucratic state were clearly, under the strong influence of Woodrow Wilson, defined by Max Weber in year 1920:

- 1) there is a clear separation between politics and administration, and thus the clear role of political leaders (mostly of elected ones) and government officials (usually named)
- 2) administration is to be permanent and predictable, and should function on the basis of written, unambiguous rules
- 3) civil servants are employed on the basis of qualifications and are trained professionals
- 4) the organization reflects the functional distribution of the workload and the hierarchical arrangement of tasks and personnel
- 5) the funds belong to the organization, not individuals who work in the organization
- 6) the main motivation is a sense of duty or of public interest, that transcends personal or organizational interests.

The perfecting of the traditional model of public administration came by applying the ideas of "scientific management" based on the private sector, that have introduced effective operational methods based on the standardization of tasks, the principle of "one best way" to adjust the staff to the assignments and system anticontrol of tasks, processes and people. These principles have easily adapted to the bureaucratic structure. Supplement to the traditional model was the application of knowledge in social psychology, through the approach based on "interpersonal relations-". (Papaioannou, T., 2020.). It is often compared with the approach of scientific management, but in practice, it scored higher efficiency in performing tasks, while paying attention to the need for motivation of workers rather than controlling and directing them. As an argument in favor of an activist state model there was the fact that state intervention was necessary for correcting the shortcomings and failures of the market. Level of control and state intervention varied considerably in practice: to the complete state ownership and market allocation. The decisive role was played by strong state bureaucracy. This activist model has been criticized by the traditional model of state bureaucracy and the government's inability to do its job properly. While the welfare state justified itself by the need to remove the lacks of the market, the predominance of the above stated characteristics has led to a critical situation that requires the rectification of failures in the administration of the state.

- 1) The Irresponsible state, whose abundant interventions limited the freedom of people to deal with their own affairs, developed a dependency instead of independence;
- 2) Excessive state, where government has taken on too many powers, could not accomplish them efficiently and effectively;
- 3) State of private interests, where the elite and the privileged groups exploited the opportunities that were offered by government jobs to meet their interests and maximize revenues.

The combination of criticism (inefficient bureaucracy and defective nature of activist government) produced a model of reform called "new public management". This model of reform is based on the assumption that large state administrations are inherently defective and useless, and that the market is better equipped than the state to provide most goods and services.

Radical changes needed for bringing a transformed and entrepreneurial model of public management are implemented by the following:

- 1) Restructuring and reduction of the public sector, particularly by privatization,
- 2) Reorganization and "thinning" of the central public services,
- 3) The introduction of competition in the remaining public services, by use of internal markets, and contracting the provision of public services with the private sector, and
- 4) Improving the efficiency by realizing the concept of "value for money" by management based on the results achieved and audit of performance.

The new type of public management is characterized by:

- 1) The separation of the strategic policy from operational management,
- 2) Concern for the results, not the process and procedures,
- 3) Orientation towards the needs of citizens, and not the interests of the organization or bureaucrats,
- 4) Withdrawal from the area of direct service provision in favor of the role of "steering" or "empowerment", and
- 5) Altered, entrepreneurial management culture.

2.1. Birth of entrepreneurial state

A common thread for the solution of problems of governance was not hard to find: it was necessary to "re-invent" the mode of government activities in all segments and integrate the elements of a new organizational culture, primarily of entrepreneurial mentality. Most entrepreneurial governments encourage competition among providers of services:

- They "empower" citizens by transferring control from the hands of the bureaucracy into the hands of society,
- They assess the success of the work of their organizations by focusing is on the results achieved, rather than on resources used,
- They are guided by the results and their mission, not by rules and regulations,
- They define their clients as "customers" and offer them a choice, for example, between different schools and educational programs,
- They prevent problems rather than react when they occur,
- They decentralize jurisdiction by developing participation,
- They prefer market mechanisms to bureaucratic ones
- They do not focus on self-provision of public services, but on catalyzation of all sectors - public, private and voluntary - into action, in order to solve the problems of the community.

The government and the company are completely different institutions. Business leaders are guided by profit: the leaders of the government are guided by the desire to be re-elected. Companies receive most of their funds from their customers/consumers, while the state collects most of the funds from taxpayers. Business is usually conducted in a competitive environment, while the states use monopolies, Osborne and Gaebler explain, and suggest that differences such as these create a completely different aspirations in the public sector: "For example, the key question for managers in public institutions is not whether they deliver a product or generate profit but whether it satisfies needs, whether they are to the liking of elected politicians. Having in mind that stakeholders are behind politicians, managers in the public sector - unlike their counterparts in the private sector - must always include the factor of stakeholders into their activities." All of these factors are combined to create an environment in which public sector employees see the risks and rewards completely different from employees in the private sector. "The government aspirations are focused on how not to make mistakes," said Lu Vinik from the Ford Foundation, "State budgets are encouraging managers - to waste money.

If they do not spend their entire budget by the end of the fiscal year, three things happen: they lose money they were saving, they get less next year, and budget directors complain that they demanded more than they should in the previous year."

Models of the new government may be

- Model 1 - "Market Government" - focuses on decentralization, salary based on performance and other operational techniques of the private sector.
- Model 2 - "Participatory Government" - emphasizes "thinner" organizational structure, total quality management, and teams.
- Model 3 - "Flexible government" - promotes virtual organization and temporary staff.
- Model 4 - "Deregulated government" - puts the emphasis on greater managerial freedom.

Each model is a product of various criticisms of the inadequacy of government, each offering different solutions. "For most of the leaders, there are only two ways out of the crisis in the public sector: either to raise taxes or cut costs. For almost three decades we are seeking the third option. We do not want a lower level of education, fewer roads, a lower level of care, but at the same time - higher taxes. We want better education, better roads, better health care, for the same or a lower amount of tax liability. To be more precise, we need better governance/state management (Good Governance) - the process by which we collectively solve problems and meet the needs of our society, and this is why this forms a coherent whole, the new model of government

3. NEW PUBLIC MANAGEMENT

New Public Management is a worldwide phenomenon, but in different countries this term is understood differently in different situations. In the United States, this approach is characterized by the movement for "reinventing government" and the project designed by the Vice-President Al Gore - "National Performance Review". The UK has started the Financial Management Initiative of Prime Minister Margaret Thatcher and continued with what is called Next Step. New Zealand has made the most drastic changes in the structure of government and managerial philosophy. It should be borne in mind that the search for new public management requires consideration of the role of the state. It is a fact that the state today is more an economic than a political agent. The crisis of legitimacy affects the political class and the administrative structures which are still based on the rule of law. Another fact is that identity and political history of every European country must be fully understood. Where there are management models, their implementation depends on their adaptation in a way that significantly varies - from country to country. The practice of the new public management is therefore proved to be very applicable in the Nordic countries, whose structures are characterized by a high level of decentralization, "guild" organizations and a rooted culture of social pluralism. Outside the Nordic countries, the implementation of new public management destroys not only the administrative structures, but also the representative bodies of civil servants and service users. Reforms largely depend on the "clientelism" in Greece, the role of civil service unions in France, the politicization of jobs in the civil service in Austria, the role of political parties in Italy. New Public Management which promotes efficiency and flexibility, it is often in conflict with the massiveness and the inertia of legal norms. New Public Management (NPM) - is a term used in many countries around the world. Seemingly, it describes a global trend of a certain type of administrative reform, but it soon becomes clear that in the various administrative environments, it has different meanings. Even in the academic world, there is no consensus on what the term means. In any case, the term is somewhat faulty because its elements are not new, which is why there are charges that it is "new wine in old bottles." (Mazzucato M., 2015.) In addition, the reform of public management occurs in a wide variety of forms, in different - contexts, including the very different national priorities and needs.

The transformation process in Central and Eastern Europe is just one of the examples. With the advent of managerism, the term "public administration" is rapidly replaced by the more popular "Public Management" even in many academic programs (e.g., human resource management). Essentially, the difference between these two terms is not so much in their definition as in the doctrine behind each of them. Although in the Serbian language "management" easily translates as "administration", the national literature equally and interchangeably uses the term management. The translation of the term "manager" - "administrator" does not fully comply with the spirit and practice of Serbian language, so the term 'director' is often used (which is in English, "leader"). The translation of the terms "New Public Management" and "Good Governance" can be a matter of discussion, as well as the translation of the term "public policy": we use the terms 'novi javni menadžment' and 'dobra vlada/vladavina'. But what is the new public management? It is fair to say that it helped in highlighting the need to change the way the governments operate. Two types of main concept of new public management emerged. According to the narrower concept, new public management is a marriage of two different streams of ideas. One stems from the new, institutional economics which examines new administrative principles such as competition, a wider choice for users of public services, transparency and a strong emphasis on new mechanisms for motivating employees. The second stream stems from the application of the principles of private business management to the public sector. Practically, this narrow understanding of the new public management places the emphasis on contract management, the introduction of market mechanisms in the public sector and linking salary with performance. The main features of the reform of public management, for achieving the targeted result-oriented management are: transferring powers and providing flexibility, ensuring the results, control and accountability, the development of competition and choice, responsible provision of services to citizens, improving human resource management, use of information technology, improving the quality of regulation and strengthening the function of "steering" in the center. A broader definition of the new public management has a more pragmatic approach, not looking at it from a philosophical perspective, but as a rational response to the pressures that the governments are facing. Since the pressures of globalization are similar in all countries, it would be expected that the reactions overlap to some extent. However, this does not mean that the implementation of the new public management in those countries will be identical. Such a broad definition does not impose a universal model, but makes the model of the new public management more transmittable from one country to another. This can involve a detailed radical reform of public management or individual adjustment depending on the institutional framework of those countries. The term New Public Management is used to describe a management culture that emphasizes the central role of the citizen and user of services and accountability for results, suggesting structural or organizational choices that emphasize decentralized control across a wide spectrum of alternative mechanisms for the provision of public services, including quasi-markets in which the public and private suppliers compete for funds provided by investors and those in charge of public policy. New Public Management does not claim that the government or the management should stop doing certain jobs; it does not care whether the work is done or not, it is interested in getting the job done in the best possible way. The new public management was conceived as a means of improving the efficiency and accountability of political leaders, and it originates from parliamentary democracies with a strong executive leadership, centralized government and administrative law. New Public Management can be seen as a "cascade chain of contractual relations", which leads to one manager (often a ministry) interested in better results in areas where there are significant and relatively stable jurisdiction. Most of the principles of new public management - can be illustrated by the example of establishing semi-autonomous agencies for the provision of public services. The argument in favor of the existence of the agency is that those who should provide those services should be concentrating

on their efficiency and quality, without disturbing the structures for the development of public policy (Mazzucato M., 2015.). OECD study (*The Future of the Public Service*, 2021.) reveals that all member states are experimenting with some of the elements of the new public management, although the degree of implementation of these elements and the differences between them vary from state to state. Nonetheless, it soon becomes clear that the actual implementation raises different difficult issues about the goals and outcomes. This is partly due to the strong orientation of new public management towards the economic value and its underdeveloped legal and political dimensions. Given the complexity and the fact that many reforms are still under way, virtually every state will have to make a careful assessment of aspects which in any combination offer real progress in the light of its institutional and political context. Public management must not only be a promotion of economic values. Before us is a task to put a stronger emphasis on products and outcomes in accordance with the political and legal principles of public administration. The emphasis placed - on these various principles and their connections will vary from country to country depending on their traditions and political and legal framework. This new paradigm cannot be reduced to a slogan, claims Bornis, and states that key ideas can be extracted:

- The government should provide high quality service that will meet citizens' needs
- The autonomy of public managers, especially from the central state organs, must be increased,
- Organizations and individuals should be evaluated and rewarded based on how successfully they reach the required goals,
- Managers must ensure that they have at their disposal adequate human and technological resources needed to achieve the objectives
- Public sector managers must appreciate the value of competition and maintain open access to what in terms of services belongs to the private rather than to the public sector.

Two variants of the new public management - contract theory and the theory of empowerment - are intended to give the public managers the flexibility they need in order to improve results (Ristic, K. et al.(2013/2014). Those who adopt the theory of "empowerment" implicitly allow them to develop the skills of intelligent decision-making, to reasonably use the given flexibility and to be motivated primarily by intrinsic motives of working in public administration. It is necessary to support the vision of the public sector as an "organization in the process of learning" /0} which should constantly be progressing. Those who adopt the strategy of contracting, normally do this through precise, clearly written agreements on the results that leave little room for the kind of confidence present in the previous strategy, which motivates better results by special awards. There are no universal solutions to the public sector as a whole - different parts of the public administration require different systems of public management, depending, for example, on whether it comes to redistribution of resources, provision of services or the classic state activities. Some states, such as New Zealand and the United Kingdom, use contracts and incentives to "force managers to do their job." Others, such as Australia and Sweden, for example, "empower" their managers and thus "allow managers to do their job".

4. SUMMARY

New public management and "reinventing government" have significantly enriched the language of management with a number of new terms and graphic expressions.

- Results, not the processes;
- Downsizing, and now the rightsizing;
- Lean and mean;

- Contracting out, off-loading, outsourcing;
- "Steering" rather than "rowing";
- "Empowerment" rather than serving ;
- Earning rather than spending.

New Public Management is designed to continue to somewhat influence the development of the administration. The question is whether this impact can go beyond the field of methods and techniques into the field of value systems. It has to play a role in the ongoing efforts to implement "good government (governance)," primarily in the - developing countries. Therefore, it is important to understand the context, powers and limitations of the new public management so the best could be taken from it. The improvement of government performance is a complex undertaking. This means that differences have to be taken into consideration between people in different regions, at different times or for different issues of public policy. Every government, when it comes to improving the results, tries to make steps forward. Whenever government decides make a specific step, it needs a special strategy that will maximize its performance in this specific context.

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INFORMATIONAL AND SOCIAL TAGGING THROUGH INFORMATIONAL AND EDUCATIONAL CREATIVITY

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ABSTRACT

Informational and social tagging is a special system of content representation that is collaboratively developed with the help of user's information and education available through web applications. Each tagging in this way represents a special aspect of social development which, together with the new learning system, gives a special educational creativity. Tagging is determined through criteria for their use, as well as descriptions of characteristics and types of social indexing of information, usefulness, critical perspective, but also social content that leads to an academic, creative and educational access to applications. This can be considered to be a greater challenge in the time that follows the abundance of information, because the system of adequate tagging can also be considered to be a complete academic approach that can lead to the development of the educational and creative spirit of each individual. As the emergence of new information technologies has activated new ways of writing and reading that go beyond the traditional framework, the system of information and educational creativity has gained new dimensions. As these new frameworks give way to new conceptions, they reshape the creative process by which the information tagging system takes place in new societal frameworks, thus simultaneously directing the function of academic education to a new kind of so-called social reading. The utility function that is realized in this way extends in many directions and takes different forms, highlighting the educational and creative process as a priority. Achieving an adequate tagging function is primarily a matter of developing educational systems, which in conjunction with information and IT tools provide a multitude of content, where the role of psychological, pedagogical and sociological factors is often crucial for adequate academic content tagging. The role that should be fulfilled here is primarily the teaching staff, which is educated for the future and has a social responsibility for the development of the academic and creative individual.

Keywords: *Social tagging of academic information, educational creativity, informational creativity, applications*

1. INTRODUCTION

Information, scientific communication, marking and selection of value categories important for academic writing, are some of categories important for science, but also education, where it is necessary to recognize true values in the informative sense. This is just one of the reasons that gained the importance of qualitative demand and targeted scientific communication, which in the modern digital world is offered over the Internet, an important part for at least two decades in social and educational communication. Scientific communication spreads, as well as misinformation, that is also intensified and accelerated, so the segment of marking or tagging

real information is very important. In the conditions of the economic crisis of traditional mass media, quality standards are significantly weakened in public communication, so the risk of false information appearing is at greater expansion. However, during the use of the Internet, and thus the power of directing the opinions of large digital corporations, there is an expansion of web development, such as development of certain applications, which aim to direct users to tag valuable information, in order to increase understanding and selection. The risks to social cohesion arising from certain platforms, such as the polarization and radicalization of the selected spectrum of opinions, impose the regulation of these applications, which not only justifies it, but seems necessary for the development of education for the future. This important segment of information and social tagging, especially comes to the fore when it comes to educational creativity that is formed in managerial education, as a significant aspect of management structures.

2. THE INFORMATION SYSTEM IN THE MANAGEMENT TAGGING FUNCTION

Although all managers need information, not everyone needs the same type of information. The type of information needed will depend on a number of factors: their level in the hierarchy, the work they do, confidentiality or urgency. The usefulness of information is a debatable thing, and what information might be for one person is simply data for another. In an organization, for example, when information is transferred from one organizational level to another, its meaning can change significantly, so that at one hierarchical level it is considered significant information, while at another level it is simply data. Information is one of the company's many resources, along with capital, raw materials and manpower, because no company is sustainable without information. When it comes to information, they are often related to the issue of information economy, in other words, how to establish the necessary relationship between the value of information and its use (International Conference on the Application of New Technologies in Management and Economics, 2020). The information system has a significant contribution to such acceptance, processing and transformation of data into information. We can define the information system as a formally, socio-technically and organizationally designed system for collecting, processing, storing and distributing information (Petrović, 2014). In the socio-technical perspective, viewed as a social category of tagging, the information system consists of four components: task, people, structure and technology (Petrović, 2014). Information systems can be defined as the integration of components for data collection, storage and processing from which data are used to provide information, contribute to knowledge as well as digital products (Stefanović, Janjić, Plasić, 2018). Any particular information system aims to support operations, management and decision making. The information system can be understood as an information and communication technology used by the organization, and it can also be understood as a way for people to communicate with new technology in support of business processes (Stefanović, Janjić, Plasić, 2018). Information systems tend to strongly influence the development, use and application of information technology in the business world. A number of methodologies and processes can be used for the development and use of the information system, and more and more often special applications are being developed that support the system of education, but also the tagging of important information. Many developers use systems engineering approach such as the system development life cycle (SDLC) to systematically develop the information system in phases (Ristić, 2013), and some of the phases of the system development life cycle are (Vukajlović, 2019):

- planning,
- system analysis and requirements,
- system design ,
- development,

- integration and testing,
- implementation and operation,
- maintenance.

Information system research is generally interdisciplinary when studying the effects of information systems on the behavior of individuals, groups, and organizations, and this research has categorized the information system into two scientific paradigms, including behavioral science to develop and verify theories that explain or predict human or organizational behavior. and also design a science that expands the boundaries of human and organizational capabilities by creating new and innovative artifacts (Laudon, 2018).

2.1. Information systems and information applications

Management information system, through the development of special applications for information and social tagging, especially in the field of management, is a special flow processing procedure based on computer data and integrated with other procedures to provide timely and efficient information to support decision making and other management functions. This determination is also present when we take into account that the number of modern business data and information is growing exponentially, and efficient business decision-making is possible only if the necessary information is fast, accurate and of high quality, and managed by adequate management, which also contributes to efficiency of good management with the support of the information system (Arsovski, 2018). The rapid development of information technology together with the development of telecommunications and technology has simplified every area of life and human activity. Through good organization of this technology to achieve quality decision-making at all levels of management from the highest to the lowest level, which is especially positively reflected through the segment of staff education, which will adequately, academically and scientifically based, successfully detect and select information relevant for their work. Information technology in the organization has proven through practice as the best and optimal database that offers great opportunities for fast and quality manipulation to raise the quality of business and decision making. If we mark that the information system is an integrated set of components for the collection, storage and processing of data and for the delivery of information, cards and digital products, its role can be fully accepted in management business. That is why more and more business companies and other organizations rely on information systems and thus improve their management business, communicate with all actors in the business, thus achieving adequate positioning at the global level. The information system and adequate applications are a dynamic area that monitors change, and is perhaps the most important driving force caused by the development of new technologies such as computers. The main function of information is to avoid uncertainties and unknown circumstances that can create a basis for quality management decision-making, especially when the information is inadequate, incomplete and unprofessional. In some authors, the processor of a computer system is often defined as inputs to the output of adequate information, ie as a set of related elements with attributes that enable their electronic data processing (Šušić, 2012). Computers in information systems are mainly used in all areas, as a basic segment of information system application, which is especially pronounced in business communications and business system used by employees, and especially management, which has a particularly important role in establishing management and development activities. Thus, it can be noticed that everyone who uses a computer and information system, has a powerful tool to achieve a competitive advantage and provide information that is adequate for business success. System information technology is studied how to achieve that hardware and software for programming are combined to create an information system, which on the one hand is interesting, logical, essential and very important for successful business and adoption of new managerial business performance, and

on the other hand to be educational and selective, so that the tagging of adequate information is marked to the user as a practical but also an exact segment. The information system should also be understood as a critical segment of the functioning of a company that wants to be involved in modern business. Every company uses information system technology to gain a competitive advantage over its rivals, where numerous segments of the basic business process are set to increase production, productivity through the use of information systems (Arsovski, 2018).

3. SOCIAL TAGGING AND ITS FUNCTIONALITY

Social tagging can be defined as a system that represents content that is jointly developed by integrating the information needed by the user and the system of information applications available through indexing information and critical relationship of its usefulness, which in this case can benefit management in the management system. The information system, which are interconnected elements with social tagging, function together with the purpose of collecting, processing and storing the distribution of information, which have a segment of educational characteristics and give an aspect of creativity. The information social system is thus defined as a formalized computer system that collects, stores, processes and places data from various sources to provide the information needed to manage the process of making a management plan, that in perspective gives its creative feature. Regardless of perhaps individual different views of this conditionality, mostly similar and essentially the same definitions of information system in management, when talking about computer operating systems list five tasks or activities that are considered crucial from a strategic point of view (Pearlson, Saunders, 2013):

- data collection,
- data processing,
- data management,
- control and security of data generation
- information.

Earlier information systems were usually classified as data processing systems or computer system as the dominant segment, while data processing systems were oriented to data storage, and only with the new date of development of these systems, the data stored are focused on the use of information management (Laudon, 2018). The modernized information system in management, focusing on the advantages provided by such a system as a priority task and functionality, determines in the direction that it enables and helps decision makers in two ways (Veljović, 2016):

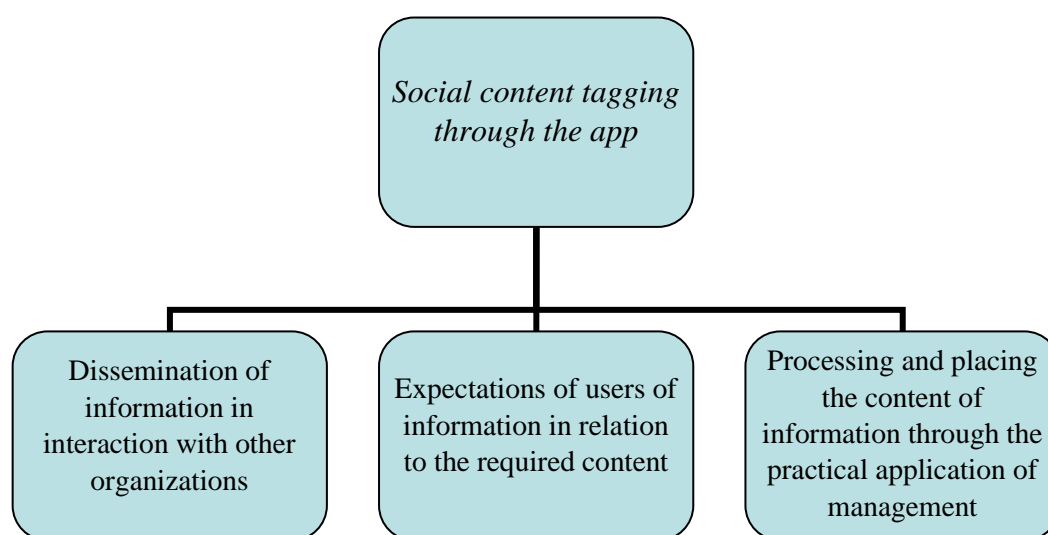
- assists managers in the decision-making process by providing the necessary information
- in some cases, the information system can even make decisions independently in repetitive situations and when the implementation process does not change, ie in this case only the incoming variable differs.

In general, such tasks, especially the second system of functioning of the information system in management, refer to the system that provides periodic information on common events and predictable business segments. In general, this system of functioning can be understood that the impact of new technologies and new information systems is not only in performing physical activities but also in intellectual activity, especially through the social segment or as a special technical process through the application system.

3.1. Content description as a system of information and social tagging

Of all the technical processes included in information description, content description is perhaps the best positioned process when it comes to linking the content of a document, on the one hand,

and searching for information, on the other. Historically, procedures and tools for content description have evolved according to the developmental stages of the social environment, as well as the necessary information, which is designed according to the needs of an adequate management system. That is why the system of tagging information is considered a dynamic process, which, in addition to its information function, also has an educational character, and whose content in a way enables certain creativity. A particularly instructive segment in content discovery, which should have its own academic approach, is first realized by the teaching staff itself, through educational systems in an adequate way, through work with future managerial staff. The system of selection and tagging of the right information is considered a key element for the future successful operation of management structures. Tagging information requires a multidisciplinary approach, because it is knowledge implemented through the information system that creates and transmits information in very different ways, and through a logical system of applications that describes the content in all its diversity. In addition to tagging content that is considered adequate for further work, applications can also offer the creation, classification and description of given information, thus achieving flexibility and adjustment in real time and real needs for the work of management. The realization of the applicability of social tagging, as well as the importance that is achieved through applications of content access to information, can be conditionally presented as a scheme that shows the mutual conditionality and functional significance in the management business.



*Figure 1: The conditionality of social content tagging
(Source: Autor)*

4. TAGING THROUGH EDUCATIONAL CREATIVITY

Previously, the task of describing the content of information was exclusively a domain that manifested itself through documentary and paper analysis of experts in the field, so that in modern times various procedures and tools are implemented through numerous applications, which are content and automatically analyzed. This depersonalizes the content, makes it available to a larger number of users, who each from their aspect of profession and interest, can tag these contents as important, further upgrade them and use them within their business activities. The way digital information is handled is completely different from the way information on paper or similar is handled. This is not because the information itself is different, but more because society has undergone numerous transformations such as the learning and education process is different, the way information is searched has changed, but the way we treat other people has evolved.

The Internet has become a social, cultural and educational space, which provides a wide creative opportunity for users who want to direct some information to their professional or educational profile. In order to describe content that can have different segments of observation and functionality in a particularly adequate way, it is necessary not to choose a series of terms that can be extracted from the application tool for document description, which serve the purpose of limiting the scope of dictionary use, ie indexing. . ISO standard 5963: 1985 is applied here, which defines indexing as “the act of describing and identifying a document in terms of its subject content” (ISO 5963: 1985, 09.11.2021). When it comes to the educational aspect, and especially in tagging the adequate content of information needed for further work, one of the most important tools for indexing are thesaurus, from which terms can be used in specific contexts, ie descriptors, which are separated. Within the management, the use of the thesaurus is from the domain of strategic management from each individual area of activity if the given thesaurus is determined. These sources also help to establish the contextualization of each descriptor by helping to determine what other terms mean, how they will be hierarchically ranked, and what associations of terms should be established. In order to illustrate some of the applications that analyze and describe content within the social indexing and tagging of information, the following table focuses on more significant and common use of the application, which provides a wider range of professional and educational functionality.

<i>Applications</i>	<i>Content Description</i>	<i>Name of Applications</i>
General and targeted search engines	Applications are equipped with tools that have suggested terms related to the data that the user enters. Tag terms are displayed within a window or tag cloud	Polymeta Quintura
Information Tagging	The applications are directly on the web and allow the user to create the necessary tags with the required terms or personal profile, which connects him via the web with other tagged locations	Tag Cloud Generator Tafxedo Wordle
Social tagging and references	Applications based on traditional reference programs with additional social networking capabilities that allow you to find new resources, connect with other users and share your own tags	Bibme CiteUlike Connotea Diigo EasyBib Mendeley

Table 1: Example of applications for social indexing of tagged information (Source: Autor)

Nevertheless, these are just some of the applications that enable information and social tagging, which can have an impact on educational and professional work. It should be noted that there are some other applications (Flicker, Anobi, Glutton, etc.), each of which in its own way have numerous features and significances that are within the segment of interest focused on user needs, thus providing adequate academic, scientific and practical access to processing and placing information.

5. CONCLUSION

The needs for changes in the company's business, the application of new technologies, set special goals that bring significant changes in the content of company policy, which changes not only the relationship within business and production, but also the relationship to direct customers who perform their function through numerous information. A significant share in this new approach should be accepted as changes that are conditioned by adaptation to new global and market requirements, as well as information technologies that use business models and software to improve the company's business, based on scientific and academic processes of tagging numerous information. At the same time, this means that the share of e-business is increasing at the expense of the traditional, and at the same time it enables the fulfillment of more complex consumer requirements, which are the drivers of company and business success. This relationship of change in business opens the way to productivity, profitability and effectiveness of the business system. Support in meeting the requirements of modern business within the company but also towards consumers, is achieved by adequate management and managerial response, special actions that include, among other things, business information system, increasingly using individual applications that properly recognize, place and detect information which have real social and informational significance. The introduction of this way of doing business, through the information system, develops in a practical way the optimal relationship with consumers, which is generated by priorities through information resources, socially useful segments, which are used as a basis for forecasts, estimates, statistical performance in the decision-making process.

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IAS 38 AND OPERATIONAL MANAGEMENT

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ABSTRACT

The digital age brings many changes, as in everyday life and well as in the field of economic environment, which is permeated with the legal and managerial system is especially reflected through the revision that operates according to specific rules. Revision rules, especially reporting on intangible assets, go on within the framework of the national Law on Audit which are regulate the conditions and manner of revision financial statements, as well as the obligations that follow, but also through international cooperation through compliance with the requirements of IAS 38. On the global marketplace leading with knowledge, where intangible assets such as intellectual property, brand, customer relationship and talent have much greater value than tangible 'visible' assets such as capital, land, buildings or factories, so the role of audit manager emerges as one of the key categories of compliance with the requirements of IAS 38. So, recognizing the role of intangible assets in the value chain relieves a better organizational management strategy and achieves more successful management of intangible resources through operational management. If we understand operational management as management that engage in with the design, control and redesign of the business process, system of application of IAS 38 through revision, includes their special responsibility to ensure business operations that should be efficient in terms of using as slightly resources as possible but the effective fulfilment of requirements by ensuring respect for copyright through the legal system of the state. In order to achieve national and international standards in the implementation of the given requirements, through the preservation of intangible assets, the role of managers can be considered particularly responsible because by applying of revision, as a legal obligation, they place intangible assets in international course. On that way, operational management is placed in the function of revision that must protect the intangible assets and intellectual rights as an individual as well as organisation.

Keywords: *Revision, intangible assets, IAS 38, operational management*

1. INTRODUCTION

The value of one company, in modern business conditions, they no longer constitute only its material goods or solvency. The need to create, improve and preserve a brand or other way of recognizing a company, or the existence of non-property assets within it, is universally acknowledged as a basic need of a company that must be satisfied in order to achieve a successful business. The competition for knowledge, special skills and talents is the main initiator of innovation in all business domains. The same can be applied to management and its closer structure - operational management. Right in that context that the factors that are important for business and the creation of new business opportunities are observed, and in accordance with that, the monitoring and preservation of the economic value of the company.

The standards that are applied in business, the norms that regulate business, but also the standards that relate to monitoring the value of non-property assets that the company has in terms of intellectual property, brand, talents or specific skills of employees, must keep pace with the changes. Assets that do not have their tangible form and at the same time represent a significant advantage of one company in relation to another company that performs the same or similar activity in the conditions of modern business are intangible goods whose reversal cannot be monitored in the same way as other property of goods are used in business. Due to their specificities, the same require special revision and accounting treatment.

2. OPERATIONAL MANAGEMENT

Management is a concept and phenomenon that is used to understand various forms of management. Operational management also appears as a subtype of management. By use of concept in various spheres of life and business, its definition is, to some extent, adapted to the sphere in which it is observed. In essence, operational management is a complex process of coordinating and directing business activities. That this process would result in success, operational management within the organisation, must have access to the necessary quality of resources, tools for the use of those resources in the organizational structure, and it is crucial that those components are properly oriented towards the desired objective. It is concluded from the following that it implies the systematic management and control of the operational process through which inputs are transformed into products, goods and services. Within these process actions, activities appear, such as procurement of materials or resources, inventory control, quality control, maintenance, then the process of transformation, then the process of control of the transformation of these goods into material goods or provision of services. Operational management includes an management of transformation processes in the field of material production as well as management of transformation processes in the field of labour productivity. If operations in an organisational context are understood as an integral part of the production of a product the course of production could be considered as a series of operations that must be performed in order to reach the final product or service.



*Figure 1: Transformation process
(Source: Author)*

The transformation process which is shown above on the figure implies the positioning of the selected inputs, whose quality control must be performed prior to their appearance in the transformation process itself. The input material must be satisfactory established standards that are defined so that the output product has a certain quality. At the material control there must be qualified, educated and trained people in order to ensure quality control of the input, during the transformation process they use responsible materials for the work.

As crucial roles of operational management are the design of the process, the planning of the work itself as well as the execution of the planned can be stated. The conception of the work process, of course, does not only mean the physical context of production or provision of services in terms of machines, people, materials, but also the design of the workplace from the position of the worker who is supposed to perform that work. This implies the application of information technology, in principle, the use of computerized system analysis of the workplace. This takes considers the interaction of the workplace, through workers, with infrastructure and the immediate environment in general. The planning of the work will define the objectives that need to be achieved. Planning implies and business and strategic planning at the macro level of the organisation but also detailed planning of a specific working place within the organisation. Implementation implies measures taken to achieve the set goals, which measures relate to monitoring, process control and operational efficiency revision (Vasić, Ž., Radojević, Z., Sajfert, D., Jevremović, M., 2015).

3. THE ROLE OF OPERATIONAL MANAGEMENT IN ACCOUNTING

A brief introduction in the previous chapter on the very concept and content of operational management was necessary to understand the role of operational management as a totality, and then more clearly present the function of operational management, which can be stated as a supporting function of management - accounting and financial function. On the basis of the implemented process control of transformations, of the input at the output, operative management within the organisation accesses information which is invaluable for making economic decisions on the management of the financial resources of the organisation. Feedback information to which is provided by the operational management can be used to further improve the efficiency and effectiveness of the production process in terms of optimizing the production process through the use of less resource or to constantly improve the quality of products and services. The described represents one aspect of the contribution to the organization's business and, indirectly, to the accounting of the same organization - delivery of feedback information in accordance with which the economic segment of the organization's business is aligned. The second aspect of the contribution implies finding the best way to make the above described process more efficient and optimized. As we've already mentioned, how operational management is considered to be a management that is involved in control, or perhaps a redesign of the business process in the context of the organization, the same ranks of qualified people who come up with creative and economically efficient ways to implement this control and to make the process more efficient. It is questioning, when in the course of operational management comes to unique solutions, economically positive for the particular organization, but in terms of the previous point, does the same represents the non-material property of that organization? Or vice versa, can the already established system of work processes within one organization be taken over by another without copyright infringement? Or, conversely, can an already established system of work processes within one organization be taken over by another without copyright infringement?

4. INTERNATIONAL ACCOUNTING STANDARD 38

From the previously mentioned issues, it is considered that the role of managers in process control is particularly responsible. By applying positive regulations related to business control, in other words by conducting an revision, operational management protects the assets of individuals and organizations at the national level, while by applying international business standards, operational management gives property international qualifications. As far as internationally acquired standards are concerned controls financial results in the form of a single company, the same may receive credentials from foreign investors or from the market, given that it operates according to the criteria that are very important to them.

This significantly reduces the risk of the company's business at the international level and increases its competitiveness. The regulations governing its operations and control in the Republic of Serbia are the Law on Accounting and the Law on Revision. The Law on Accounting ("Official Gazette of the RS", No. 73/2019 and 44/2021 - other law) regulates the issues of those obliged to apply that law, classification of legal entities and entrepreneurs, organization of accounting, accounting documents and types of business books, conditions and the manner of conducting them. Register of accounting service providers, recognition and valuation of positions in financial statements, preparation, submission and public disclosure of financial statements, annual business report, corporate governance report and more. The Law on Revision ("Official Gazette of RS", No. 73/2019) regulates the conditions and manner of revision financial statements, the obligation to revision, professional qualifications of persons and licenses to perform revisions, quality control of revision companies, independent revision and licensed certified revisions, granting and revoking licenses to revision companies as well as other issues related to revisions. In addition to the aforementioned laws, International Accounting Standard 38 (IAS 38) (hereinafter: IAS 38) is also important for the organization's business and control. IAS 38 is one of the international standards for financial reporting and it prescribes the criteria that must be met in order for certain non material property to be recognized as property, as well as the method of measuring the book value of non material property and the methods of public disclosure of non material property. It would be necessary to eliminate the problems by implementing this standard, with which classical accounting is related regarding evidency non-material property and its value through the books of the organisation. Establishing the same criteria and standards which one entity needs to be filled how to in order to be recognized as non-material property of an organization, the same entity has the possibility to use this non-material property. Acquisition of non-material property as well as their disposal inevitably leads to a financial change in the business of the organization and its business books. IAS 38 is a fairly well-developed standard when compared to various national accounting regulations, although it is limited to the possibility of applying it to non-material property. Users of financial statements prepared in accordance with IAS 38 can more easily and better understand the balance sheet items of an organization, although IAS 38 is in some way limited in recognizing internally generated non-material investments. However, IAS 38 requires extensive disclosures of accounting policies, amortization as well as expenditures on internally generated non-material investments (Procházka, D., Zouhar, T., 2019).

4.1. Recognition criteria under IAS 38

According to the criteria prescribed by IAS 38 in order to be considered non-matter property, it must have the elements of the definition of non-matter property, and it must be recognised in accordance with the recognition rules. Thus, IAS 38 on page 2 in the part that deals with definitions instructs that: „Non-material property is non-monetary property without physical substance which can be identified.” And at IAS 38 itself the following are examples of non-material property and the same can be patented technology, computing software, databases of data and trade secrets, stamps, trade blankets, news feeds, internet domains, video and audio-visual material (e.g. (e.g. films, television programmes) client lists, licensing of the right to mortgage servicing, objections to licences and import quotas, objections to franchising, relationships between buyers and suppliers (including buyer lists), marketing, market research, market learning, buyer loyalty (IAS 38 p. 3, point 9). However, there are some items that can be brought under the examples given above, which they do not fulfill the terms of the definition of non-material property like what's for example the possibility of identifying one of them or controlling the resource and the economic benefit. If a items to which the above standards are applied, does not satisfy the definition of non-material property, the results of its disposal or internal generation shall be recognised as an expense when incurred (IAS 38 page 3 paragraph

10). To be recognised as non-material property in the business of an organisation, a transaction must also be recognised in accordance with IAS 38. IAS 38 on page 4 paragraph 21 instructs that non-material property shall be recognised if, and only if, it is probable that future economic benefits attributable to the property will flow to the entity and if the cost of the property can be measured reliably. As can be seen, these two conditions are cumulatively set. One of the main elements of non-material property is its useful life, given that the accounting treatment of the same is based on its useful century. This question is important for the amortisation of non-material property and its accounting standard how non-material property with limited useful century is amortised, while with an unlimited useful century is not amortised (IAS 38 par 89). Deciding whether a non-material immovable property with a fixed or unfixed useful century is redeemed has many decisive factors among which is the expected use factor, and if another management team within the same organisation can manage this property on an effectively basis (Romić, L., Milenković, I., 2015).

4.2. Knowledge as non-material property

According to IAS 38 which, as part of its work on control, deals with the definition of criteria which are amenable to control it is also stated that technical or market knowledge can lead to future economic benefits. The organization that uses that knowledge must control whether that knowledge that is actually used is knowledge protected by legal rules such as copyright. This can be controlled by a restriction on the trade contract or a legal obligation for employees to respect confidentiality or to include a non-compete clause in their employment contracts. By developing its business, the organization can form such a qualified team that will have excellent opportunities to identify the skills of individuals, who will, through training, contribute to the economic benefits of the organization, or they can be expected to make available skills. But as can be seen, control over the economic benefits that are expected to flow in the aforementioned manner is not entirely possible. For this reason for example, a specific managerial or technical talent cannot satisfy the definition of non-material property, unless it is explicitly protected by legal rules. A similar problem was posed with regard to defining customer portfolios or market share as non-material property. Namely, the organization can, with its effort and such commitment, build relationships with customers who will certainly remain loyal customers in the future. In this way, the absence of legal rights to protect customer relationships, exchange transactions for the same or similar non-contractual customer relationships (unless they are part of a business combination) provide evidence that the organization can still control the expected future economic benefits of customer relationships. Because such exchange transactions also provide evidence that customer relationships are separable, these customer relationships meet the definition of non-material property. As the development of emerging forms of property and thus non-material property has expanded the range of ways to acquire them, unjustifiably managerial capacities and knowledge in the field of operational management are placed outside this category and a way should be found to manage a team with special skills. which undoubtedly contributed to the economic benefit of the organization, could fall under the definition of non-material property and thus protect.

5. APPLICATION IN PRACTICE

Organization management presupposes the constant adaptation of the organization to the changes that occur in the business. In such circumstances, the role of operational management is extremely large and crucial. At the level of organisation management it is essential to make targeted decisions, but in order for such decisions to have a positive character for the organisation's business they must be based on adequately prepared, timely and relevant information. The fact that the accounting of one organization plays a big role in this process is undeniable.

Accounting has the tools that make it the only comprehensive system for collecting, analyzing and presenting information about business and financial transactions of the organization (Needles, E. B., Powers, M., Crosson V. S., 2014). Information that can be accessed by collection forms is the basis of the organisation's accounting system, which serves as the basis of operational management for the implementation of business-critical decisions. Just as there is no single management model for an organization that would suit all organizations, the accounting and financial model of one organization cannot be expected to suit the business of another organization. Notwithstanding the above, there are certain principles that guide organizations, companies and enterprises in managing financial decisions. One of these principles is the tendency of management to reveal what is the best possible information about the business, in what way the operations of an organisation become transparent and less subject to abuse. With regard to the field, in which an individual company deals, this principle does not necessarily have to be the prevailing principle in their business. In order to achieve satisfactory transparency in operations in such organizations and raise confidence in the financial statements, it is necessary to have established systems and procedures for controlling accounting evidency. These systems imply the existence of trained staff for the control of accounting data and reporting on the obtained information. Based on such reports, a conclusion can be reached about the company's business, its success, the success of the management team and whether has achieved the set business goals at all (Benković, S., Milosavljević, M., Dmitrović, V., 2018). By complying with the standard that specifically refers to intangible assets, IAS 38, it is easy to follow the non-material property that the company has at its disposal and that appear in its operations. There is one more aspect of operational management that is important and that is the aspect of management accounting. To be successful in business it is important that an organisation has developed management skills at every level of its business, but again to balance the positioning of the same ones on different levels how not to duplicate the number of working places with the same work assignment. Financial accounting and management accounting must be developed within the accounting system or differences from the above must be made.

Table following on the next page

CHARACTERISTICS	FINANCIAL ACCOUNTING	MANAGEMENT ACCOUNTING
USERS	Provides information externally users	Provides information management.
GENERAL PURPOSE	Creates reports for general needs.	Reports for needs planning, adoption decision and control business in the organization
REGULATIONS	Consistent required application of legal regulations and professional standards.	Application of professional standards are not important because they are information users those who determine the requirements..
ORIENTATION	Orientation towards events that occurred in recent past (from last report).	Orientation is too anticipating and predicting the future, so that the "management" of the organization can use this information to employ for donation operating decision of the organization in the future period.
REPORTING FREQUENCY	Steady dynamics (annually or more often).	Reports are compiled in at intervals it determines management.
SCOPE AND QUALITY	Information by nature quantitative	Information can also be quantitative and qualitative.

*Table 1: Characteristics of Financial and Management Accounting
(Source: Benkovic, Milosavljevic, Dmotrovic, 2018)*

5.1. Implementation at the international level

Role of IAS 38 and its implementation is being developed through various activities at the national, regional and international levels. By collecting data from these researches on the implementation of IAS 38, an insight is gained into the problems that arise during its application, and a basis is created for the adoption of adequate solutions to these problems. According to one of the researches, which was conducted within the world markets that are breaking through, it was concluded that large for-profit organizations share the opinion on the usefulness and life of intangible assets (internally generated or acquired), i.e. that the value use of such assets is more stable and to have a longer useful life than assets. According to one of the researches, which was conducted within the markets that are go through at the world level, it was concluded that large profit-making organizations share the thinking on the question of the usefulness and duration of non-material property (internally generated or acquired), ie that the value use of such assets is more stable and has a longer useful life than property resources. This research used information on the type of audit performed, the type of industry observed as well as compliance with the requirements of IAS 38 (Agyei-Mensah, 2019) as factors for this conclusion. Dealing with the application of standards at the international level is in itself represents a significant challenge, but as the implementation of the relevant standards relates to the field of accounting, the challenge becomes more difficult. At the national level, each country prescribes ways of controlling the operations of its businesses and/or organizations, and by implementing international standards from this field; attempts have been made to unify these norms. The integration of accounting and revision rules into the international platform allows for easier international operations of profit-making organizations and the application of the same criteria in the control of their business. Despite many touch points, countries in Europe still have problems with harmonizing these rules in the area of non-material property.

In a publication published in 2001, on the example of France and Germany, which countries are in a similar position in terms of national accounting systems (the "continental-European" model), different application practices are indicated that is, that they have adopted very different solutions in terms of categorization of accounting treatment non-material property and in relation to each other and IAS 38. The results shown in this paper will be used for the purpose of international coordination. They also show that, as far as the qualitative characteristics of accounting are concerned, the often established association between the Anglo-American accounting philosophy and "relevance", and between the continental-European accounting philosophy and "reliability", may not apply to non-material property (Stolowy, H., Haller, A., Klockhaus, W., 2001).

6. CONCLUSION

One of the main characteristics of this age is that it is the age of knowledge, knowledge belongs to the key resources that organisations can use to increase the process of innovation and to gain competitive advantage, especially as they know the capacities of each employee and learn how to make the best use of their knowledge. Knowledge has become a key factor in traditional manufacturing. It is the basic stimulus of economics, evolution and catalysts for the advancement of technology and the advancement of production, transforming knowledge of ideas, resources and innovation into processes, products and services. If this is applied to intangible assets it is clear that knowledge is a key factor that permeates all aspects of non-material property. The question is that operational management belongs to, in accounting terms, to non-material property in accordance with IAS 38 or the non-material property is generated and control through operational management, is a question to which there is not yet one concrete answer. It is stated and understandable, having in mind the criteria that certain property must disclose in order to be considered non-material properties, but also the variety of manifestations of non-material properties. It is clear that knowledge, of the established process of advice which is used in business which contribute to economic success of the organisation (entity) can belong to non-material property or do not have to. The role of operational management is clear in the control of non-material property. Accounting principles, systems and methods of gathering information about the company's operations create a clear picture of the organisation's business on the basis of which it can be further strategically planned. In relation to the previously stated attitudes and problems, it is clear that in the future the scientific community must address issues related to the further categorization of non-material properties in order to prescribe applicable standards in the growing market of non-material properties. In terms of operational management, it must be provided with modern ways of controlling non-material property in order to protect them as efficiently as possible, but also to identify them more easily.

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MODERN WELFARE ECONOMY AS A HISTORICAL AND PRACTICAL VALUE

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ABSTRACT

The movement of the modern economy is increasingly focused on a specially conceived theory, based primarily on the microeconomic level, and that is the welfare economy. As the economy is not an independent social category, but a system that is closely related to historical and social trends, its practical application, and thus value, development of new theories and facts complements modern economic trends and leads to general well-being. It is noticeable that the welfare economy is connected with special ethical categories, which primarily proclaim equality, freedom, but also justice, which to some extent coincides with basic human rights. Thus, the economy sets priorities, which, viewed from the historical point of view of both the economy and society, clearly theoretically emphasize their connection. The social and historical context of the welfare economy can be observed through the theory of social contract, but also through functionalism, which applied at the macroeconomic level gained its practical category and was realized as a realistic vision that can lead to general economic growth. This aspect of the social and sociological approach to the welfare economy can be seen as a connection that deals with connecting individual theories into a clear economic whole and at the same time is a link between politics, law, the individual and the economy. The practical application of the theory of social contract and functionalism gives a special economic dimension which, viewed from a historical perspective, gives a special stamp to every social development, and thus economically directs its flow, (not)achieving the well-being of the individual or society as a whole. In this way, the welfare economy can be viewed as individual or collective, which individually has its own special values but at the same time is based on a common vision, and that is prosperity.

Keywords: *Microeconomics, welfare economics, historical and social aspect, social contract theory, functionalism*

1. INTRODUCTION

The problem of well-being is a unique one which has a global structure in addition to the individual approach, also has a global structure, because if well-being, in the highest sense, is understood as usefulness, the ways of accomplishment move from individual needs, through social movements, to overall economic stability. Therefore, in the economic development of society, especially on the microeconomic plan, discusses about welfare economics, which, as seen from a historical perspective, shows a strong connection with social development, which gives a practical aspect to welfare economics. As we consider the welfare economy from a microeconomic perspective, economic welfare is a subjective reflection of social and historical

trends, thus clearly defined, which leads to the fact that the welfare of the individual increases when its prosperity increases, through the historical development of the society, practicality and functionalism.

2. SOCIAL DEVELOPMENT AS THE INITIATOR OF WELFARE ECONOMICS

Method of consolidation and finding the important factors which have a decisive influence on the social development and movement of society as a whole, is set as one of the basic problems of social cognition. There is also one rhetorical question, whether social development determines the economy of welfare or whether the system of mutual satisfaction conditioned in the opposite way? Historical and theoretical facts show that social development, primarily through social speech, has conditioned numerous and individual changes that have been reflected as laws in all social spheres, following its economic, political, social and individual development. Considered in this way, the economy of welfare, through its historical appearance, takes on new forms of fulfillment, i.e. as a social aspect, which through economics and social contract takes on its practical aspect as a social wealth, which propagates justice, equality and stability through the material sphere (Shin, 2016). This is reflected as an essential segment of the development of the welfare economy through the theory of social contract and functionalism.

2.1. Social contract theory

Social and economic issues have been an important part of everyday life for centuries, and especially theoretical research on possible segments of their connection. When we perceive at it historically, the initial economic development in the original social forms, which was realized through a simple exchange of goods, is precisely the initial aspect of achieving prosperity, which then had its individual value. With further social development, which brings a changed social structure, the economic aspect of valuing goods and consumption takes on new dimensions, through the micro and macroeconomic plan. The theory that is often shown in the development of society as a significant connection with the welfare economy, which in a unique way propagates justice and equality is the theory of the social contract, which is represented in a special way by Tomas Hobs in his thesis. Dealing with his theory of the framework of human coexistence, which is manifested through the sources of justice, fairness and fair distribution in society. Such a theoretical approach is an essential connection that connects society, the individual and the economy into a certain welfare, and thus deals with the justifications of the principle of justice, which cannot be imposed arbitrarily or by elimination with the economy. There are certain conditions that must be fulfilled in order for a principle to be justified, when it comes to justice as righteousness and the economy of welfare. Both refer to the frequent situation in which people set principles that are fundamental and binding to their society, which is connected to alternative utilitarianism and is considered superior to the economy (Olssen, 2021). Without going deeper into the interpretation of Hobbes's theory of social contract, our focus, viewed from the economic and historical aspect of prosperity, is focused primarily on his point of view in natural law as a source of prosperity and justice, which is closely related to political economy (Ward, 2020). With Hobbes it becomes clear that there is equality of people in spite of different, natural framework, but this does not apply in the ethical and moral sense, but in the simple physical sense, where we can add that it manifests itself through everyday life. This natural diversity develops potential and intense violent conflicts, where individual self-preservation is increasingly threatened and the need for fundamental change cannot be predicted, except in the realization of economic prosperity that guarantees coexistence. That is why a way out of this situation must be find. The decisive role here is played by the innate ability to reason, which is already manifested in rational calculation and used to satisfy needs, and which leads to welfare, by developing man as an economic being, who, through natural

law, seeks to maintain his existential needs, guided by the theory of functionalism. The very theory of the social contract, viewed from a historical perspective, and conceived according to Hobbes, is ready to be realized through the welfare economy at the moment when it is ready to achieve human self-preservation, and above all when the minority only wants to see its modest property secured, but and when, as a result of a state of conflict, one group manages to accumulate larger assets and wants to transfer them from full de facto control to securing property rights.

2.2. Functionalism through the welfare economy

Classical welfare economics, above all, observes the individual and summarizes the individual benefits of all members of society, thus equating that welfare with the common good. The purpose of this realization is manifested through the desired benefit which is the same for all individuals, and it can be realized through income or it can be mapped to a uniform dimension of giving. In the first case, the national product is realized as a quantitative measure of total utility that can be offered from the point of view of welfare, which is maximized as a general good. The national product, mainly due to the neglect of many individual values, the measurement of the national product and inequality, is assessed through natural law, as a financial and functional segment that can lead to prosperity. Operationalization and functionalism, as a social product, offer a utilitarian definition of welfare as a sum of individual benefits, which in turn has individual criticisms and which mainly refers to neglecting the diversity of individual preferences and neglecting the temporal and social dimension in the distribution of total benefits (Scharpf, 2017). Although the theory of functionalism has its roots with the initial development of social thought, it finds its pragmatic segment in modern theories, because it formulated holistic and integrative social theories, viewed as a sociocultural phenomenon that views social movement from the standpoint of their function in society. As the economy represents an important aspect of social movement, especially when individual welfare is considered, functionalism can take on its new character and as an organic structure, it represents a structural component that is connected and functioning, both on the development of the society and the individual. The important issues of functionalism relate to the principles of interaction, for example, to the social organization, where individual aspects of society, as welfare economics, they are not considered in isolation and they are treated differently from other societies as a individual phenomena, are more often described and analyzed in the context of their specific social and economic structure. In this sense, economy or economic action is an integral part of the social and cultural structure of the community, fulfill certain functions and are connected to other areas of the society. Functionalism is also combined with aspects of structuralism (structural-functionalism) and has long been the central paradigm of European (especially British) social anthropology (Holthaus, Steffek, 2016).

3. THE WELFARE ECONOMY AS A SOCIAL AND HISTORICAL COMPROMISE

Considering welfare economics through a microeconomic plan, its essence can be analysed as a condition for optimal welfare, which is historically determined or has criteria for increasing social welfare. Interdependent appreciation of the factor of social movement, which is historically and economically related, can represent basic resources which are a valuable resource when the members of society are considered on the macroeconomic plan and when it is considered as the best possible guideline for the welfare of the economy. How does this connection work through practice? Preferably, when following the historical development of society, we are witnessing the development of individual needs, through the development of social structures, where with the level of development of society, the needs of the individual develop, for all material things, are being developed, and the conditions for optimal welfare and criteria are being increased through the increased social well-being.

At the same time, welfare economics, the framework of macroeconomics, explores the question of how economic resources should be used to achieve the best possible social development. Based on the analysis of individual benefits, welfare economics develops welfare criteria by which alternative social conditions and economic policy measures can be assessed in terms of their welfare content, which is also the main principle of welfare economics (Tsoklinova, 2018). Considerable welfare economy, through its historical and social context, as a special functionalist but also socially oratorical system of justice and equality, it aims to provide a microeconomic healthy base for the implementation of the decision on the functioning of economic policy, of any social community. This primarily means in practice that it is necessary to consider one's own historical development, societies and states, where the welfare economy would be defined as a positive theory, which considers its normatively prescribed goals exogenously given in terms of desired freedom, equally achieved social and material values. In order to establish the optimum of welfare, through historical and social contracts, two basic questions need to be clarified as to how to get beyond the true theory of the model. Preferably in the context of social development, especially the theory of objection, the historical context of the development of the productive efforts of the society must be resolved, which are the main guides of economic development, and this is defined as the problem of allocation. The second question, which is related to the previous one, is evaluation, where it is necessary to define evaluation rules, in relation to the criterion of welfare and useful welfare function through the historical development of productive efforts. When answering these basic questions of social development, the application of the principles of rationality and functionality is formally understood as the maximization of economic welfare under secondary conditions. Although such a theoretical model of welfare economy development is accepted, from its historical and social aspect of development, it still cannot provide a single answer to the basic problem of what criteria are suitable for individual benefits to be permanently implemented in microeconomics, which could transform the whole society into social welfare. This essentially refers to the basic information base of the welfare economy, the measure of utility. In the course of the development of the basic theory of welfare economics itself, there has been a considerable change in the approach to the benefits created by the available quantities of goods as a measure of the welfare of the individual and society, viewed in its historical context.

3.1. Traditional and modern concept of the socio-historical aspect of the welfare economy

How would be the relationship between the social-historical development of welfare economics, especially through the development of social theories, it is inevitable to consider their relationship through their traditional or contemporary concept. If we follow the traditional welfare economy, which was founded by Pigou and Marshall, and is based on the hypothesis that individual benefits can be measured and sum up (Dekker, 2018), its essential determination is in the fact that allows the development of special interpersonal benefits and aggregation of individual values and welfare, in order to achieve the function of social security and the welfare economy. While Marshall uses the concept of consumer growth in as a way to maintain the optimum of welfare through a delimited analysis, Pigu focuses his special attention on external effects as possible causes of loss of welfare. This aspect is certainly closer to us in the given model of theory, where it is reflected as an assumption that social development and historical context have a significant contribution in the development of the welfare economy. Positive external effects, ie the positive difference between social and economic productivity, should be intensified by using the historical factor of development. When we follow the new welfare economy, through representatives such as Pareto, Kaldor, Hicks, Bolding, Samjuelson and Sen, the assumption that cardinal, as well as interpersonal, measurements of benefits are not possible is emphasized.

With this aspect, Pareto's economy of well-being is emphasized through the ordinal criterion of utility, where it is presented through the individual comparability of alternative measures of goods in the sense of "better", "worse" or "indifferent". Based from that, the welfare optimum is derived with the help of the central welfare criteria and from the welfare function. Highlighting these criteria, in our model of the theory of conditionality by social and historical determinants, it proves necessary to analyze social and political trends in the microeconomic field, where economic policy interventions are justified by the discrepancy between expected and real situation, which is determined by considering the economic theoretical model results performed by instruments of welfare theory, and observing microeconomics through the level of social and historical development. The modern system of development of welfare economics is conceptualized here is derived from its clear mathematical and graphical derivation of the optimum of social welfare, which is socially, politically and historically determined. This conditionality, especially when placed through a political prism, can lead to certain weaknesses in the theory of welfare economics, due in part to highly highly idealized and politically conditioned facts, where welfare economics proves to be a failure conditioned by economic policy in practical use. Therefore, the orientation towards the general state of balance, social, political and economic potentials assumes an increase in welfare by innovation processes that should give importance to institutional frameworks, which put theoretical and practical aspects in the focus of the welfare economy.

4. JUSTICE, EQUALITY AND FUNCTIONALISM - THE WELFARE ECONOMY

When it comes to the policy of justice and equality, which is found in the theory of social protest, as well as functionalism, which is in the theory of social contract, as well as functionalism, which is based on social development and usefulness, the question of the right degree of pragmatism, realism and willingness to compromise these theories in relation to welfare economy. There are no single and simple answers, because pragmatism, realism and compromise are still only philosophical concepts, while welfare economics is exact and clearly defined. The limitations and limitations of political power, within the historical sequence of the development of society, are difficult to ignore, where a little more utopianism would be advisable, to the increased orientation towards ideals, how the qualitatively expressed economy of welfare would be shown beyond the certain values. The starting point for further development of this conditioned relationship of the economy in its form of well-being, is essential, because today this discipline is given primacy for society as an entirety when we can talk about economic culture, or economization which is described as a process through which structures, processes, orientations and effects that are usually associated with modernism, economics connects the social integrity (Wenzlaff, 2019). Accordingly, it allows the development of a economic system, the entire economy, the development of society and the creation of a new history. The framework conditions for such a new concept is a system widely spread through the segment of belief in a righteous society and a special realization of a way of life that meets the deepest needs of human nature, and which leads to a welfare economy. This gives a stamp to the modern understanding of the welfare economy, which should look at every social and historical aspect, placing them in relation to traditional theories, so that through the theoretical experience of other social sciences it can set aside important economic facts and lead to justice and unity welfare economics. One of the most important measures of modern economics is to find a perfectly conceived economics that leads to prosperity, which goes from microeconomics to macroeconomic planning. It is primarily reflected when following paradigm change in society, interested in economic success and progress towards reliability and stability, which is reflected as utility. This certainly creates an individual or personal interest, which is fundamental to a modern economy.

In fact, this is based on the course of thought as a utilitarian doctrine, mostly developed and formulated from the prism of social contract theory, and with a functional perspective. Exploring the historical development of the economy in general, in important segments of social development, through the development of productive efforts and means, can show that this historical development is mutually conditioned, which is an excellent justification for their parallel analysis. One segment of justification can be found in identifying and describing the differences and similarities that exist between the economy and the level of development of society, where at the same time it can simultaneously follow the traditional and contemporary segment of the way of creating the welfare economy and the way of thinking about society and the social life. This historical thread that connects them, gives a unity that is moving from the original community, when the classical economy does not exist, but thus does not exist such a type of welfare, to the modern society, when it is the essence of democratic development to create this welfare, the system shows that the step of the creation of the welfare economy, develops in parallel with the development of the social consciousness and the individual. At the same time, this can mean that when all the features of the social reality in which an idea appears and which can have a certain impact, such as the welfare economy is, its realistic aspect can be considered. Here again we can turn to Pareto, who as a sociologist and economist, representing a mechanistic point of view, developed a theory of factors, one of which is also an economic factor, and which can lead to the benefit that Pareto shows through the theory of efficiency (Blanchet, et. al. 2018). Every factor that Pareto analyzes and states are important segments of figuration a social system, and one form of society is determined by all the elements that come into it, but at the same time the form, for its part, comes into contact with these elements. It shows the connection of all elements, which are conditioned and form a whole, and at the same time how the totality affects individual elements. Without going into too much detail about Pareto's elements and factors which, in addition to clear solutions, have also suffered certain criticisms, we will focus only on the economic factors as an element of the social environment. According to him, this is the basis of social balance, which is based on interest. According to his understanding, we cannot doubt that individuals or groups are lead by instinct or reason to obtain useful material goods, as well as to tends to be respected, which can only relate to a certain usefulness or interest. The aggregate of all these interests has an important role in determining the social balance, but we can also add to the tendency towards the theory of social contract and functionalism, through justice to equality. Such a complex reality, based on interests, cannot simply be explained from the economic aspect, but a systematic connection with social and historical facts is necessary. On the other side, sociology that deals only with society cannot clarify the complex social reality, unless it takes into account the items of pure economics as a special science, which examines data elements independently and under different rules and laws. Economic interpretation is justified if it underlines the important role of economic factors in social terms. Of course, any exaggeration or exaggeration of any of the elements or factors is not adequate, because it does not provide an overall realistic picture and mutual conditioning.

5. CONCLUSION

Every financial and economic crisis brings with it some fundamental tensions in the social and historical practices of the state, politics and other practices of social justice, and the problem of building an economy of welfare is even more visible. These tensions are especially obvious in the strategic problems of economic, and especially microeconomic policy, which in these conditions should look deeper into social and historical roots, which in a functional sense directs to a different view of the economy and society as a entirety. In addition to the field and substantive postulates of social justice, the areas of crisis tension reduction and imbalance of the welfare economy it is necessary to resolve the issues of the relationship between the proper

design of collective social institutions and the practice of effective intervention in the micro-context which promotes the interests of the disadvantaged and excluded from welfare. In fact it is necessary to resolve the relationship between the ideals of justice and the politics of justice in the complex decisions of the new dimensions of the social dispute, which will also raise new economic horizons. A case of social theory, historical context and functionalism, in the creation of a welfare economy, everything is more focused on the institutional level, where the pressure tends to increase on individuals and organisations to be efficient and effective in initiating economic reforms that lead to prosperity. This, in turn, usually reduces political influence, bureaucratisation and control of social development activities, as well as the insecurity of distorting the motivation of economic development. Reaching out to these unique segments which are the roots of social development, in some way we are approaching Pareto theory, which being a sociologist and an economist, is doubly credible and aims to show that economics is not isolated from the context of social doctrines. Of course, it is not necessary to consider them as integrated doctrines, more interconnected and separate, which, from the segment of historical development, can provide the development, reality or perspective of welfare economics. Pareto has repeatedly emphasized that the doctrine is a successive approximation to concrete phenomena, which should be understood in two ways: from the abstract to the concrete and from preliminary knowledge to a better understanding of the phenomenon. The pure theory of political economy is the highest science that can appear in their mutual approximation.

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FAIR TAXATION UNDER THE GLOBAL ANTI-BASE EROSION RULES?

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ABSTRACT

In 2021 the OECD launched the Global Minimum Company Tax to implement the Action 1 of the BEPS Project. This instrument has seen as a good mechanism to prevent company avoiding taxes at the global level and to stop existence of the harmful tax regimes worldwide, as well as a good mechanism to achieve fair taxation in the era of global digitalization. However, the broke-out of the COVID-19 pandemic and, consequently, the close of the national borders, then armed conflict between Russia and Ukraine, boost financial crisis and the crises in almost all social and industrial spheres at the global level. Such unwilling trend, between all, has influenced behavior of the companies and the initial optimism of the OECD and other international organizations that the global minimum company tax, at the very end, would end existence of the harmful tax regimes, tax avoidance and unfair taxation, dropped significantly. Therefore, at the very end of the 2022 and the beginning of the 2023, the OECD launched consultation document on tax certainty in the application of the Pillar Two of the global minimum tax known as a GloBE (Global Anti-Base Erosion) Model Rules. This paper deals with mentioned issue and actual problems that the application of the GLoBE rules is faced with.
Keywords: *Global Minimum Company Tax, Global Anti-Base Erosion (GloBE), Model Rules, OECD, Tax Certainty*

1. INTRODUCTION

The breaking-out of the COVID-19 pandemic at the very end of 2019/beginning of 2020 significantly influenced industry and people's daily lives at a global basis. The close of the national borders and sharp medical measures made people stay at home the most part of the day, sometimes somewhere a whole week or month. Even more, close of the national borders made significant drop in industrial production and, for a certain time, even the food and other life necessary goods could not be transported from one country to another. Such a situation speed up already wobbly global market, which had not been completely recovered from the global economic and financial crisis broken-out in 2008. One by one, the crises have been accumulating, making changes in the world order at all levels. And, just when the market economies have started to recover slowly, the new crisis open a door to global disturbances - the Russia-Ukraine conflict made shortage in almost everything and pumped-up the inflation in market economies. All these, unwilling, events and others unmentioned, lead to the abyss from which only the strongest can rise, although significantly hurt. The crisis can be seen everywhere, in everything ... The need to shortcut costs in every sphere speed up already started digitalization. The business, education, shopping, delivering of majority other services have become *online*. Such a way of functioning made peoples' lives and business easier, cut many costs, but deepen crisis and made significant alienation of the people in different aspects of their daily lives. Digitalization, digitalization, online, online ... become our reality. Looking from the aspect of the multinational business, digitalization has given the opportunity to the multinational enterprises (MNEs) to made all or majority of their business online, to cut their business and tax costs, but also has given the opportunity to made many operations and revenues "invisible" and find new methods of tax avoidance. At the other side, such MNEs' behavior has influenced the OECD to speed up implementation of the Action 1 of the BEPS project, the action that deals with digitalization.

The actual result of the OECD's efforts is the launch of the Global Minimum Company Tax as a mechanism to prevent further tax evasion and avoidance at the global level and end the unfair taxation. Even more, the OECD adopted Inclusive Framework on Model Rules to be implemented by the countries in accordance to the global anti-base erosion strategy (GloBE Model Rules). However, the question is would these rules really prevent the erosion of the income at the global basis and made the taxation of the business more fair?!

2. THE BEPS PROJECT

The Base Erosion and Profit Shifting (BEPS) project (OECD, 2013), initially, has been required by the G-8, followed by G-20. The G-20 had asked the OECD to do research and make proposal on the actions that should prevent and eliminate tax avoidance and other abuses of the MNEs conducting the business around the globe. The BEPS project is oriented to the development of the new set of standards with an aim to prevent double non-taxation and tax evasion and avoidance; make better national and international cooperation; increase transparency in reporting and disclosure of certain data and, related with that, tax transparency; development of a multilateral instrument to amend bilateral tax treaties, etc. The Action Plan was fully endorsed by the G-20 in 2013. The BEPS project consists of 15 actions which look like separated and independent one of another, but actually all of them are closely related and have a common aim - to make companies pay taxes where they do business and make profit. As have been mentioned, the whole project consists of the 15 actions, as following:

1. Addressing the tax challenges of the digital economy;
2. Neutralizing the effects of the hybrid mismatch arrangements;
3. Designing the effective controlled foreign companies rules;
4. Limiting base erosion involving interest deductions and other financial payments;
5. Countering harmful tax practices more effectively taking into account transparency and substance;
6. Prevention of granting the treaty benefits in inappropriate circumstances;
7. Prevention of the artificially avoiding permanent establishment status;
- 8-10. Actions: Aligning transfer pricing outcomes with value creation;
11. Measuring and monitoring BEPS;
12. Mandatory disclosure rules;
13. Transfer pricing documentation and country-by-country reporting;
14. Making dispute resolution mechanisms to work effectively;
15. Developing multilateral instrument to modify bilateral tax treaties.

As have already been said, the breaking-out of the COVID-19 pandemic at the very end of the second decade of the 21st century had resulted with significant drop of the factual business and financial activity, furthermore the close of the national borders has speed up the already started digitalization of the business operations and implementation of the BEPS Action 1. Enterprises that have already been conducting their business online profited, others had "to become digital". Small or no control by the national governments and slow of the realization of the international projects (mainly BEPS), had given the large enterprises an opportunity to evade their tax duties around the globe. However, the most powerful economies (again, represented in the G-20) decided to stop such behavior of the MNEs and prevent breaking-out the new global financial and economic crisis: they endorsed the OECD's proposal on the global minimum company tax: "the countries would apply the minimum tax to nearly any multinational company making more than €750 million (\$870 million), though some kinds of income will be exempt from that calculation". Primarily, the rules will allow a country where a company is headquartered to "top up" its taxation of the company if it's paying less than 15% in another country (Bloomberg,

2021)¹. By the end of October 2021, totally 137 countries have joined the two-pillar solution² to reform the international tax rules and ensure that multinationals pay tax where they make profit³. Adoption of these pillars, especially pillar two, would have significant effect to global base erosion and, certainly, would distract large companies to hide their profits in low-tax jurisdictions, made different tax and business arrangements using base and conduit companies to evade their tax duties. (Stojanovic, 2021, 2022)

3. GLOBAL MINIMUM TAX

In 2020, during the global COVID-19 pandemic, the states were focused on prevention of further spread of the pandemic and curing already infected citizens, paying little or no attention on online mal activities of the companies. Small or no control by the national governments and slow of the international projects' realization (mainly BEPS), have given the large companies space to evade their tax duties around the globe. After the first wave of the global pandemic, states were mainly focused and put a lot of efforts to recover their economies faced with economic losses caused by the close of national borders; suspension of travelling, export-import and other types of cross-border activities; minimum or no industry activities, etc. These events lead, once again, the most powerful economies (G-20) to gather and make a joint decision to stop such a behavior of the MNEs and prevent breaking-out the new global financial and economic crisis: they endorsed the OECD's proposal on the global minimum company tax. The pillar one of the global minimum tax is focused on the reallocation of the taxing rights between the countries where MNEs doing business; the pillar two is focused on the global anti-base erosion mechanism/global minimum company tax. (Stojanovic, 2021). While in 2021, the OECD and national governments were focused on the effect of the pillar two solution implementation, during 2022 the international attention was paid on the effects of the pillar one implementation. The very end of the 2022 was the time when the OECD launched the GloBE Model Rules defining the frame for the countries to implement the global minimum company tax and GloBE strategy. First of the first, let's explain the mechanism of the global minimum company tax as separated in two pillars' rules. The pillar one rules applies to the biggest and most profitable MNCs that allocate part of their profits to the countries where they sell the products and provide services. Within the pillar one, two solutions are defined - known as Amount A and Amount B. The Amount A is based on a comprehensive scope that uses quantitative thresholds to determine whether a MNE is a subject to the rules on Amount A. This means that any MNE that meets the scope thresholds will have to apply the Amount A rules, regardless of what type of business it undertakes: the MNEs with revenues greater than EUR 20 billion and profitability greater than 10% will be within the scope of the Amount A. These thresholds apply to the entire MNE using the financial data in MNE's consolidated financial statements. In exceptional cases when MNE does not meet the profitability threshold, but a segment reported in the MNE's consolidated financial statements (a 'Disclosed Segment') has revenues greater than EUR 20 billion and profitability greater than 10% on a standalone basis, the MNE's profit will be subject to tax - the Disclosed Segment will be in scope of Amount A. The exclusion of the extractive industry and regulated financial services' profits have been used as a tool to satisfy the interest of national governments to collect taxes, more than to protect interests of the companies operating in these types of industries: the exclusion for extractive industries (mining, oil and gas companies) is related to the protection of the source countries' right to have the sole right to levy tax on the profits related to the extraction of valuable

¹ https://www.bloomberg.com/news/articles/2021-10-15/a-new-way-to-tax-global-corporations-explained-quicktake?utm_medium=cpc_search&utm_campaign (9 April 2023)

² Pillar one is oriented to the reallocation of the taxing rights between the countries of the business operations of the MNCs, and the pillar two is oriented to the global anti-base erosion mechanism (global minimum tax). <https://www.oecd.org/tax/beps/beps-actions/action1/> (9 November, 2021)

³ <https://www.oecd.org/tax/beps/beps-actions/action1>; Date visited: August 7, 2022

resources in these countries; the exclusion for regulated financial services is related with regulative nature of that industry (particularly, capital requirements) that already drives substantial alignment between the location of taxable profits and the market, as well as the unique complexity and costs that would be introduced for tax administrations to administer the complex rules necessary to make Amount A fit for purpose for that industry. (Stojanovic, 2021, OECD, 2022a). The pillar one is focused on a fair distribution of profits and taxing rights among countries in relation to the largest MNEs (mainly, digital companies). It would re-allocate some taxing rights over MNEs from their home countries to the markets where they have business activities and earn profits, regardless of whether firms have a physical presence there. Under pillar one, taxing rights on more than USD 125 billion of profits are expected to be reallocated to market jurisdictions each year. Another part of the pillar one (Amount B) would make it easier to identify how much tax might be owed on marketing and distribution activities in countries (Bunn, 2022). Under the pillar two, the national competition over company income tax will be minimized or disappear using mechanism of a global minimum company tax rate. The global minimum company income tax with a minimum rate of 15% is estimated to generate annually around USD 150 billion in additional global tax revenues. Further effects are going to be achieved by increasing stabilization of the international tax system and the greater tax certainty for taxpayers and tax administrations. (OECD 2021)

4. THE GLOBE MODEL RULES

The GloBE rules are intended to be implemented as a part of a common approach with intention to be brought into domestic legislation from 2022. They are drafted as a model, because that is a good method to implement them as a part of a national legislation of each state which joined a two-pillar solution and Inclusive Framework. "The GloBE Rules have been developed as part of the solution for addressing the tax challenges of the digital economy. They are designed to ensure large multinational enterprises pay a minimum level of tax on the income arising in each jurisdiction where they operate. The GloBE Rules are intended to be implemented as a part of a common approach. A jurisdiction that joins the common approach is not required to adopt the GloBE Rules but, if it chooses to do so, than that jurisdiction agrees to implement and administer the Rules in a way consistent with the outcome provided under the GloBE Rules" (OECD, 2022a). These rules should be applied to the system of *Top-up Taxes*, which relates to the total amount of the taxes a MNE paid on its excess profit in one jurisdiction considering the minimum tax rate applied by that jurisdiction. The unique characteristic of the GloBE Rules is the introduction of the limitations in their scope. This is a tool to prevent jurisdictions to come into legislative conflict in case when the rules applied in one jurisdiction are different/conflicting from the rules applied in another jurisdiction. Also, this a way to provide fair taxation in jurisdictions included in GloBE Model Rules Inclusive Framework. The limitations in the scope are as following:

- 1) the GloBE Rules are applied to the MNE Groups whose annual consolidated revenues in at least two of the four preceding Fiscal Years is equal or exceed EUR 750 million (these scope rules ensure that smaller Groups and purely domestic Groups remain unaffected by the GloBE Rules);
- 2) the GloBE Rules apply only to the constituent entities of a MNE Group (entity that is a member of a group, PE, the main entity, the ultimate parent entity⁴);
- 3) the excluded entities (a governmental entity; non-governmental organization; international organization; pension fund; investment fund as an ultimate parent entity; real estate vehicle fund as an ultimate parent entity, etc.).

⁴ Ultimate Parent Entity is defined as: an entity that (in)directly owns a controlling interest in any other entity; an entity that is not (in)directly owned with controlling interest by any other entity; a main entity of a MNE Group. (OECD, 2021)

In the context of the Global Model Rules, the MNE Group means any group that includes at least one entity or permanent establishment not located in the jurisdiction of the ultimate parent entity; also, it means a collection of entities related through ownership or control such that the assets, liabilities, income, expenses and cash flows of those entities are included in the Consolidated Financial Statements of the ultimate parent entity; or are excluded from the Consolidated Financial Statements of the ultimate parent entity solely on size or materiality grounds, or on the grounds that the entity is held for sale. Furthermore, in this context a Group also means an entity located in one jurisdiction and has one or more permanent establishments located in other jurisdictions in case when that entity is not a part of another MNE Group. (OECD, 2022a). Also, one of the limitations introduced with an aim to ensure fairer taxation is a mechanism that addresses temporary differences which appeared when income or loss are recognized in a different year for financial accounting and taxation. This mechanism builds on a deferred tax accounting, with key adjustments to protect the integrity of the GloBE Rules. Certain adjustments are required to protect the integrity of the GloBE Rules. Some allowed adjustments include using the lower of the Minimum Rate or the applicable tax rate to calculate deferred tax assets and liabilities in order to prevent deferred tax amounts from sheltering unrelated GloBE Income. The rules also require the recapture of certain amounts claimed as deferred tax liabilities that are not paid within five years. Exceptions are provided for the most common and material book to tax differences when they relate to substance in a jurisdiction or are not prone to taxpayer manipulation. These amounts do not require monitoring for recapture. (OECD, 2022). In applying the GloBE Rules in the implementing jurisdiction, both taxpayers and tax administrations may need to evaluate whether Constituent Entities in the same MNE Group are subject to a Qualified Domestic Minimum Top-up Tax in another jurisdiction in order to correctly apply GloBE Rules. "Qualified Domestic Minimum Top-up Tax means a tax that applies to Excess Profits of the domestic Constituent Entities and operates to increase domestic tax liability with respect to those profits to the Minimum Rate. The tax must be implemented and administered in a way consistent with the outcomes provided for under the GloBE Rules, including the prohibition against the implementing jurisdiction providing any collateral or other benefits that are related to such domestic tax" (OECD, 2022a, 2023). Furthermore, with an aim to protect taxpayers and tax administrations from unnecessary compliance and administrative costs, than to provide opportunity for improved tax certainty and tax transparency, and, accordingly, fair taxation, as a part of the GloBE Rules, the OECD introduced a safe harbours mechanism. The GloBE safe harbours would allow a MNE Group to avoid the effective tax rate and Top-up tax calculation in respect of its operations that are likely to be taxable at or above the minimum rate. The election of the GloBE safe harbour would be made on an annual basis (OECD, 2022a, 2023). Defining of the qualified domestic minimum top-up tax works as a very specific mechanism introduced to protect domestic tax base and prevent global tax base erosion. The definition is given in the GloBE Model Rules as a minimum tax included in the domestic law of a jurisdiction that:

- a) determines the excess profits of the constituent entities located in the jurisdiction (domestic excess profits) in a manner that is equivalent to the globe rules;
- b) operates to increase the domestic tax liability with respect to domestic excess profits to the minimum rate for the jurisdiction and constituent entities for a fiscal year; and
- c) is implemented and administered in a way that is consistent with the outcomes provided for under the GloBE Rules and the Commentary and if such jurisdiction does not provide any benefits related to such rules.

This definition distinguishes qualified domestic minimum top-up tax from other minimum taxes because it requires the minimum tax is implemented and administered in a way consistent with the outcomes provided for under the GloBE Rules and Commentary such that it increases the

MNE Group's domestic liability on domestic excess profits to the minimum rate. The definition also prohibits the provision of benefits to the MNE Group related to the GloBE Rules (OECD, 2023). The qualification of a minimum tax as a qualified domestic minimum top-up tax must be assessed in the context of the existing tax system and in light of the need to ensure consistent and coordinated outcomes in accordance with the GloBE Model Rules and their Commentary (OECD, 2023). Beside the listed mechanisms, the Inclusive Framework introduced other mechanism not mentioned above, all with a common aim - to provide transparent and fair taxation; prevent tax avoidance and evasion, and the use of the harmful tax measures to protect national tax base and increase national tax revenues, and lower taxation in neighbor and other jurisdictions and harm the tax global tax base.

5. CONCLUSION

The Pillar 2 of the global minimum company tax in accordance with a main goal of the BEPS project (prevention of the global base erosion) enable jurisdictions that joined an Inclusive Framework to introduce the GloBE rules and, in their implementation, to apply their domestic law rules in a consistent and coordinated manner. "However, it is possible that differences could arise in the interpretation or application of such rules among jurisdictions that could lead to the disputes and give rise to divergent outcomes under the GloBE rules. Therefore, the Inclusive Framework has begun work on exploring mechanisms to provide further tax certainty with respect to the GloBE Rules" (OECD, 2022b). With an aim to prevent disputes between tax jurisdictions and provide fair taxation of the MNE Group, the OECD introduced mechanisms to be applied under the law of the each jurisdiction. Some of them are: the correct application of the agreed rule order and allocation of top-up tax to each jurisdiction; cases when a Domestic Minimum Top-up Tax could be "qualified" under the GloBE rules and their Commentary to ensure consistency of outcomes in each jurisdiction; an administrative framework that provides development of safe harbours; agreed administrative guidance and a common return filing; information exchange structure. Also, the OECD published the Commentary on the GloBE Model Rules and announced providing of the Agreed Administrative Guidance, which is going to be additional source of interpretation of the Model Rules. It is expected that the Commentary and Administrative Guidance will further ensure consistency in the application and coordination of the outcomes under the GloBE Model Rules, which all will lead to the increased tax certainty and fair taxation of the MNE Group at the global level.(OECD, 2022b)

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INTERNAL AUDIT IN THE FUNCTION OF CORPORATE MANAGEMENT IN THE PUBLIC SECTOR OF SERBIA

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ABSTRACT

Requests for more effective and efficient operations are increasingly demanded by the public sector users, with a special emphasis on better quality provision of public services. Literature and business-financial reality, very convincingly confirm the significant role of an effective control and internal audit mechanisms. The concept of good management requires that the achievement of the goals of public sector organizations be economical, efficient, effective and transparent in accordance with regulations and internal acts and the approved budget. From the point of view of the organization, the basis for good management is the implementation, maintenance and development of financial management and control systems and the establishment of the internal audit function. The paper presents an overview of the quality of internal audit work among users of public funds in Serbia. Starting precisely from the grandiose aspiration to achieve greater responsibility in the disposal of public funds and good management, the aim of the work is to analyze the role of audit by looking at the contribution to institutions and bodies of the public sector to do "the right things", thereby starting from the basic assumption of knowledge of assessment methods and procedures, measurements and finally supervision of the public sector. The results of the analysis provide a comparative view of the fulfillment of requirements for the establishment of the internal audit function, the competence and training of auditors. After defining the key barriers, recommendations were given for overcoming them and guidelines were defined, especially focused on the role of audit in examining the efficiency and effectiveness of the operations of public institutions.

Keywords: *internal audit, internal control, financial management and control, risk management, public sector*

1. INTRODUCTION

Analyzing the concept of the strengthening financial discipline in the public sector, internal audit provides an independent and objective assurance that the organization is well managed. On the other hand, in the context of market mechanisms of business and the establishment of basic mechanisms of corporate governance, it represents an advisory activity with the purpose of adding value and contributing to the improvement of the organization's business. A rigorous audit process, almost without exception, can provide insight into areas where management can improve control systems and processes. In certain circumstances, the auditor may be required to report deficiencies in the control system to the management of the organization and the

competent persons. Such communication provides added the value to society and improves the quality of business processes. In the public sector, internal audit primarily has the role of contributing to the achievement of general goals related to business operations in accordance with laws and regulations, reliability, accuracy and timeliness of financial and other information, efficiency, effectiveness and economic use of resources and protection of property and information. The internal audit support is achieved through planning and risk assessment of public sector entities, assessing the adequacy and efficiency of the established financial management and control system, which are significant for the achievement of the organization's goals, and providing advice and recommendations for business improvement. In the context of good governance in the public sector, the logical question of the mechanisms that the state can use to control the achievement of defined goals arises. The state, as the owner, appoints the key bodies of public enterprises, the supervisory board and the director of the public enterprise. The fulfillment of the goals set before the public company is precisely up to them. The general perception is that public companies are in the service of political parties or individuals close to political parties, and not in the service of the public interest. The logic of public companies is reflected in the view that state intervention in certain areas of the economy is in the public interest ("Official Gazette" of the Republic of Serbia, No 25., 2000). The legal framework foresees the existence of the State Audit Institution (which, among other things, controls the work of public companies) and the obligation of public companies to perform a mandatory audit of their financial statements by external auditors. The legal framework, respecting world practice, provided that public companies in their organizational composition have a special part that deals with internal audit. Internal auditing in the public sector of the Republic of Serbia is aligned with the International Standards of Professional Practice of Internal Auditing of the Institute of Internal Auditors (UIRS, 2017) and is performed according to the Internal Audit Manual prepared by the Central Harmonization Unit of the Ministry of Finance of the RS. The key principles applied by the internal audit in its work are independence, objectivity, impartiality and professional competence. The goal of organizing an internal audit in public sector organizations is to improve the internal control system, as well as to monitor compliance with internal procedures and rules. The functional independence of the internal audit is ensured by independent decision-making on: the area of the audit based on the risk assessment, the way the audit is performed and the reporting on the performed audit (Zdravković, 2018). In this context, the presence of internal audit is of great importance for the improvement of business in the public sector. Unbiased and objective evaluations of activities and processes identify potential "weak" points that can lead to inefficient operations, non-compliance with regulations, and even losses in the business of public sector entities. The detection of irregularities by the internal audit contributes to the reduction of risks that may arise from business operations. This increases the efficiency of business and management, and as a result, the presence of internal audit contributes to increasing the value for citizens as users of public sector services and thus whole society. Internal audit units, i.e., internal auditors, are organizationally and functionally independent and solely responsible to the head of the subject, however, they are not involved in the performance of direct and executive functions. The functional independence of the audit is realized by independence from other organizational parts, in the planning and implementation of the audit and in reporting on the performed audits. The aim of this paper is to emphasize the role and importance of internal audit in supporting the manager to manage more effectively. Without timely and precise internal control, management wouldn't be able to properly direct the organization towards the set goals, which should basically lead to achieving efficiency and effectiveness, as well as business development (Trklja et.al., 2019). Thus, one of the significant preconditions for raising the quality of management in the business operations of public sector entities is the organization of an independent and independent internal audit function.

2. THEORETICAL FRAMEWORK OF THE INTERNAL AUDIT

Internal audit work is performed in entities that differ in purpose, size, complexity and structure, in different legal and organizational environments. Although differences may affect the practice of internal audit in a certain environment, compliance with the International Standards for Professional Practice of the Institute of Internal Auditors is necessary in fulfilling the obligations of internal auditors and internal audit activities for the public sector. Internal audit does not have an inspection role. The modern function of internal audit in the public sector implies the cooperation of employees and management, to obtain enough true data needed to perform the audit (Stanišić, 2015). This requires ensuring an atmosphere of mutual trust and cooperation, i.e., internal audit adopts a "participatory approach", to be transparent in its work and goals, and to always maintain professional relations. The concept of new public management based on the efficiency and effectiveness of public administration has been demanded for decades, and has experienced practical application through various models of public reforms that can be grouped into three major groups of models: Westminster (Great Britain, New Zealand), American (USA) and Nordic (Denmark, Sweden, Finland) type of reforms (Cvijović, 2014). Also, the reforms were carried out in most Western European countries, as well as in the Far East. The activity of the authorities in terms of reforms were focused on privatization, market mechanisms, decentralization, orientation to effects and results, change of work organization and transformation of the bureaucracy, management of the implementation of public policies and programs, application of information technologies, changes in the system of public finances and budget policy. The effects of implementing the reforms were varied. The best results were recorded by Ireland, the Netherlands, and New Zealand, while Switzerland, Japan and South Korea had the largest increase in public service costs (Cvijović, 2014). One of the progenitors of the theoretical approach to the wave of reforms that swept developed countries from the 1980s is Christopher Hood. In his article "Public Management for All Seasons" in 1991, he states the basic doctrines of the new public management: professionalism, performance, control, decentralization and reorganization of monolithic units, competition, managerialism and cost rationalization (Hood et. al., 1998). Although much of the public service reform rhetoric in Great Britain since the late 1970s has emphasized managerial themes—such as reducing bureaucracy or giving managers more discretion—the development of increasingly formal public sector regulation has added to the procedural constraints and other conjectures facing public managers. The later development of the topic of new management in the public sector relates to the observations that the reforms require an increasing formality of controls based on auditable procedures, which is also somewhat related to the decline of trust in traditional styles of professional self-regulation (Flynn & Asquer, 2017). A characteristic feature of the public sector is the expectation that public officials are accountable for their actions towards citizens. The lack of responsibility opens space for corruption, a scourge of public sector management that affects all countries of the world to a greater or lesser extent. Transparency in the conduct of public sector activities helps strengthen the bonds of accountability. Public sector organizations should provide financial statements and information on key performance indicators of their activities and be subject to forms of internal and external audit (Maksimović et. al., 2021). Financial statements, but also an audit trail that provides chronological documentation and monitoring of business changes within business processes, activities or operations from beginning to end, informs the public about how well public sector organizations are managed. Internal and external audits provide assurance that public finances are being managed prudently and are being used to deliver value to the public. In this context, the academic community has accepted the belief that internal audit has a positive effect on management responsibility in public sector entities, not only in terms of efficiency but also in terms of long-term value creation, and only reinforces the need to find best practices in this area (Čeliković, 2017).

Numerous models and guidelines for new management models are interwoven in the literature, primarily for strengthening the integrative function of management functions and strategic policy, and in recent years the framework of corporate management has been extended to the function of monitoring and control. The Organization for Economic Co-operation and Development - OECD defines corporate governance as "the internal means by which joint-stock companies are managed and controlled (OECD, 2004) and which include a group of relationships between the company's management, its board of directors, its shareholders and other stakeholders. Good corporate governance should provide adequate stimulation of executives and members of the board of directors in the company, to pursue goals that are in the interest of the company and shareholders, as well as to enable effective supervision, thereby encouraging companies to use resources more rationally (OECD, 2004). The concept of corporate governance contains several important determinants that in their entirety form the essence of corporate governance, among which reporting and auditing (in addition to responsibility, transparency, ethics and morals, management control and evaluation of the company's work) occupy an important place. The task of internal auditors is to provide systematic and disciplined assess and provide assurances and advice to managers about the effectiveness of risk management, the adequacy and effectiveness of controls and the effectiveness of the organization's management process (Stamatović et. al., 2020). In addition, the need to eliminate the obvious information asymmetry between investors on the one hand, and management and shareholders on the other hand, is increasingly emphasized. In 2008, Hilb created a new corporate governance model known as the KISS model (Keep it Integrated, Strategical, Situational and Controlled) (Hilb, 2008). This is achieved by introducing a business reporting model, which, in addition to financial data, includes broadcasting non-financial, expected (prospective) and information on intangible assets. The new model of corporate governance enables the provision of relevant and reliable information, but also strategic direction, integrative management and comprehensive control, both in an entrepreneurial and ethical manner, and in a way that suits each individual context (Čeliković, 2017). There is complementarity between the goals of public sector organizations and the goals of internal audit in many aspects, such as determining reliable information in the organization and efficient functioning of internal procedures and rules, determining the degree of protection and safeguarding funds against losses of any kind, and others. Internal audit assesses (CUH, 2020):

- the adequacy and reliability of the internal control system and the compliance control function of the operations of public sector organizations,
- ensures that risks are appropriately identified and controlled,
- determines weaknesses in the operations of the public sector organization and its employees, as well as in cases of non-fulfillment of obligations and excess of authority, and prepares proposals for eliminating those weaknesses, as well as recommendations for their prevention.

The audit results in an increase in responsibility, so the role of the audit can be seen as: social (public), economic, psychological and political. The social role is probably the most important role of the audit because it provides useful information to citizens and other stakeholders, who need security when it comes to the operations of public sector organizations, as well as the dedicated use of public funds. Verification provides not only security, but also protection through the prevention and identification of human carelessness that can endanger the interests of individuals and organizations (Asiedu & Deffor, 2017). Information published in financial statements can be considered a public good, because it is not only available to individuals who have capital, but also to the wider social community. The high-quality work of internal audits is also one of the requirements within the negotiation chapter 32, which is one of the most important chapters in the process of Serbia's accession to the European Union.

In addition to the fact that the legal, effective and efficient work of internal auditors is one of the requirements under Chapter 32, the findings and recommendations of the conducted audits should be available to the public, as this is part of the responsibility towards citizens who expect users of public funds to use them efficiently. and manage available public funds. The importance of an effective system of internal financial control in the public sector is that it contributes to a more successful and responsible use of budget funds at the state and local level. At the same time, through the development of this system, a new approach to management is introduced in the public sector through the definition of strategic goals in the performance of activities, the assessment of risks, as well as the establishment of stronger control mechanisms in the collection and spending of budget funds. In this way, an effective system of control mechanisms for users of public funds leads to the strengthening of corporate management practices, because in addition to the function of control and monitoring, they contribute to the strengthening of strategic policy and the preservation of the integrative function of management processes (Khongmalai et.al., 2010).

3. RESEARCH CONTEXT

Internal audit can be viewed from different contexts, for example as an organizational control that functions by measuring and evaluating the effectiveness of other controls. In this article, the research context is the observation of the influence, role and importance that internal audit can have in supporting public sector managers to manage public funds more efficiently, while achieving defined business goals and simultaneously satisfying the interests of various stakeholders, primarily citizens as users of the services of public sector institutions. When a certain organization creates a strategy and operational business plans and continues to implement them, it must monitor that business to ensure the achievement of the set goals. This monitoring represents kind of control. One of the types of controls used is the internal audit function itself, although there is a wide range of other controls as well. Its specific role is precisely to help in measuring and evaluating those other controls. The definition of internal audit given by the IIA (Institute of Internal Auditors) reads: "Internal audit is an independent assessment of the function that is established within organization to examine and evaluate its activities as a service provided to that organization" (IIA, 1999). It helps the organization achieve its goals by introducing a systematic, disciplined approach to evaluating and improving risk management activities, control and management processes (IIA, 1999). Internal auditing is an independent, objective assurance and consulting activity designed to add value and improve an organization's operations (Stanišić, 2015). In public sector organizations that strive to improve corporate governance, the essential role of internal audit can be seen from several aspects. In the first place is the role of audit in supporting the organization to meet its set goals by introducing a systematic approach to evaluate and improve the effectiveness of risk management, control and management processes. Risks in the organization are the starting point of every internal auditor, and the starting point is always the biggest and most significant. In this context, the role of internal audit is important in the sense that it provides management with the necessary information for timely response. Although as less important, the internal audit is an introduction to the objective assessment of the company's operations. Namely, in theory and in practice, internal audit is classified in "management controlling" rather than in the field of auditing financial reports. Internal audit is also internal supervision and thus an introduction to the independent audit of financial statements. An independent audit includes, in addition to the audit of financial statements, a compliance audit (which determines the level of compliance with policies, laws and other regulations) and a business audit (which represents a systematized and expert insight into professional activities with the aim of evaluating the efficiency of resource use). The corporate management system implies true and objective financial reports, which is ensured by a professional and independent audit.

Public sector entities are also expected to disclose information about their performance in providing public services and how well public sector organizations rank in terms of social and environmental concerns. The provision of performance information - usually in the form of key business performance - has been implemented in many countries in public sector organizations. Key performance indicators provide evidence used to assess how well public sector organizations are implementing their institutional mandate. In addition, they offer an opportunity to assess whether the performance of public services improves over time and provide evidence for evaluating the performance of managers of beneficiaries of public funds. Internal controls and controlling must be designed to improve, direct, limit, manage and check its activities in the organization to achieve the goals of that organization. Several authors believe that there are a number of choices where the focus, purpose and business style of internal audit is determined (McCaul, 2008). The research in this paper is focused on the application and effectiveness of control mechanisms that focus on and monitor the effectiveness and efficiency of business processes. The starting point of the analysis is the assessment of the quality of internal audit by the users of public funds in the context of the establishment in such a way that their functioning enables business in accordance with the goals of that system (DRI, 2021). A prerequisite for corporate governance in public sector organizations is the existence of norms and institutions that enable efficient and rational management of public enterprises aimed at satisfying the public interest. Corporate governance refers to structures and processes related to decision-making, accountability, control and behavior at higher levels of an organization (Ministry of Finance RS, 2020). Organizations of the public sector are different in size, they do not function according to the same legal framework, that is, they do not have a standard organizational structure. For this reason, it is important to recognize the diversity of these organizations and all the complexity of the management models that are applied, which require special consideration and impose different types of responsibilities. Adequate establishment of a financial management and control system requires organizations in the public sector to establish corporate governance structures, including an internal control system. Corporate governance can be defined as a system through which organizations direct and control their functions and establish relationships with users and other stakeholders. The basic principles of corporate governance in public sector organizations are (Ministry of Finance RS, 2020):

- Openness, which is necessary to ensure that all participants have enough confidence in decision-making processes and management processes in the organization;
- Integrity, based on honesty, selflessness and objectivity, and high standards of professionalism (correctness) and honesty in the management of public funds and the organization's affairs, which depend on the effectiveness of the internal control framework (established financial management and control and internal audit), as well as on personal standards and professionalism;
- Accountability, which represents the process in which organizations and employees are responsible for decisions and activities, including the management of public funds, as well as for all aspects of work performance (performance) that can be subject to control.

It is necessary to direct attention to fact that the institutions guided by the norms of efficient corporate governance that were adapted to the functions of public companies, achieved it by effective control mechanisms. Rules that are vaguely defined, 'loopholes' or norms that are against each other, create an ideal space for informal political arrangements. Even when such arrangements are, strictly speaking, defined by the letter of the law, they can negatively affect the functioning of public sector organizations. Therefore, the analysis of this work is focused on internal control systems that aim to help organizations achieve the desired performance goals, in terms of efficiency, compliance with laws and regulations, monitoring risks and assessing their probability and impact, all of which represent components of corporate

governance. In order to follow the guidelines of management responsibility, effective control mechanisms through organizational policies that are implemented also include a clear definition of roles and responsibilities, separation of duties and checks, preparation of documentation that justifies actions, compliance with procedural rules and monitoring of information systems security.

4. ANALYSIS AND DISCUSSION

The main goal of internal audit in modern conditions is to examine and evaluate the overall functioning of the entire business system, as well as to provide opinions and suggestions for improving its operations. (Trklja et.al., 2019). The internal audit function in the public sector in Serbia has an appropriate regulatory framework. In the manual of the Ministry of Finance for the work of internal auditors, internal audit has an important role in the concept of managerial responsibility since it strengthens the responsibility of managers, both in terms of elected and appointed persons, and in terms of users, taxpayers and citizens in a broader sense, which is achieved through (CUH, 2020):

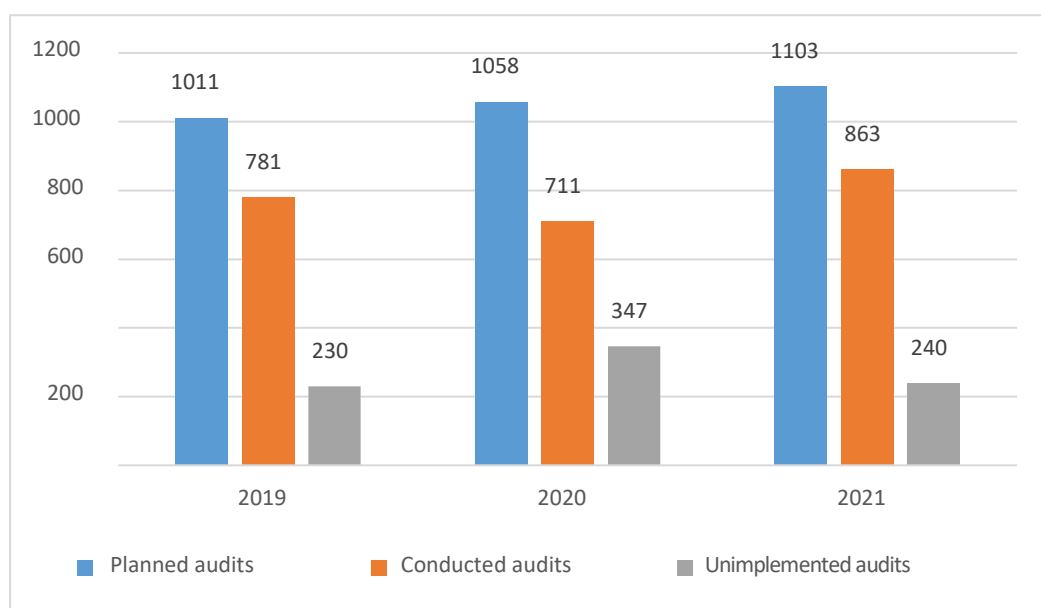
- Independence of the auditor from the subject of the audit;
- Wide scope of audit work in the public sector, which includes regularity and management according to the principle of "value for money".

It is very important to understand the context in which internal audit is established and performed in the public sector of the Republic of Serbia. Internal financial control system is a term and concept adopted by the European Commission in order to help in the understanding and implementation of good and effective control systems in the EU accession process. The goal of this concept is to ensure that public funds are managed well and economically. The concept is based on three pillars (Ministry of Finance RS, 2020):

- Central Unit for Harmonization;
- System of Financial Management and Control/Management Responsibility;
- Internal Audit.

Each of the pillars has its own role and tasks, according to which the Central Unit for Harmonization develops standards and methodology for Financial Management and Control and Internal Audit. General conclusion in the Consolidated annual report on the state of internal financial control submitted by public sector users to the Central Unit for Harmonization in accordance with the Law on the Budget System (CUH, 2022) in connection with the establishment of Internal Audit within the public sector is that within the existing possibilities, the number of established internal auditors is satisfactory, but still insufficient. In the total number of users of public funds an increase of 11% was registered that the Internal Audit function was established compared to 2020 (CUH, 2022), so we can conclude that there is a positive trend in the development of the Internal Audit function by all indicators. Direct budget users generally have an established internal audit. The situation is different with local self-government units, where it is important to point out that functional internal audits have been established in 18 out of a total of 28 cities, which accounts for 87% of realized expenditures for 2021. (CUH, 2022). The situation with municipalities is significantly worse, so only 20 municipalities have a functional internal audit, which together cover 22% of realized expenditures for 2021. (CUH, 2022). When it comes to public companies, internal audit is established in 54% of the total number of this category, which are the largest in the sample in terms of total income, expenses and number of employees (CUH, 2022). When we talk about the number of submitted reports on the established Internal Audit, the reporting in relation to 2020 records a growth of 24 % (CUH, 2022) that speaks of significant results in raising awareness among users of public funds about the added value for the organization since the

establishment of the internal audit function. In this reporting period, there was also a 31% increase in performed assurance services (CUH, 2022) compared to the previous year, which represents a significant improvement after 2020, in which business was largely slowed down by the corona virus pandemic. The total number of implemented services even exceeded the number that was achieved before the outbreak of the pandemic. The decrease in the percentage of unimplemented audits, which we can see from *Graph 1*. in relation to 2020, indicates better planning and implementation of audits, but it is necessary that the central unit for harmonization through its regular activities additionally educates auditors in this area, through continuous education, as well as in the process of assessing the quality of work of the Internal Audit.



Graph 1: Realization of the annual assurance services plan, Source: (CUH, 2022)

The internal auditors gave a total of 6,143 recommendations for improving operations and reducing the identified risks to an acceptable level (CUH, 2022). In the structure of the areas of given recommendations, there is an increase in the number of recommendations in almost all areas, except in the area of bookkeeping and financial reporting, which indicates that the users of public funds respect the legal regulations. We can see from the annual report that the recommendations are mostly implemented in the reporting period, that is 53% of the recommendations, for some of the recommendations the deadline for implementation has not expired, and about 20% of the recommendations have not been implemented (CUH, 2022). Limited personnel capacity, lack of attention, time and human resources engaged in the introduction and implementation of the given recommendations are cited as reasons for not implementing the recommendations whose deadline has expired. We can conclude that giving recommendations and pointing out shortcomings in the future will not be enough, at least when it comes to risk assessment. The tendencies in the reports and recommendations in the surrounding countries given by the internal auditors are to indicate the causes of risk to maximize the potential and contribution of the audit to the business system. The international standards of the professional practice of Internal Auditors emphasize audit engagements regarding the provision of advisory services. The standards dictate that the audit manager should consider accepting consulting engagements based on the contribution of those engagements to improving the organization's operations, improving risk management, and adding value to the organization, and all accepted consulting audit engagements must be included in the Internal Audit work plan.

Advisory engagements according to the submitted annual reports of users of public funds recorded an increase of 84% (CUH, 2022) compared to the previous year. The main reason for this growth in audit advisory services provided is the normalization of business after the crisis caused by the pandemic, given that the work of internal auditors, as well as other employees, continued to proceed normally. It is quite certain that such a significant growth of internal audit consulting services in the public sector indicates the raising of managers' awareness of the importance of audit and its benefits in decision-making processes. This is proof of the strength of internal audit, its quality, and the trust it enjoys. Internal audit standards indicate that internal audit is part of the management process and an instrument used by managers in decision-making processes. In this context, in the future there will be a challenge for internal auditors regarding their stronger involvement in decision-making processes, and then auditing the performance of those decisions. The results of this practice in the future could provide guidelines for this approach to internal audit, which would be a special contribution of internal audit in improving corporate management practices among users of public funds.

5. CONCLUSION

Internal auditors in the public sector of Serbia generally understand well what their task is, however, there is still a fundamental lack of acceptance of the role of internal audit on the part of public sector managers. However, for the adequate functioning of Internal Audit, the role of managers is crucial, and in this context, there is work to be done on establishing, understanding, and accepting the modern way of working and managing in the public sector. On introduction the internal audit into the legislative framework, managers perceived it's as an inconvenience and a necessary evil, and it was an unwanted function. There is still some misunderstanding, because managers see internal auditors as their employees and try to impose their will on them, which undermines the autonomy and independence of internal audit (Cvejić, 2018). Except from that, the managers of users of public funds must engage in ensuring adequate implementation of Internal Audit recommendations, provide unrestricted access to documentation in the audit, as well as enable professional development of internal auditors in their organizations. There is no benefit from "controlled internal audit", it is a form without content, and the manager does not have real insight into the state of control mechanisms if he receives the desired recommendations, nor can he adequately manage risks in such conditions. There is a positive effect on the efficiency of the Internal Audit function if the practices of the so-called "weights" of systems and structures that provide adequate assessments of whether internal controls ensure the achievement of the entity's goals. With this type of audit, the manager receives an assessment and confirmation of the functioning of the internal control system, which is the basis for making decisions about their adequacy. It is very important that the control mechanisms are designed and observed by the management in an appropriate way and that the role of the audit in achieving the goals and business plans is understood. Internal audit provides a reasonable assurance, but not an absolute guarantee of the achievement of goals, because the business of the entity can change its direction due to external events, which can again be reduced to a reasonable extent if the risks are adequately managed. We can be sure that without adequately established control mechanisms, the company cannot achieve its goals. So effective controls are a key responsibility of management at all levels. Essential acceptance of Internal Audit in the public sector of Serbia and understanding of its role requires time and commitment. The authors of this article believe that that time is behind us and that the established system of Internal Financial Controls and regular reporting on that basis contributed to the fact that internal audits are now perceived as part of the basic structure of the organization that exists quite naturally, gives recommendations, assures and advises, and all in order to achieve a more efficient and effective use of public funds.

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NEW FLOWS OF OIL AND GAS IN EUROPE BEFORE THE RUSSIAN-UKRAINIAN CONFLICT

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ABSTRACT

When oil was discovered at the beginning of the 20th century as a possible fuel for the entire economy, almost by accident and in the midst of the "big game" between Russia and Great Britain over the control of key parts of the Middle East, few could have imagined its indispensable role and importance in history 20th century. In the same year when the "first oil shock" occurred, another energy source, which over time will increasingly overshadow oil, also flowed towards Europe; natural gas. Gas from the USSR, for the first time, flowed to Europe on October 1, 1973, at 1:15 p.m. For the uninitiated, it was a humble beginning. The following decades brought enormous growth in Soviet-Russian oil and gas deliveries.

Keywords: oil, gas, Europe, Russia, energy

1. INTRODUCTION

The issue of energy supply has always been, like the issue of the economy as a whole, inseparable from politics. The interweaving of economic and political interests and their essential connection largely determines the situation even today. Europe's energy security indicates its essential inability to be self-sufficient in this matter and therefore independent and freer in carrying out its activities. This conditions, on the one hand, a compromise cooperation with the great rival in the east, the Russian Federation, which is its main energy supplier, which again, as a reaction, entails the complication of relations with its number one political, economic, military and cultural ally - the United States of America, which is often in a rival (even hostile) relationship with Russia. Between these extremes, balancing between East and (extreme) West, contemporary Europe finds itself today, on the threshold of starting work on the (long-since written off) "South Stream" (which is returning as "Turkish Stream") and the complications surrounding the realization of the second section on the the central European gas route; North Stream (2). Since compensating Russian gas with others would be much more expensive, and relying on American exploitation of liquefied natural gas (which is still in the development phase) seems utopian in the long run, Europe (especially the European Union and Germany as its center) remains conditioned to depend on Russia for energy and from the US to a large extent in everything else.

2. BRIEF HISTORY OF EUROPEAN OIL AND GAS SUPPLY

Since then, oil has been rightly called "black gold", it has raised and due to its absence, states, military campaigns, economies of countries around the world have collapsed, because of it, wars have been waged, coups have been carried out and historical trends have been changed. Until the seventies of the 20th century, (mainly Western) multinational companies had the almost inviolable right to exploit and distribute this energy source. The main importers were the countries of Western Europe and the USA, the main suppliers of their company and the main sources in the Middle East. Then came the real shock for the main users of this product; the first oil shock. Since then, " ...member countries of the Organization of the Petroleum

Exporting Countries (OPEC) impose a 55% tax on these companies, which leads to the first significant increase in the price of oil on the world market." Since then, OPEC has become a significant factor influencing the formation of oil prices. Until the end of the eighties of the 20th century, OPEC member countries accounted for half of the world's crude oil production. Since then, until the end of the first decade of the twenty-first century, OPEC produces on average one third of the total world production of crude oil (Đukić, 2011: 9)." In the same year when the "first oil shock" occurred, another energy source, which over time will increasingly overshadow oil, also flowed towards Europe; natural gas. "Gas from the USSR, for the first time, flowed to Europe on October 1, 1973, at 1:15 p.m. For the uninitiated, it was a humble beginning. But in order for it to be realized, it took years - almost a decade and a half of negotiations between Austrian, Italian, German companies, their governments and the Kremlin (Rapać, 2009: 516)." Even then it was clear that Europe (as a whole, especially the countries of today's European Union) in energy deficit, i.e. they consume more energy than they produce from their own resources, which automatically means that they are directed to imports. Taking into account the importance of energy sources for the functioning of modern states, the issue of energy supply is at the top of the priorities of each of them. This is because: "Energy is necessary to run the entire transport sector, the industrial sector as well as the household, and the life of a modern man is unimaginable without the use of these products." That is why the goal of every country is to provide sufficient amounts of energy, i.e. energy products, for the needs of its economy, as well as a safe and continuous supply of energy products to the economy, at stable and competitive prices (Rapać, 2009)."

3. EXISTING OIL AND GAS PIPELINE SYSTEMS

Today's directions for supplying Europe with oil and gas were also established in the seventies of the last century. "Since the 1970s, the main directions of movement of energy resources have been marked and largely built in Europe. The Council for Mutual Economic Assistance (SEV) implemented an extensive program of oil and gas pipeline construction in the countries of Eastern Europe. Also, a network of oil and gas pipelines was agreed with the countries of Western Europe, which still today represents the backbone of European roads for the flow of energy resources from the east to the west of the continent (Đukić, 2009: 12)." The fall of the Berlin Wall and the "Iron Curtain" in general did not stop the two sides' trade in energy products, on the contrary. Russia remains the main supplier of oil and gas to the European Union; "In the total import of crude oil to the European Union, Russia participates with 32.4%, Norway with 16.8%, Saudi Arabia with 10.5%." The rest of the 40% of the total crude oil imports, the European Union settles from Libya, Iran, Kazakhstan, Algeria, Nigeria, Iraq, Mexico and Syria (Eurostat, 2008: 440)." As for natural gas, the country shows even greater dependence on Russia; "The European Union has the highest concentration of natural gas imports from three countries: Russia, Norway and Algeria, almost 83%." The European Union should be particularly concerned about the fact that it is energy dependent on Russian gas and to a greater extent than on Russian oil (Eurostat, 2008: 440)." Since the situation has not changed drastically until today, except of course in favor of increased imports from Russia, the logical conclusion is that the main oil and gas routes go from Russia to Europe (European Union). And here is how they are divided; strategic energy directions starting from Russian territory are:

- 1) North Baltic,
- 2) Caspian-Black Sea-Mediterranean,
- 3) Central European and
- 4) East Siberian (Đukić, 2009: 131).

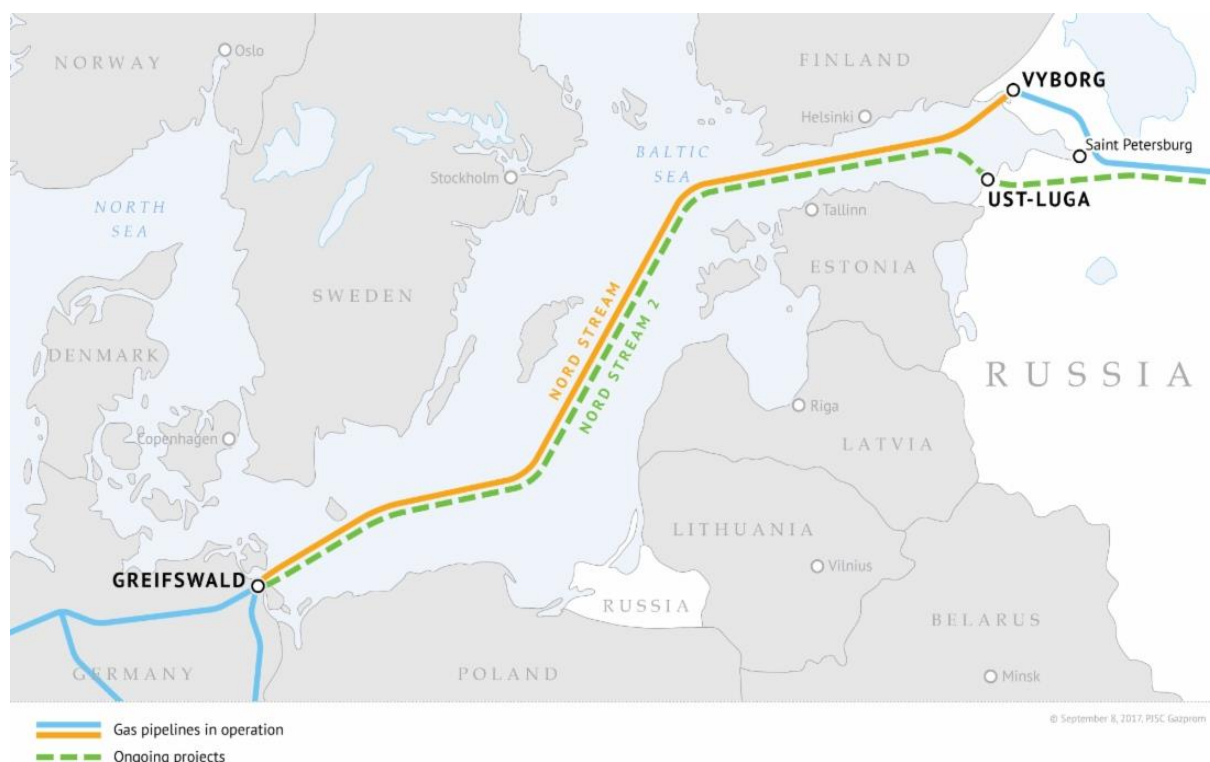
The first direction, the North Baltic, is important for the Russian economy as a whole and probably has a key importance for the future development of the Russian economy and Russia as an energy "superstate" without whose energy Europe cannot do. Its importance is best reflected in "North Stream", which should soon be continued in "North Stream 2", which will be discussed a little later, and which is the result of great controversies and the interference of various actors in order to obstruct that idea and so that it would not be realized. The second direction, the Caspian-Black Sea-Mediterranean, in addition to the export of Russian oil and gas, also serves for the transit of oil from Azerbaijan, Kazakhstan and Turkmenistan to European countries. The third is the Central European route, which is traditionally used for export oil. From Russia, oil goes to Europe in two directions; the northern, towards Poland and Germany and the southern, towards the refineries of the Czech Republic, Slovakia, Hungary, Croatia and Serbia. The last one is the East Siberian route intended primarily for the Asia-Pacific region, primarily China, and therefore we will not analyze it more seriously on this occasion (Đukić, 2009: 132-133). The "Gas Pipeline of the Century", as it was called from the first negotiations, which would solve the problem of energy supply to Germany for a long time and bypass Russia's usual and frequent disputes with Eastern European countries as transit, was contracted in 2005, when on September 8, Russian President Vladimir Putin and German Chancellor Gerhard Schroeder signed an agreement on the construction of the "North Stream", which would run along the bottom of the Baltic Sea and bypass the "disputed" states in the east and deliver gas to Germany directly (Đukić, 2011: 139). The Nord Stream, as the basis of supply to the largest and most important European country, began operating in 2011, when the first section was put into operation on November 8, and the second "started" in 2012. It is located between the Russian city of Vyborg and the German city of Greifswald through which Russian gas is transported to Germany and further to Western Europe. It is 1,224 km long. This pipeline avoids transportation through Ukraine, with which Russia had a gas price dispute in 2009; that "incident" is necessary to mention because of the future of some other projects such as "North Stream 2", "South Stream" and the recently opened "Turkish Stream". Namely, since the main route for the delivery of oil and gas to Europe passed through the territory of Ukraine, the countries dependent on these energy sources and this direction found themselves in a panic during a few days in 2009, when due to the dispute between Russia as a distributor and Ukraine as a transit country, until the dispute. The main reason for the dispute was the absence of an agreement on gas trade and transit between the two countries, because they could not agree on the price of Russian gas for Ukrainian needs and the price of its transit through this country. The dispute started on January 1st, and on January 7th, gas delivery through Ukraine was completely suspended. The conflicting parties met at the negotiating table in Brussels and after several days of negotiations, the agreement was signed on January 18, 2009, and gas flowed again two days earlier before the signed agreement (Koronakis, 2017: 122). The problem with Ukraine and the resulting tightening of relations between Russia and Western countries over the crisis in that country was the reason for not opening one stream, opening a new one, and actively stopping and sabotaging the one previously mentioned at every step. Namely, since there was a violent change of government in Ukraine in 2014 after the election that the opposition claimed was stolen by the then president Viktor Yanukovich, the country fell into chaos, anarchy, temporary powerlessness and civil war in the east of the country, predominantly inhabited by Russians. Russia refused to recognize the new government, annexed Crimea and annexed it to the Russian Federation after a referendum held on the peninsula. The West stood by Ukraine and the new government, imposing sanctions on Russia due to the secession of Crimea and the civil war in the east of the country. This was the trigger for starting a new Cold War. "Besides, the new Cold War goes beyond the Crimea problem." It is a continuous and unprecedented conflict between the United States and Germany. Under the leadership of Gerhard Schröder (SPD, 1998-2005), Germany tried to establish a bilateral agreement with

Russia, since it depends on Russian gas. The United States is against any such agreement and managed to prevent it, while the basic American position is that Germany must stop buying natural gas from Russia. For Germany it is practically impossible because Russian gas (which arrives in Germany via Ukraine) drives German industry. Replacing gas with oil is out of the question, because Germany should allocate twice as much money for oil, for the same thermal value. This explains the ongoing invisible Cold War between the USA and Germany, which is likely to spread and may drag the entire European Union into this logic (Koronakis, 2017: 124-125)." This conflict was definitely the main reason for the cancellation of the "South Stream" project, which was supposed to transport natural gas from Russia, from the city of Anapa on the Black Sea, through Turkish territorial waters to Varna in Bulgaria, and from there one branch would go through Greece to Italy and others through Serbia to Hungary, Austria and further to the European Union. The last northern stop of this branch of the South Stream would be Germany. This was unacceptable to some actors. "Because, when the European consumer sees on the map the big pincers that make the North and South Stream gas pipelines from the north and south of the continent, he can notice that a ring system has been created, a closed stable way of supplying Europe with Russian gas (Đukić, 2011: 141)." "transports" and political statements related to the war in Ukraine, this project was abandoned by the official statement of the President of the Russian Federation Vladimir Putin on December 1, 2014 (RT, 2014). In addition, "South Stream" was Russia's response to the EU project to open a gas and oil pipeline called "Nabucco". "Through Nabucco, the blue fuel from the Central Asian countries would flow to Europe, through Turkey, bypassing Russia, through the territory of Azerbaijan (Đukić, 2009: 189)." It would go from Azerbaijan and Iran, through Georgia and Turkey, to Bulgaria, Romania, Hungary, Austria and the Czech Republic Germany and further to the west, bypassing the Balkans as a whole.

4. NEW ROADS OF OIL AND GAS IN EUROPE

That business interests are often above surface political disagreements was also shown by a kind of "resurrection" of the "South Stream" project under a new name - "Turkish Stream". After the tightening of relations between Russia and the EU over the issue of Ukraine in 2014, and between Russia and Turkey over the issue of Syria (after the downing of a Russian SU-25 plane by the Turks) in 2015, the following year 2016 brought a calming of the situation and the signing of an agreement on construction "Turkish Stream", which many rightly call "Southern Stream 2". This flow bypasses the "problem states in the east" but essentially has the same goal as its predecessor. One part of this flow is exclusively for the supply of Turkey (thus placing this, the second strongest member of NATO, also under Russian energy dependence), and the other part goes to Europe according to the previously outlined paths. The gas pipeline was officially opened on January 8, 2020 in Istanbul, Turkey, in the presence of Russian President Vladimir Putin, Turkish President Recep Tayyip Erdogan, Bulgarian President Boyko Borisov, Serbian President Aleksandar Vucic and numerous others (Atlantic Council, 2020). The gas pipeline is 930 kilometers long and the branch that goes through Europe crosses the territory of Bulgaria, Serbia and Hungary and continues towards the EU, with the possibility of 15.75 billion cubic meters of gas passing through it every year. Its Balkan section is also called the "Balkan stream" (RTS, 2020). The opening of this gas pipeline, the "Serbian part" of which was ceremonially opened by President Vučić on January 1, 2021, has a particularly great benefit and significance for Serbia. It passes through Serbia with 403 kilometers, from Zaječar to Horgoš, and the practical benefit is reflected in the fact that the price of gas for Serbia will be reduced from 240 to 155 dollars per 1,000 cubic meters, which is a reduction of 35%, the cost of transportation from 48 to 12-14 dollars and earnings from transit will amount to about 185 million dollars, which is almost 1% of Serbian GDP. However, the negative side may be that Serbia is now more dependent on Turkey in terms of energy, from whose territory this section

of the gas pipeline that goes to the Balkans starts, and in the event of possible "tension" of relations between Ankara and Moscow, this may affect our damage. Another project, much larger and more significant, whose implementation is nearing completion but not the conflicts surrounding it, is "North Stream 2". The "Nord Stream 2" consortium, headed by Russia, announced that on December 28, 2020, the laying of the pipeline for the gas pipeline in German territorial waters was completed, thus ending this 2.6-kilometer section, which was temporarily stopped due to the risk of American sanction to Germany (Radio Slobodna Evropa, 2020). The total capacity of "Nord Stream 2" is 55 billion cubic meters of gas per year. Together with "North Stream 1" it makes a total of 110 billion cubic meters of gas (GAZPROM).



Picture 1: Nord Stream 2

(Source: Picture from <https://www.gazprom.com/projects/nord-stream2/>)

New tightening came a few days ago. In the final draft of the national security budget project for 2021, passed in late 2020, the US Congress included measures to combat the implementation of this project. The first results were seen already a few days later; "The Norwegian firm that was supposed to issue technical and safety certificates for Nord Stream 2 will not do so because of American sanctions." "Det norske veritas - Germanischer Lloyd" (DNV GL) announced on Monday that it will suspend all pipeline verification activities while the sanctions are in effect (Politika, 2021). Then the Russian ship "Fortuna", which is involved in the construction of this flow and which completed its construction in German territorial waters on December 28, 2020, "died" and fell under American sanctions on January 18 of this year, both the ship and its owner (Politika, 2021). Ignoring these new obstacles, the Kremlin declared that the pipeline would be completed. A German company also withdrew from the project in the meantime, after Fortuna fell under sanctions, which is another blow to the project's progress. The company "Bilfinger Engineering" was the first to withdraw from this project after the sanctions were introduced, and others may follow, which exposes the entire project to risk, with which Gazprom itself agrees; "In extraordinary circumstances, including those resulting from political pressures, such changes may result in the project being suspended or even suspended," Gazprom admitted (DW,

2021). The biggest losses from the possible suspension of this project would certainly be Germany, then Russia, but also all European countries, taking into account the size and importance of both these countries. In that case, the "Pyrrhic winner" would be the USA, which offers its alternative in the form of liquefied natural gas (which it exploits from its own reserves), although there are no fully developed and clear plans for distributing it to Europe, at what price and at what price. way, and when it could be realized and whether it would be enough to satisfy European (and above all German) needs and serve as adequate compensation, is not yet known, and the answer to these questions is mostly unknown and negative. On the one hand, this once again shows how the issue of energy supply is an essential policy issue and how energy security and supply (among other things) is a serious geopolitical issue, and on the other hand, taking into account the experience with "South Stream", it leaves the possibility that "North Stream 2", subsequently "resurrected" under a different name but with essentially the same goal.

5. CONCLUSION

As you can see from the attachment, the statement from the introductory part about the essential intertwining and mutual connection of politics and economy, where one often affects the other and one "falls out" at the expense of the other, is confirmed. Most recently, this is best seen in the "North Stream 2" project, which (in accordance with its overall importance and scale) is followed and known much more and more seriously than the "Turkish Stream", the successful successor of the failed "South Stream" project. While primarily economic and energy motives direct Germany towards the realization of this project (as well as Russia), where numerous political disagreements in this case are left aside, primarily political reasons compel the USA to oppose this project, because in Germany they see their energy subordination to Russia long-term rapprochement and therefore the weakening of German-American ties and cooperation, which are not always friendly and partner-like, on the contrary. In this sense, the issue of energy sources is a broader issue of the future of the entire European continent, torn between the interests of the main world competitors competing for dominance in this space, whether in the domain of politics, economy, energy, culture, military or any other issue. It remains to be seen the future of the Nord Stream 2 project, which will largely determine the future of Germany, Russia, their relations, the presence of the USA in Europe and, in general, the further development of European integration and the European Union.

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DISSOLUTION OF THE EUROPEAN UNION

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ABSTRACT

The European Union was created as the biggest ideological-political project that ever appeared on the soil of the European continent. This did not happen all at once, it has been worked on for years, and generations of citizens of the countries who now live on the soil of the European Union have been taught that integration and mutual unification is the only way to succeed in the future and hope for a better life. However, after more than half a century of European integration, this alliance failed to convince all nations that this is the right path for them, and it failed to convince them of the existence of the European spirit. This kind of unnatural alliance has not succeeded in forcing the great nations throughout history to renounce their heritage, and it seems more and more that it works artificially.

Keywords: European Union, integration, European spirit, unnatural union

1. INTRODUCTION

The EU was an integration created without the people, that is, the demos, and naturally there was a crisis of legitimacy, which leads to questioning its further survival. Although the lofty ideals of commonality were publicly proclaimed, the project of the European Union first fell into a major economic and then political crisis, which threatens to turn into something that will lead this community, and with it the entire European continent, to complete marginalization both in the world and on the economic scene. Instead of what was promised to the citizens of these countries, which is integration, there have been many new divisions. The consequences of all this are already coming to the surface and they threaten to become historic because there is a sense of disruption of the economic and social model practiced by European societies, which was created as a result of the civilizational achievements of the great difficulties that arose during the implementation of the EU project. Regardless of the fact that an attempt was made to build a myth about European integration, in reality it turned out that the citizens never gave enough support to this creation, not even to their political leaders, and it is now clear to everyone that the European project is actually a project of the rich, bankers and politicians, and not the wishes of citizens living in the member states of the European Union. To this can be added the decline in the desire of citizens of countries that want to join the EU, to join this community in general.

2. THE IDEA OF THE ESTABLISHMENT OF THE EUROPEAN UNION

Ideas about the emergence of a community of European states are as old as modern Europe itself. These ideas were expressed both by leading intellectuals and by some of the politicians or important statesmen. There is no getting around the fact that some of these ideas have led to a great deal of bloodshed. For example, Napoleon and Adolf Hitler, each in their own way, envisioned the unification of European countries, but with great bloodshed and the use of force. Both of these attempts ended in defeat, and the number of victims and material damage was incalculable.

Nevertheless, in addition to these extreme ideas, some other ideas appeared from time to time, at a lower level, and even some small integrations were created, which were mostly successful. The first such integration took place during the 18th century when Great Britain was created, and a century and a half later today's Italy. Italian integration can be said to be successful because it still exists today and represents the unification of small states that had no ethnic similarities. This is also supported by the fact that a little over half a century later, during the 1921 census, the majority of Italian residents declared themselves Italian. While, on the other hand, even today, slightly more than five percent of Britons identify themselves as British. After these integrations during the 19th century, the unification of Germany took place under the auspices of the German Empire. During the 20th century, Yugoslavia was created, but although ethnically similar peoples lived in it, it experienced its disintegration. The first ideas about a united Europe appeared clearly only in the first half of the 20th century. These first ideas appeared in intellectual and artistic circles in France, and then spilled over into Germany. The loudest among those voices was the Serbian intellectual Dimitrije Mitranović, who was among the first to shape the idea of an integrated Europe (Radivojević, 2004: 59-83). This intellectual resided in Munich, Germany and was working on his doctoral dissertation on modern art. In this period, he published his idea or platform about a united Europe. His idea consisted of several principles, namely: (Kovačević, 2019: 26-49)

- World wars are not the solution to creating the future of humanity.
- Until Europe stops its suicide, a real solution to the cultural problems of humanity is not possible.
- The peoples of Europe should unite with all the states on its soil, such as western and southern Slavs, Russians, etc.
- The new community will be self-created through the Union of European Republics.

The stated principles, in fact, only reflect the real state of thoughts and desires in the intellectual circles of Europe at that time and they were later accepted during the establishment of the European Economic Community in the founding documents. The idea of this Serbian intellectual was not abandoned even later in history and prevailed in intellectual circles for a very long time. After the end of the First World War, which was accompanied by great war destruction and great mortality, the idea of creating a united Europe gained momentum. Plagued by great calamities and political crisis, Europe was unable to come to any solution. A part of the political elite believes that this problem can only be solved by uniting the European countries. This idea was supported by both rightists and leftists. This idea gained so much importance that it probably would have been realized even then if the Second World War had not occurred. It cannot be denied that Hitler himself had the idea of unifying Europe, but his aspirations were very different. The Nazis developed the idea of the integration of Europe, especially in the economic aspect, and miraculously they came true after the European Economic Community was formed. For this reason, many authors believe that the idea of European integration is actually a Nazi creation (Ljepojević, 2017: 10). However, this is not true, because these ideas about the economic community in Europe were taken over by the Nazis from other authors. World War II was also devastating for Europe. A few years after the end of this war, ideas about the unification of Europe appeared in order to save the states on its territory, and this was seen as the only way out. What distinguishes this idea from the others is that its proponents advocated it more and more and eventually succeeded in making it a reality. What helped them in this was that the political scene at that time did not even exist in European countries, and on the other hand, the communist parties were very strong under the auspices of the Soviet Union, which created great fear among the European elite and had a great influence. The United States, which at this time began to have a strong influence on what was happening in Europe. America believed that by creating a united Europe, it would be able to maintain

harmony on this continent and thus preserve its hegemony that it had acquired over it. The French leader De Gaulle, who was a general, was of the opinion that in the creation of a united Europe, the thought of the emptiness of the political scene prevailed (Cirtautas and Schimmelfennig, 2010: 421-441). What all these circumstances that lead to the creation of European integration have in common is the resulting crisis. After the end of the war, all European countries were in a big crisis and had no idea how to get out of it. Although Europe was slowly recovering economically, politically there were no visions of how it was necessary to arrange relations on the continent in order to avoid a new conflict. From the fear of working again, peace becomes an obsessive thought of Western Europe at the time. That obsession, which was fueled by the emptiness on the political scene, as well as the fear of the elite and the strengthening of the communist parties and the influence of the Soviet Union, gave a chance to the advocates of integration who offered the only solution, but not a clear vision of how to get out of the political crisis in which Europe is found. The crisis was actually the main motive for advocating integration. Thus, one of the leaders who advocated the unification of Europe declared that "Europe will be created in crises (Ljepojević, 2017: 11)."

3. CREATION OF EUROPEAN INTEGRATION

During later history, this thought proved to be correct and became one of the basic principles of the functioning of these integrations. When you look at it from the other side, it is clear that European integration itself was a forced solution, something that was a way out of crises and not an achievement or a natural course of events. It must be noted here that in Western Europe at the time, which placed great emphasis on its reconstruction and economic development, there was no great mood for the creation of a united Europe, but under the pressure of the United States, this idea managed to dissolve, due to the fact that the USA wanted to create appropriate buffer zone towards Eastern Europe and the Soviet Union. Thus, it can be argued that European integration arose as a result of the Cold War (Kovačević, 2019: 26-49). It is true that America tried on several occasions after the end of the war to create some form of integration, but they mostly failed. Although without the support of America, the idea of the Unification of Europe would be just a dead letter on paper, the authorities in Europe hoped that in this way they would succeed in freeing themselves from American hegemony, and according to some even from occupation. The truth was, however, that an "integrated Europe" was a dream of American interests. This duality of European integration is present even today and is in its foundations. The first step took place at the beginning of the 50s of the last century in Paris, when the European Community of Coal and Hammer was founded, which consisted of six countries, namely France, Italy, West Germany, Luxembourg, the Netherlands and Belgium. It was a community that aimed to rebuild the economy of Western Europe. Each of these countries saw their own interest in the establishment of this community. France, for example, saw in this the control of Germany, and Germany saw this union as a way of getting closer to Europe. Despite the fact that it was founded as an association, it had a parastatal infrastructure consisting of a bureaucratic apparatus, the structure of which was later taken over by the European Economic Community (EEC). Later crises only contributed to strengthen this community even more. Although this suited the politicians in this community, they were still aware that this project did not have the necessary public support and that the majority of citizens did not look favorably on it. However, that was not important for the formation of the EEC itself, because this project was a project of the European elite and the USA, and therefore had nothing to do with citizens and their attitudes. However, in order to justify this union, it was necessary to come up with explanations that would give it legitimacy in the eyes of the public. Monet's method stands out here, which advocated the idea that the public should not be told everything that happens about this association, but should work behind the scenes according to the set goals, and inform the public only when something has been done, which will bring the citizens to the finish line.

The official version that could be heard in Europe was that this integration was a project of the future, which was in the interest of peace, economic well-being and full employment as well as creating prospects for young people. The real, i.e. hidden goal, from the very beginning was the unification of Western Europe and the creation of some "super state" that would use a single currency and have a single state structure (Cirtautas and Schimmelfennig, 2010: 421-441). This real goal remained hidden from the public, so all the announcements made by the EEC were misleading. This principle represents a big shadow hanging over the European Community, which has been tearing it down piece by piece for decades, as well as the very idea of integration. This doubt led to the emergence of intractable problems of the European Union, the successor to the EEC. After the creation of the EEC, the interest of the political elite in Europe began to decline, so that it did not have too much importance in the political life of the countries that made it up. However, even though interest declined, the infrastructure continued to be built, and thus institutions were formed that are still the backbone of European integration. It was France that dominated this alliance and its political culture was transferred to the community and this is what is now called the "Brussels bureaucracy". The revival of the idea of integration was given life by three related events. The first was the departure of French leader De Gaulle, who opposed deeper integration, the second was the bankruptcy of American public finances, and the third was the oil crisis. After that, the crisis reappears as a lever to launch the idea of deeper integration of Western Europe. After these events, the countries in Western Europe realize that they have to strengthen themselves and that only united ones can economically and politically defend themselves and progress. This represents another deception because the only ones concerned in this case were once again the European elite. After these events, there was an expansion in 1973, when Great Britain, the Republic of Ireland and Denmark joined the community. In that year, the principle was established that the power of integration is shown to the public through its expansion. This principle of enlargement remained in force until today, but at the same time it became the cause of the destruction of European integration itself. Over the years, deeper elements of integration have been worked out, but there are also the emergence of crises that only build on each other. The EEC covered up these weaknesses with enlargement. In 1981, Greece joined, and five years later, Spain and Portugal. A year earlier, Greenland leaves this community. Together with the expansion, ideas for creating a single currency, or monetary union, are still being worked on (Kovačević, 2019: 26-49). Thus, at the end of the 70s, the creation of the European Monetary System (EMS) followed the formation of the exchange rate mechanism (ERM), which was based on permitted changes in the value of national currencies in relation to the German mark. It quickly became apparent that this system did more harm than good and eventually ERM failed. The fall of the Berlin Wall represents one of the key moments in Europe after the Second World War. Germany finally unites into one country, which becomes economically the most powerful, both in terms of population and the largest European country. After that, the collapse of the communist bloc and the breakup of the Soviet Union took place. To tell the truth, the EEC was not ready for such big events, so it wandered in its positions, moving from wanting to preserve the Soviet Union to opposing the unification of Germany. France, however, accepts the unification of Germany, so the opposition of the other countries loses any meaning. From this moment on, European integration becomes a French-German tool and everything is done according to their will. After the breakup of Yugoslavia, it is quickly understood that only Germany stands behind that curtain (Ljepojević, 2017: 12). This also represents the beginning of German Europe. Regardless of the great divisions among the countries in Europe, a new agreement on integration is being prepared very quickly, and in 1992 the Maastricht Agreement was signed, which laid the foundations for an even stronger integration that takes the form of a quasi-super state and the goal of introducing single currency (Cirtautas and Schimmelfennig, 2010: 421-441).

With this agreement, the EEC becomes the European Union (EU). After that, many European countries joined the Union. During 2002, all countries accepted the single currency, the euro. This divided European countries into two blocs. After the American invasion of Iraq, the crisis between the states deepened the most, mostly between France and Germany and the USA as the European protector and mentor. This crisis was solved by new expansions. The Czech Republic, Estonia, Hungary, Latvia, Lithuania, Slovakia, Slovenia, Poland, Cyprus, Malta, Romania and Bulgaria joined the EU a little later, and in 2013, Croatia. After all these enlargements, the EU became a Union with 507 million people, which included the largest market in the world. The old member states offer the greatest resistance to the adoption of the new constitution, because the new members did not have the right to vote. A referendum is organized. The first two are happening in France and the Netherlands, where voters rejected the EU Constitution. After this event, the idea of the Constitution was abandoned, and its text was reformulated, but the essence remained the same. While this success was being celebrated, Europe was hit by a major financial and economic crisis that mainly affected countries in the Eurozone. This shows that the euro is not a good solution for the EU and is only a problem for it. After all these enlargements, the EU became a Union with 507 million people, which included the largest market in the world. The old member states offer the greatest resistance to the adoption of the new constitution, because the new members did not have the right to vote. A referendum is organized. The first two are happening in France and the Netherlands, where voters rejected the EU Constitution. After this event, the idea of the Constitution was abandoned, and its text was reformulated, but the essence remained the same. While this success was being celebrated, Europe was hit by a major financial and economic crisis that mainly affected countries in the Eurozone. This shows that the euro is not a good solution for the EU and is only a problem for it.

4. THE FALL OF THE EUROPEAN UNION

After this crisis, several EU countries, primarily Greece, Portugal, Spain and Ireland, fall into a debt crisis and face bankruptcy. In order to save the euro, the EU had to intervene and provide financial support. It was already clear from the very beginning that the EU is not saving countries, but big banks owned by the European elite. The EU once again showed that it managed to bring, thanks to its elite, the citizens to the brink of collapse. By doing so, the EU broke its Lisbon Treaty, which prohibited this type of aid to member states. However, it is obvious that these rules did not apply to the European elite, which has been its real owner since the very foundation of the European Union and which at all costs wanted to maintain the illusion of the existence of European integration. This crisis has lasted a long time and it is fueled by the exit of Great Britain from the European Union. Instead of looking for reasons for Great Britain's exit from this community, leaders from Brussels come out with sharp criticism and promise even stronger integration for those who remain. Frequent official announcements and urgent night meetings could not hide the truth that the European project has failed and that the EU is currently between the diagnosis of thermal illness and death (Cirtautas and Schimmelfennig, 2010: 421-441). No one can say with complete certainty how long this period will last, the only thing that is certain is that the end is near. Instead of looking for reasons for Great Britain's exit from this community, leaders from Brussels come out with sharp criticism and promise even stronger integration for those who remain. Frequent official announcements and urgent night meetings could not hide the truth that the European project has failed and that the EU is currently between the diagnosis of thermal illness and death. No one can say with complete certainty how long this period will last, the only thing that is certain is that the end is near. The key question that arises is how this failure came about and how Europe's biggest dream was turned into its biggest problem. The European Union actually represents the biggest problem of the whole of Europe at the beginning of the 21st century.

During its lifetime, this community failed to learn anything from its experiences and mistakes. She has not been able to figure out what contributes to the dysfunction of the integration and what needs to be done in order for it to continue to live. One of the possible answers to this question lies in the belief that this European project is actually a utopia, which is why many call it EUtopia or European utopia (Kovačević, 2019: 26-49). Hans Kundani claims that the EU is a kind of utopia, and that it represents the ambition of creating an ideal European society, but at the same time it is not a utopia because it has money (Ljepojević, 2017: 14). Now even those who supported the creation of this union are beginning to have doubts, because according to the German sociologist Wolfgang Streck, this utopian project was suppressed by the neo-liberian vision of Europe, which clearly shows the creation of a single currency (Cirtautas and Schimmelfennig, 2010: 421-441). Margaret Thatcher also wrote that the EU is "a classic utopian project, a monument to the vanity of intellectuals, a program whose failure is an inevitable fate (Joseph, 2016: 370-390)." An almost identical attitude is shared by John Gray, who says that "big utopian projects are rarely carefully and consciously not assembled", and therefore harbors doubts that the EU will not only fail, but will cause complete chaos when it fails (Ljepojević, 2017: 15). There are also a large number of those who interpret the whole EU puzzle with conspiracy theories and that some secret societies are behind this whole project. One often hears that it is about Masonic projects, and one can often hear from Masons that they are responsible for the creation of the EU (Kovačević, 2019: 26-49). They may not be Freemasons, but they may be the Illuminati or the Bilderberg Group. There are clear facts that indicate that the members of these societies were the founders of the EC and, later, the EU. It is known that all these societies represent the most powerful people in Europe and it is quite understandable that they had an influence on the establishment of this community. However, it is inappropriate to dedicate the entire establishment of this community to these societies, because it was the guiding idea of European intellectuals and the political elite. The fall of the EU is the prospect of the European Union ceasing to exist as an organization or the exit of a significant number of its members or the most economically developed member states. The study of possible scenarios, their expected consequences, the reasons for the emergence and development of "centrifugal" forces in Europe is the subject of study by political scientists, sociologists and economists, the possibility of the disintegration of the EU is mentioned in the programs of political parties and leaders of European countries. After the creation of the European Union, Eurosceptic opposition parties appeared in the participating countries that criticized the common European policy or called for the exit of their country from the European Union. The most significant achievement of Eurosceptics is the exit of Great Britain from the European Union. The reasons for the exit of Great Britain from the European Union are: (Wallace, 2012: 225-239)

- Economic inequality;
- Crisis of national sovereignty;
- Contemporary Euroscepticism.

New research and polls show that skepticism has been on the rise since 2016, with one in three voters now supporting parties critical of or hostile to the bloc (Cirtautas and Schimmelfennig, 2010: 421-441). The paradox at the heart of the EU is being exposed today, showing that Eurosceptic votes have more than doubled in two decades, even though support for the EU remains at an all-time high. The sudden increase in the electoral success of parties supporting Eurosceptics reveals the studies of the PopuList project, conducted by academics, experts on populism and radicalism in the EU (Cirtautas and Schimmelfennig, 2010: 421-441). Matijs Ruiduijn, PhD in political science, associate professor at the Department of Political Science at the University of Amsterdam, and the initiator of The PopuList project for international scientific cooperation, says that "Euroscepticism is flourishing, and it is unlikely to change

soon. time" (Wallace, 2012: 225-239). The project covers all currents of Euroscepticism: the "hard" version is a direct rejection of European political and economic integration; an active part of the opposition, which defends the integrity of the European Union; and softer and more reasoned remarks on certain aspects of the European project. Research shows that since 1992, the first year that free and fair elections were held in every EU member state, the combined support of the European far-right, far-left and other skeptical parties has risen from 15% to almost 35% (Populism, 2023). The UK left the European Union on 31 January 2020 at 23:00 GMT. The reason for the exit is the result of the consultative referendum on June 23, 2016, when 51.9% of those who voted supported the exit of Great Britain from the European Union (DW, 2021). The United Kingdom joined the European Communities, which became the basis of the future European Union, on 1 January 1973 and confirmed this membership in a referendum in 1975. While exit from the European Communities was demanded by the political left in the 1970s and 1980s, by the 2010s exit from the EU became the main political goal of the conservative opposition - nationalists and Eurosceptics. Following the 2016 referendum result, previous Prime Minister David Cameron, who had championed keeping the UK part of the EU, resigned and was replaced by Theresa May. On March 29, 2017, the United Kingdom government initiated the withdrawal procedure in accordance with Article 50 of the Treaty on European Union; the country was expected to leave the European Union on 29 March 2019 at 23:00 GMT. However, as a result of severe disagreements both between the leading parties in Parliament and within the UK government itself, the publication date has been delayed several times - Parliament rejected the proposed exit plans and obliged the government to seek a delay from the EU; in return, the European Council agreed to extend the withdrawal deadline until October 31, 2019. These disagreements related to different views on the exit process and the future of the UK after it: the Labor Party insisted on maintaining a customs union with the EU, while many members of the Conservative Party found unacceptable the plans to pay the UK's financial obligations to the EU as part of the exit, as well as the creation of customs barriers on the border between Northern Ireland and Ireland proper, which remains part of the European Union. At the same time, smaller parties such as the Liberal Democrats, the Scottish National Party and others demanded a new referendum to keep the UK in the EU. As a result of ongoing controversies, Theresa May announced her resignation as Prime Minister in May 2019. Her successor Boris Johnson, who was elected to this position by members of his party in July 2019, was also unable to obtain significant concessions from the EU, and moreover, according to the law adopted by the parliament on September 9, 2019, he is obliged to ask the EU leadership further delay of the release date. In the parliamentary elections held on December 12, 2019, the majority of parliamentary seats were won by conservatives who advocate leaving the EU. After that, the law on withdrawal from the EU was adopted. At midnight from January 31st to February 1st CET, the UK officially withdrew from the European Union (DW, 2021). According to the agreement with the EU dated January 31, 2020, Great Britain lost representation and the right to vote in the EU authorities, but at the same time remained part of the single economic space until the end of 2020. During these 11 months, the UK and the EU have agreed on new terms of trade and cooperation (DW, 2021). Predictions from the past decade that the EU would successfully deal with crises have come true. The EU has managed to solve many problems, both economic and political. When considering whether the EU is now or will ever be on the brink of collapse, most experts believe that an international organization made up entirely of liberal democracies will prove more resilient. In the discussion about the prospect of the breakup of the EU, there is convincing evidence that EU member states will continue to work together to find a way out of the crisis (Populism, 2023). At the same time, according to analysts, the optimistic forecast was threatened by the outbreak of the pandemic caused by the Kovid-19 virus (Populism, 2023).

Centrifugal tendencies that have emerged in the EU as a result of the pandemic are intensifying: policies that defend national interests are gaining weight; anti-globalists gain more support; stricter borders have been introduced within the Union (some governments have introduced border restrictions within the Schengen area); growing opposition to "green" politics; tension is growing in relations not only between eastern and western countries, but also between northern and southern countries. A recent public opinion survey conducted by the agency "Dire" (Italian: Agenzia DIRE) and the Research Institute Tecne (Italian: Istituto Tecnè) showed that if in 2018 65% of respondents believed that staying in the EU was the right decision, then in the spring of 2020 their number dropped to 44%. As many as 42% of Italians agree that we should leave the EU. Co-founder of Roubini Global Economics (RGE), RGE Monitor, who is Professor of Economics at the Leonard N. Stern at New York University, argues that the global economy is facing an unprecedented long-term recession. The European Commission has published a forecast that the European economy will shrink by 7.4 percent in 2020, as it is the "deepest economic recession in the history of the EU." Even if the threat of a viral infection passes, the economic consequences could weigh on the global economy for months, if not years later, according to Maarten Verwey, head of the European Commission's economic and financial affairs unit (Project Syndicate, 2020). Poland and Hungary are considered the first possible candidates to leave the EU due to their rather conservative attitudes towards the population and the government. This is primarily due to the acceptance of refugees from the Middle East and Africa, as well as the progressive policy of the EU regarding the LGBT community and its promotion. Also, there is a possibility that countries with internal and economic problems will leave the EU, for example, Spain with the Catalan crisis or Greece with its economic crisis.

5. CONCLUSION

This paper clearly shows that the fall of the European Union is imminent. Its end cannot be confirmed with certainty, nor can it be said what it will look like. An artificially created creation, which to this day is not approved by the public of the countries that are its members, as well as the birth of the European spirit, speaks of the fact that it is very difficult to establish such a creation with countries that have different cultural and ideological heritage. Moreover, many of the great powers that are within the EU were once great powers themselves during the colonial era and can hardly accept having someone from outside create their policies. The idea of creating the EU was born even before the First World War, and later crises and the Second World War contributed to the realization of this idea, a little with the push of European leaders who did not know how to react in times of crisis, and a little in the interests of the United States Countries that wanted to create a foothold in this part of the world, in order to fight against the growing communism and the power of the Soviet Union. Although the European community was guided by the slogan that it was acting alone, it was clear that behind its decisions was the USA, and later Germany. According to some, the union that was created is a utopia, and as such it cannot function, yet this utopia has money, but over time it faced several crises and did not know how to respond to them. At the same time, it broke a number of its own rules, in order to save interest groups and not member states that were in debt slavery. Also, the EEC, and today the EU, failed to learn anything from their past mistakes and change their mechanisms to prevent future crises. She used each new crisis to expand herself to cover up the problems she was facing. Today, the European Union is a bulky apparatus that cannot function well, nor quickly, but slowly. This bulky apparatus, with conflicting interests, and with exposed truths, as well as with the decline of trust in the same among the citizens of the members, will inevitably lead this community to ruin.

Its fall will certainly cause great shocks throughout Europe, which can lead Europe to an even greater crisis, especially after the corona virus pandemic, when this union and all other countries are facing severe consequences and rising inflation.

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MATHEMATICAL MODELING AND COMPUTER SIMULATIONS OF AIRCRAFT STABILITY

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ABSTRACT

This paper presents the results of research on the impact of external forces on an aircraft: gravitational forces of the Earth, aerodynamic forces, transfer inertia forces, reactive forces, and Coriolis forces. The problem is interesting because it analyzes the capabilities of the aircraft body to sufficiently follow the direction of translational velocity, which is tangent at each point on the center of mass trajectory. The proposed solution achieves high-quality simulation of motion in software solutions with six degrees of freedom in a wide range of initial angles. The calculations obtain: range, ordinate, direction, angular velocity, flight velocity, and descent angle as a function of changes in flight time and initial angle. A special contribution of the paper is the calculation and analysis of the stability of aircraft flight as a function of flight time and distance covered through the gyroscopic and dynamic stability coefficients at the initial part and the derivatives on the curved part of the trajectory and changes in the angle of attack $\alpha(t)$ around the y-axis and the slip angle $\beta(t)$ around the z-axis. The particular contribution of the paper lies in significant savings of all resources. The contribution of the paper itself confirms the irreplaceable role of simulation in scientific research due to better understanding of the system (reveals oversights in design), improving efficiency (reveals problems in systems), testing alternatives (avoiding expensive and sometimes dangerous experimentation by trial and error on a real system), saving time, human resources, and money (the cost of simulation is small compared to the benefits it provides), and creating virtual environments. By applying the proposed solution, the procedures of research are rationalized and simplified.

Keywords: *differential equations, model, simulation, dynamic system, aircraft*

1. INTRODUCTION

The motion of a classical projectile represents a complex system that depends on a large number of factors. One of the key factors is the stability of the projectile's motion. The stability of a projectile determines its ability to maintain a certain orientation in the air and to move along a desired trajectory without sudden deviations. This chapter will explain what affects the stability of the motion of a classical projectile and how it can be ensured. The stability of the motion of a classical projectile depends on a series of factors, among which the most important are aerodynamic, kinematic, and dynamic factors.

Aerodynamic factors include the shape of the projectile, the arrangement of surfaces, the type and quantity of fins, while kinematic factors involve the speed, height, and angle of the projectile's motion. Dynamic factors relate to the interaction of the projectile with the environment, such as the effects of wind, gravity, and other external forces. There are two basic types of stability of the motion of a classical projectile: static and dynamic stability. Static stability refers to the ability of the projectile to return to its initial position after deviating from the desired trajectory, while dynamic stability involves the ability of the projectile to maintain stability of motion at high speeds and under large angles of attack. The stability of the motion of a classical projectile is ensured in various ways, depending on the type of projectile and the conditions in which it is used. One way is to use fins located at the rear of the projectile. Fins increase air resistance and stabilize the motion of the projectile, preventing sudden deviations from the desired trajectory. Additionally, the aerodynamic shape of the projectile can be designed in a way that enables stability of motion. Moreover, the use of guidance systems, such as inertial systems or GPS, can help maintain the stability of the motion of the projectile. The stability of an aircraft refers to the ability of the body to sufficiently follow the direction of the translational velocity, which is the tangent at each point on the trajectory of the center of mass. Mathematically, the aircraft should have properties that neutralize disturbances that cause this inconsistency. Stability is considered by introducing quantitative Lyapunov criteria for a chosen case of undisturbed motion. Static stability is characterized by the balance of forces and moments during the flight of the projectile. The degree of overload can be taken as a quantitative indicator. Dynamic stability is assessed based on Lyapunov's quantitative criteria: maximum amplitude values of a disturbed variable relative to the nominal, damping time-duration of the transitional process, periodicity and aperiodicity, etc. In classical aircraft, stabilization is achieved through the projectile's ability to rotate at high angular velocity, which provides an oscillatory character of the change in the state variables of disturbed motion. Changes in the amplitude of the oscillatory motion are related to the problem of dynamic stability and depend on the moments and forces acting on the aircraft, primarily the damping and Magnus moment.

2. GYROSCOPIC AND DYNAMIC STABILITY OF AXIS-SYMMETRIC AIRCRAFT

Static stability is a property that refers to a projectile's ability to maintain its orientation in flight without rotating around its axis, under the influence of small disturbances. If the projectile is stable, it will return to its initial position after being disturbed by an external force, such as a change in wind speed or sudden turn. Static stability is determined by analyzing the distribution of masses and aerodynamic forces acting on the projectile. The evaluation of projectile dynamic stability is defined by Lapunov criterion. Quantitative disturbances are: maximum amplitude of disturbed value in regard to nominal value, period of transitional process (dumping), periodic or aperiodic behavior. The aim of the research is to achieve dynamic stability of projectile, i.e. to make the maximal amplitude of disturbed value to converge to nominal value, such as the angle of attack. The general solution of complex inhomogeneous differential equation is sum of solution of homogeneous differential equation and one particular solution of inhomogeneous differential equation $\tilde{\xi} = \tilde{\xi}_h + \tilde{\xi}_p$. The homogeneous solution is caused by initial trajectory disturbances and particular solution is caused by acceleration of gravitation and aerodynamic asymmetry. The coefficients of homogeneous part of complex differential equation do not depend upon flight velocity. The variables depend on the change of aerodynamic coefficient with the change of Mach number. The prediction of stability of axis-symmetrical projectile is determined by observing the value variations of damping coefficients λ_1 and λ_2 , and evaluating the relationship factors of dynamic S_g and gyroscopic S_d flight stability.

Frequency equation,

$$\Phi_j = \frac{1}{2} \left[P \pm \sqrt{P^2 - 4M} \right], \quad j = 1, 2, \quad (1)$$

depends on Murphy's coefficients P and M ,

$$P = \frac{I_{XX}}{I_{YY}} \cdot \frac{p \cdot d}{V},$$

$$M = \frac{C_{M\sigma}^* - C_{M\dot{\sigma}}^* \cdot \frac{V'}{V} - C_{Mq}^* \cdot C_{Z\sigma}^*}{\bar{I}_Y^2},$$

where are:

$$C_{M\sigma}^* = E \cdot C_{M\sigma}, \quad C_{M\dot{\sigma}}^* = E \cdot C_{M\dot{\sigma}}, \quad C_{Mq}^* = E \cdot C_{Mq}, \quad C_{Z\sigma}^* = E \cdot C_{Z\sigma}, \quad C_X^* = E \cdot C_X, \quad E = \frac{\rho \cdot S \cdot d}{m} \text{ and } V' = C_X^*.$$

The criterion of gyroscopic stability for full linearized solution is:

$$(P^2 - 4M) > 0, \quad (2)$$

According to classic exterior ballistics, gyroscopic stability factor is defined by:

$$S_g = \frac{P^2}{4M}. \quad (3)$$

In case of gyroscopic stabilized projectile, where Murphy's coefficient is $M > 0$, equation (3) is simplified and criterion of gyroscopic stability is given by:

$$S_g > 1 \text{ or } \frac{1}{S_g} < 1.$$

The main condition for dynamic stability is that both damping coefficients are less than zero ($\lambda_1 < 0$ and $\lambda_2 < 0$) during all flight period. During the real flight, it is possible that damping coefficient becomes positive, for a short time period, and then reestablishes negative values, without significant influence on flight. If the positive trend of damping coefficients remains during the flight, the projectile becomes unstable on the trajectory. Static stable projectile without spin (or with small axial rotation) has values of Murphy's coefficient $M < 0$, and spin velocity p is equal to zero or small enough that might be neglected.

Damping coefficients equation, represented by:

$$\lambda_j = -\frac{1}{2} \left[H \mp \frac{P(2T - H)}{\sqrt{P^2 - 4M}} \right], \quad j = 1, 2, \quad (4)$$

shows that, in this particular case, only condition for dynamic stability is that Murphy's coefficient $H > 0$. In case of fin stabilized projectile, the sum of dynamic derivative of aerodynamic coefficients is usually negative, $(C_{Mq} + C_{M\dot{\sigma}}) < 0$.

The aerodynamic coefficient of normal force is usually negative, $C_{\bar{z}\sigma} < 0$. In this way, the dynamic stability is provided, because the Murphy's coefficient is positive, i.e. $H > 0$.

$$H = -C_{\bar{z}\sigma}^* - \frac{(C_{\bar{M}q}^* + C_{\bar{M}\dot{\sigma}}^*)}{\bar{r}_Y^2}, \quad (5)$$

Regarding to the equation (4), it is concluded that dumping coefficients λ_j will be negative, respectively to the following condition,

$$\left[H \mp \frac{P(2T - H)}{\sqrt{P^2 - 4M}} \right] > 0, \quad (6)$$

The dynamic factor of stability S_d is defined by Murphy's coefficients

$$S_d = \frac{2T}{H}. \quad (7)$$

The insertion of equation (7) in equation (6) leads to following inequalities, where both inequalities have to be fulfilled to achieve dynamic stability,

$$H > 0, \quad (8)$$

$$\left[\frac{P^2(S_d - 1)^2}{P^2 - 4M} \right] < 1. \quad (9)$$

The solution of inequality (9) gives

$$S_d(2 - S_d) > \frac{4M}{P^2}. \quad (10)$$

The insertion of equation (2) in inequality (10) gives following inequality:

$$\frac{1}{S_g} < S_d(2 - S_d). \quad (11)$$

Equations (8) and (11) describe general criteria of dynamic stability for any axis-symmetric projectile with or without fin stabilizer. Most types of projectiles can be classified in two groups: static stable type of projectiles without axial rotation or slow-spin projectiles and static instable type of projectiles which have to be gyroscopically stabilized.

3. CONCEPT OF PROGRAM SOLUTION

The program solution "PROGRAM SB06.FOR" for a personal computer was created in the programming language FORTRAN, and consists of four units [2]:

- File SB06U. DAT.- input file
- Program SB06. FOR. - the main program
- File SB061. DAT.- output file.
- File SB062. DAT.- output file.

The SB06.FOR program is intended for detailed external ballistic calculation and flight simulation of a rotating missile with and without reactive force.

According to one option, the program calculates the characteristic parameters of the missile's flight stability. Integration of differential equations is performed using the Runge-Kut method with four approximations. The accuracy of the calculation depends on: integration step, accuracy and number of derivatives of aerodynamic coefficients, defined wind speed and reactive force. Contents of input file SB06U.DAT:

- the first group of data on initial and boundary conditions for aircraft flight calculation: initial time, calculation step, method of stopping the calculation - boundary data, interval and step of calculation of stability parameters, wind components, initial position of the aircraft, initial velocity of the aircraft, initial angular velocity of the aircraft and angular initial position of the aircraft (attitude),
- the second group of data on the geometric and dynamic properties of the aircraft: the position of the center of mass, the main moments of inertia, the diameter and mass of the aircraft model,
- the third group of data on the aerodynamic properties of the aircraft: aerodynamic coefficients and derivatives of forces and moments in relation to Mach number values.

T0, H, TK, XK, ZK
 T1, T2, NDT, NSTAB
 VW0, DVW, AW0S, DAWS, FW, HI0S
 (X(K), K=1,3)
 (X(K), K=4,6)
 (X(K), K=7,9)
 FI0S, TETA0S, PSI0S

Files SB061.DAT and SB062.DAT are created during program execution. With the WRITE command of the SB06.FOR program, the obtained information is placed in the wih. These are the results of the external ballistic calculation represented by tabular output values. Figure 1 shows the algorithm of the program solution.

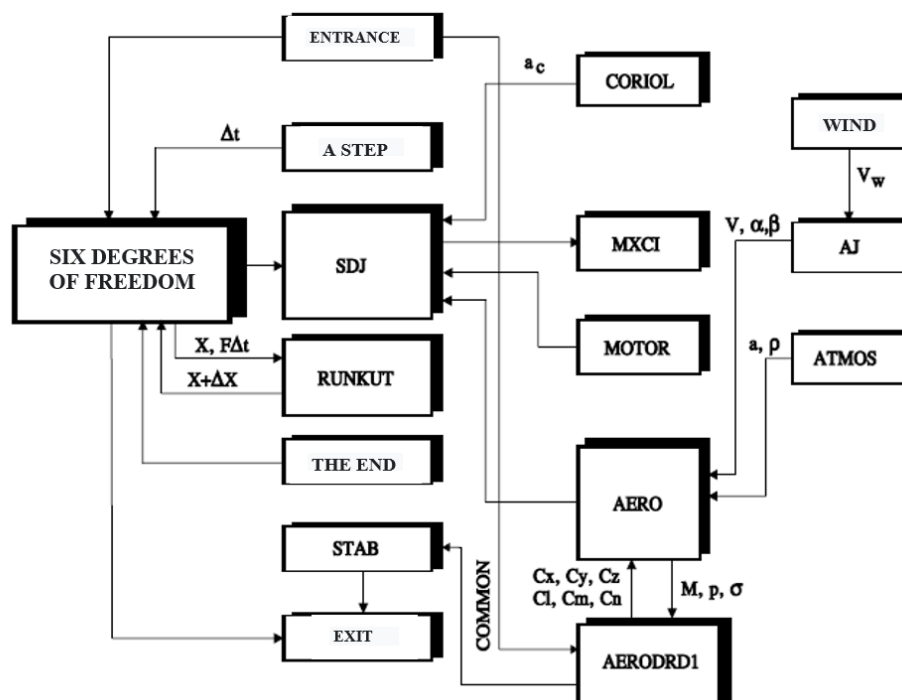


Figure 1: Block diagram of the SB6A1 flight software solution

The program solution provides data on changes:

- Range, ordinate, direction, angular speed, flight speed and angle of descent in function changes in flight time and starting angle;
- Flight stability of the projectile as a function of flight time and distance traveled coefficients of gyroscopic and dynamic stability at the initial part i derivatives on the curved part of the path;
- Changes in the angle of attack $\alpha(t)$ around the y-axis and the slip angle $\beta(t)$ around the x-axis.

The result of the calculation by the software solution, represents three groups of data in functional dependence on time, as independent variables:

- path elements - movement characteristics,
 - coordinates of the center of mass of the aircraft (x , y and z),
 - flight time - aircraft movements (t),
 - angular position of the aircraft in space prostoru (χ and γ),
 - flight speed components - aircraft movement (u , v and w),
 - components of the angular speed of the aircraft (p , q and r),
- stability parameters
 - damping coefficients - the roots of the solution of the stability equation (λ_1 i λ_2),
 - gyroscopic stability factor in the form ($1/Sg$),
 - dynamic stability factor in the form ($Sd(2 - Sd)$),
 - angle of attack in the vertical plane and slip angle (α i β),
- accuracy measures and probability of hitting the target,
 - probable deviation by height, direction and distance (V_v , V_p and V_d),
 - differential range coefficients ($\partial X/\partial V_0, \partial X/\partial \theta_0, \partial X/\partial \tau_0, \partial X/\partial p_0, \partial X/\partial W_x$),

For the aircraft model, dynamic properties were determined using the Inventor software package [2]. In addition to the position of the center of mass in relation to the top of the aircraft, the moments of inertia along the main axes of the model aircraft were also determined:

- the position of the center of mass from the top of the aircraft, $x_{CM} = 133$ mm,
- longitudinal moment of inertia of the model, $I_{xx} = 263,6$ kg mm²,
- transverse moments of inertia of the model, $I_{yy} = I_{zz} = 3,052 \cdot 10^3$ kg mm².

Table following on the next page

Parameter	Label	Value
Mass	m	0,960 kg
Ballistic coefficient	C_{43}	0,68
Center of mass position from the top	x_{CM}	133 mm
Referent diameter	d	39,9 mm
Diameter of cylindrical part	d_2	39,2 mm
Base diameter	d_3	35,2 mm
Nose diameter	d_1	7,3 mm
Rotating band diameter	d_4	42,0 mm
Total length	l	207,6 mm
Nose length	l_1	103,3 mm
Cylindrical part length	l_2	85,9 mm
Back cone length	l_3	18,4 mm
Front ogive radius	R_{lo}	1103 mm

Table 1: Parameters of the aircraft model

3.1. Analysis of the Flight Path Calculation Results of the Aircraft Model

Motion of projectile is simulated through six-degrees of freedom model (6DoF), [1]. Comparative analysis of calculated and experimental parameters of stability is presented in pictures as dependencies of angle of attack, dumping coefficients and factors of dynamic and gyroscopic stability on time and path. Preliminary qualitative evaluation of projectile flight stability is determined through analysis of components of total angle of attack. At initial part of trajectory, disturbances cause deviation of velocity vector from longitudinal axis of projectile. Values of angle of attack α and side-slip angle β should decrease during the flight. This would provide initial qualitative condition of stable flight. The angle of attack α and side-slip angle β versus time flight and distance in initial part of trajectory is presented in the pictures 2 and 3. Results of flight simulation are presented in regard to two different groups of initial data: experimental values (*exp*) and calculated prediction (*calc*) of aerodynamic coefficients for model of axis-symmetrical projectile.

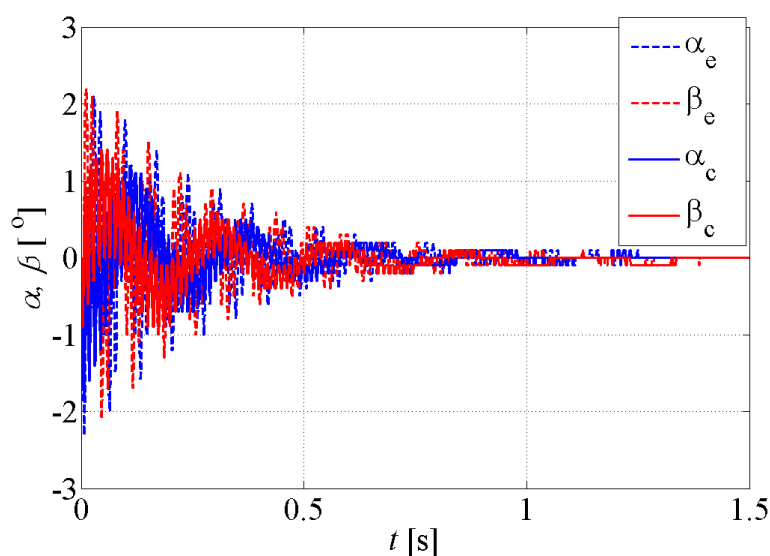


Figure 2: Angle of attack vs. time

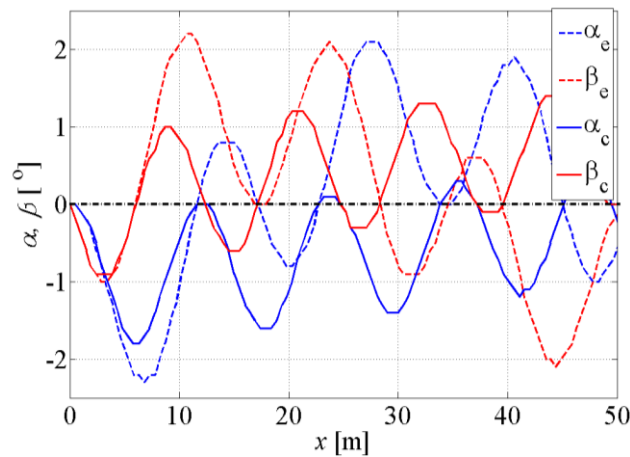


Figure 3: Angle of attack vs. distance

The analysis of flight stability is performed according to 6DoF simulation using experimental and calculated values of aerodynamic coefficients for same flight conditions. Qualitative stability analysis is performed with regard to stability equations and inequalities of dumping coefficients and stability factors. Stability parameters determined by 6DoF flight simulation of model of projectile are presented in pictures 4 and 5.

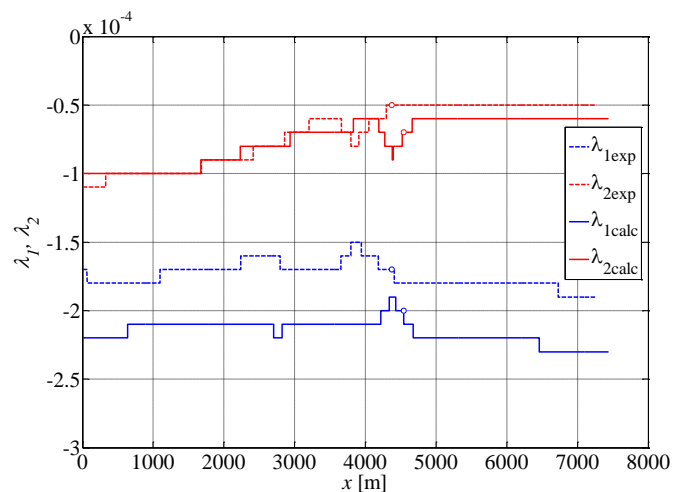


Figure 4: Damping coefficients vs. distance

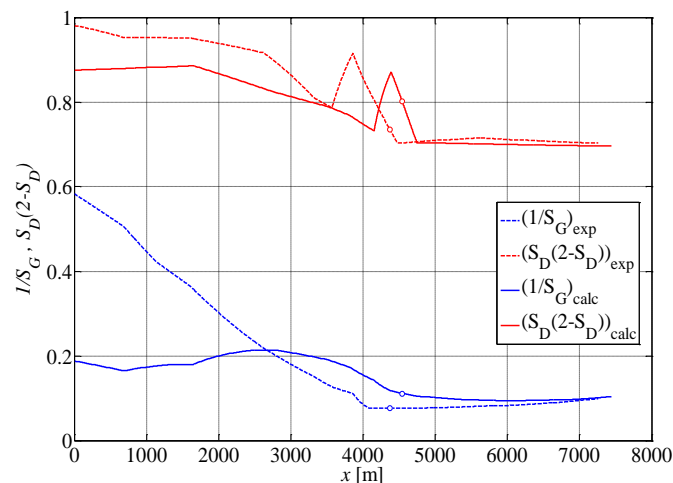


Figure 5: Factors of stability vs. path

Trajectory simulation is performed according to experimental (exp) and calculated (calc) values of aerodynamic coefficients. In the picture 4 preliminary conditions of stable flight as negative values of dumping coefficients during the flight ($\lambda_j < 0$) are presented. In the figure 5 final and sufficient condition of stable flight, as relation of gyroscopic and dynamic factors of stability, is presented and given by inequality (11). Presented results of stability research for model of axis-symmetric projectile, [3,5], describe a type of static instable projectile stabilized with longitudinal rotation.

4. CONCLUSION

By simulating movement in a software solution with six degrees of freedom of movement in a wide range of starting angles, it enables the calculation of flight stability and the element of the aircraft trajectory. The dependence curve of the ordinate y in relation to the horizontal distance x has an identical character of change [1,3]. The stability parameters of an axisymmetric aircraft also depend on the value of the derivatives of the aerodynamic coefficients. The calculation showed that the character of the change of the angle of attack α and the angle of slip β for the values of calculated and experimental derivatives differs according to the damping frequency and the oscillation amplitude, especially in the first part of the path. Based on the calculations, it can be seen that the theoretical criterion of flight stability is satisfied: that the real parts of the roots λ_1 and λ_2 are negative [3,9]. The consequence of that is the reduction of the sum of those two vectors, and thus the angle of attack and the mutual approach of the projectile axis and flight speed. The amplitudes of the angle of attack changes decrease during the flight, which proves the stability of the aircraft's movement both for the derivatives calculated from the calculations and from the experimental results. The condition of stability is satisfied if the following condition is met:

$$H > 0 \text{ i } \frac{1}{S_g} < S_d(2 - S_d).$$

Most aircraft can be classified into:

- statically stable without rotation around the longitudinal axis or pro-rotating,
- statically unstable that must be gyroscopically stabilized.

Basic characteristics of statically stable aircraft: they are gyroscopically styled regardless of rotation around the longitudinal axis; if the dynamic stability factor is in the interval $0 < S_d < 2$, the statically stable aircraft is always dynamically stable, regardless of the rotation around the longitudinal axis; for values of the dynamic stability factor $0 > S_d > 2$, a large angular velocity around the longitudinal axis (p) will make statically stable aircraft dynamically unstable.

The basic characteristics of statically unstable aircraft are:

gyroscopic stability is a necessary but insufficient condition for dynamic stability;

at dynamic stability factor values, a statically unstable aircraft is always stable. The value of longitudinal rotation at a certain angular velocity necessary for dynamic stability is obtained from the condition:

$$p^2 > \frac{4M}{S_d(2 - S_d)},$$

Where in:

$$P = \left(\frac{I_x}{I_y} \right) \cdot \left(\frac{pd}{V} \right);$$

for the value of the dynamic stability factor $0 > S_d > 2$, a statically unstable aircraft cannot become dynamically stable regardless of the value of the longitudinal angular velocity p ; for statically unstable aircraft, the condition of dynamic stability is:

$$\frac{1}{S_g} < S_d(2 - S_d).$$

Figure 6 shows a graphic representation of the relationship between the gyroscopic and dynamic stability of the aircraft with the angular velocity p around the longitudinal axis of the aircraft [1,5].

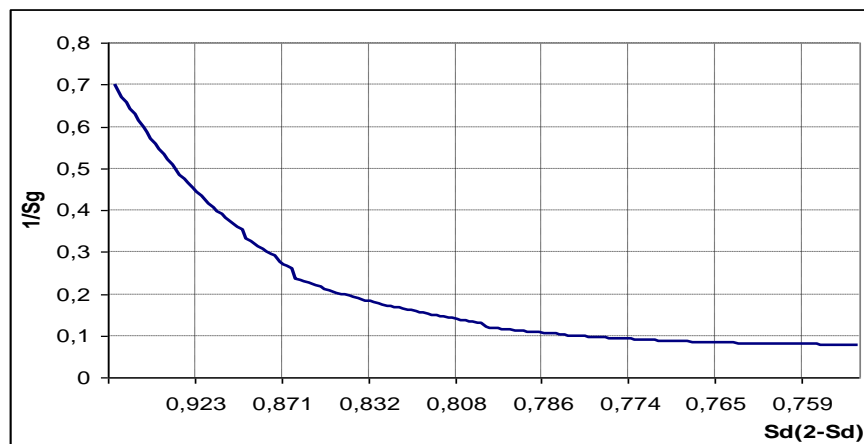


Figure 6: Interdependence of the coefficient $1/S_g$ and $S_d(2-S_d)$

Based on the obtained values in Figure 6, it can be concluded:

- for the value of the dynamic stability coefficient $0.8 < S_d < 1.2$, the condition $S_g > 1$ for dynamic and gyroscopic stability is sufficient;
- if the coefficient of dynamic stability $S_d = 0.5$ (or $S_d = 1.5$), then it S_g should be greater than to 1.33 ensure dynamic stability;
- for the value $S_d = 0.1$ (or $S_d = 1.9$) the aircraft would be dynamically stable if $S_g > 5.26$.
- Keller, Reno and Mc Shane believe that equation (16) can be considered a "reinforcement" of the criterion of classical gyroscopic stability ($S_g > 1$), it is claimed that $S_g > \frac{1}{S_d(2-S_d)}$

.which, due to its shape, is always greater than unity. It can be seen from Figure 8 that the basic problem of defining the angular speed of rotation of the aircraft is based only on the classical requirement $S_g > 1$.

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APPLICATION OF THE SOFTWARE SOLUTION FOR THE FLIGHT SIMULATION AND DISPERSION OF AIRCRAFT TRAJECTORIES

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ABSTRACT

In the paper, an analysis of systematic disturbances was performed using the difference method in relation to probable deviations of the initial flight conditions of the aircraft. The calculation model is based on the model of body movement in the vertical plane. The body is represented by a material point on which the action of the force of Earth's gravity and the aerodynamic force of air resistance in the direction of the flight speed vector is defined. The reference model of the atmosphere parameters was the standard atmosphere according to the ISA (International Standard Atmosphere) standard atmosphere. The results of the calculation of systematic deviations were used to realize the prediction of random deviations of the projectile flight trajectory. Cases of deviation of part of the initial flight conditions in relation to the simulation of the projectile flight according to the material point model in the vertical plane were considered. The aerodynamic load model is reduced to axial aerodynamic drag for the case of axisymmetric body obstruction. The contribution of the work is in the analysis of the trajectory of the aircraft body in relation to three ballistic parameters (ballistic coefficient, initial velocity and initial velocity angle) and a group of meteorological parameters (temperature, pressure, wind, etc.). The results of systematic deviations and the prediction of the results of random deviations, in relation to the available reference experimental deviation values, showed a justified possibility of predicting these characteristics with a high level of reliability.

Keywords: *flight model, projectile, systematic deviations, random deviations, trajectory*

1. INTRODUCTION

By solving the motion model of the projectile body, the elements of the trajectory are obtained, as a function of the initial values of the speed parameters, the angle of inclination of the speed vector and the dynamic and aerodynamic characteristics of the body, which are called the basic parameters of the trajectory [1]. Solving the movement model starts from basic assumptions, [1,7,8]:

- normal atmospheric conditions (ISA),
- there is no influence of the transmitted inertial movement and the Koiolis effect of the Earth's action on the body,
- there is no influence of the movement of the body around the center of mass.

For the assumed conditions, the elements of the trajectory are determined, which are given in the reference catalogs of data on the weapon system (shooting tables or ballistic collection), [1,9,10].

The assumed conditions in practice are not fully realized, but will differ to a greater or lesser extent from the reference, i.e. standard, conditions. In order to consider dynamically changing initial conditions, it is necessary to determine what effect changes in various parameters have on the elements of the trajectory. Deviations of the movement conditions from the reference ones are called disturbances, i.e. perturbations [1,7,8]. Change of trajectory elements due to changed starting conditions of movement are called sensitivity, variations or alternations, [1]. Deviations of the conditions under which the movement is carried out in relation to the superiors can be:

- 1) System deviations
- 2) Accidental deviations.

Systemic deviations of conditions have a predictable, i.e. measurable intensity and character of influence on the elements and character of the trajectory, while random deviations include a series of "hidden" influences, which in practice are not justified to measure from the aspect of time, price and availability of measuring equipment. They lead to the so-called dispersion of trajectory elements from mean values. In the first part of the work, in accordance with the movement model and the theory of repairs, it is necessary to determine systemic deviations through the analysis of the character of the causes that lead to the disturbance, that is, determining the impact of systematic deviations. On the basis of the developed method, it is possible to compensate for the influence of systematic deviations, that is, to be able to reduce the specific experimental values of the measurement of trajectory elements to reference, that is, standard conditions of movement. The impact on the trajectory of the projectile body will be considered in relation to three ballistic parameters (ballistic coefficient, initial velocity and initial velocity angle) and a group of meteorological parameters (temperature, pressure, wind, etc.). Deviations from the initial ballistic conditions result according to the so-called movement model. another normal path. Deviations in the meteorological conditions of movement determine the trajectory in changed meteorological conditions. The classic mathematical model is valid for the case of changed terrestrial meteorological conditions, while for specific effects of wind, effects of Earth's rotation or effects of rotation of the body around its own coordinate system, the differential equations would have to be changed, that is, an adequate movement model should be applied. The deviations, which were analyzed in the paper, are constant and represent disturbances of initial velocity δV_0 , angle of inclination of initial velocity vector $\delta \theta_0$, horizontal angle $\delta \psi_0$, ballistic coefficient δC , constant values of longitudinal WX and transverse WZ wind, atmospheric temperature $\delta \tau_0$. The assumption of the model is that the values of pressure p_0 and temperature τ_0 change with height. Another group of movement condition deviations are variable disturbances, such as the influence of the Earth's rotation, and are not part of the investigation of this paper. The influence of all disturbances on the deviation of trajectory elements is non-linear. In the paper, it is assumed that there are conditions when certain non-linear deviations can be linearized, which depends on the size of the disturbance and the sensitivity of the trajectory elements to that disturbance. Therefore, small disturbances are considered, which makes the deviations of the elements linear, from where the following assumptions will be applied, which are in the model for calculating systematic deviations:

- the impact of a small disturbance on the elements of the trajectory is proportional to the size of that disturbance and,
- the impact of several different disorders is equal to the sum of individual disorders.

2. DISPERSION OF HITS AND PROBABILITY OF A SHOT CALCULATION

Dispersion of hits represents irrecoverable occurrence created during the shooting. Shooting probability represents numerous measure of objective possibility that in a certain shooting conditions target would be shot.

The shooting probability depends on:

- mid hit position compared to the target mean,
- target dimensions,
- ellipse of dispersion size, and
- shooting direction.

For each shooting it is impossible to change target shooting direction and dimensions, but it is possible to affect to the shooting probability by mid hit centralizing in the target mean and selecting of the one charge that on the specific distance has a smaller dispersion image. Program solution TVERP is used for calculation of basic elements, repairs, dispersions and shooting probability. The equations basic system, with three degrees of movement freedom, is solving by software solution and with the corresponding mathematical system, and in its final form gives the mutual dependence of trajectory elements, repairs, dispersions and shooting probability.

2.1. Differential equations system and analytic solution

Differential equations of projectile motion as material points have the following form with independent variable t (time):

- longitudinal component of projectile velocity $\frac{dx}{dt} = V_x$
- normal component of projectile velocity $\frac{dy}{dt} = V_y$
- lateral component of projectile velocity $\frac{dz}{dt} = V_z$
- tangential component of projectile acceleration $\frac{dV_x}{dt} = (a_p - J) \frac{V_x - W_x}{V_r} + a_{cx}$
- normal component of projectile acceleration $\frac{dV_y}{dt} = (a_p - J) = \frac{V_y}{V_r} + a_{cy}$
- lateral component of projectile acceleration

$$\frac{dV_z}{dt} = (a_p - J) = \frac{V_z - W_z}{V_r} + a_{cz}$$

- projectile velocity is defined as $V = \sqrt{V_x^2 + V_y^2 + V_z^2}$
- projectile relative velocity is defined as $V_r = \sqrt{(V_x - W_x)^2 + V_y^2 + (V_z - W_z)^2}$
- whereby are:
- x, y, z - trajectory points coordinates,
- V_x, V_y, V_z - velocity components,
- a_p - reactive force acceleration (at rocket and active reactive projectiles),
- Coriolis's acceleration:

$$a_c = 2\vec{\Omega} \times \vec{V} = 2\vec{\Omega} \begin{bmatrix} \vec{i} & \vec{j} & \vec{k} \\ \cos \lambda \cos \mu & \sin \mu & -\cos \lambda \sin \mu \\ V_x & V_y & V_z \end{bmatrix}$$

- $J = K_0 C \frac{P_0}{P_{0N}} \xi(y) M^2 C_x(M)$ - deceleration because of the air drag,

- $K_0 = \frac{\pi a_{0N} \rho_{0N}}{8000} = \frac{k \pi p_{0N}}{8000}$ – meteorological-ballistic parameter constant,
- $K_0=55$ – for reference atmosphere at Ventcel's (ANA),
- $K_0=55.707$ – for reference atmosphere OACI,
- p_0, p_{0N} – ground and ground normal air pressure,
- M – Mach's number,
- $\xi(y)$ – function of pressure change with height,
- $C_x(M)$ – air drag coefficient,
- $\Omega = \Omega [\cos \lambda \cos \mu \sin \lambda - \cos \lambda \sin \mu]$ – angular velocity of Earth rotation,
- λ – latitude and
- μ – shooting azimuth.

2.2. Aircraft dispersion analysis

Aircraft dispersion occurs due to perturbations:

- ballistic parameters V_0, θ_0, c and m ,
- rocket engine characteristic t_N, I_{sp} and t_M ,
- meteorological shooting conditions $\tau, W_x, W_z, W_{xa}, W_{za}$,
- projectile structural imperfections that cause static and dynamic unbalance and eccentricity of reactive force and
- gun-projectile system imperfection that enables initial impacts or perturbations.

Within the limits of basic values small changes, the expressions for dispersion are:
at distance

- $$V_d = \sqrt{\left(\frac{\partial X}{\partial V_0} r_{V_0}\right)^2 + \left(\frac{\partial X}{\partial c} r_c\right)^2 + \left(\frac{\partial X}{\partial \theta_0} r_{\theta_0}\right)^2 + \left(\frac{\partial X}{\partial p} r_p\right)^2 + \left(\frac{\partial X}{\partial m} r_m\right)^2 +$$

$$+ \sqrt{\left(\frac{\partial X}{\partial t_N} r_{t_N}\right)^2 + \left(\frac{\partial X}{\partial t_M} r_{t_M}\right)^2 + \left(\frac{\partial X}{\partial W_x} r_{W_x}\right)^2 + \left(\frac{\partial X}{\partial W_{xa}} r_{W_{xa}}\right)^2 + \dots}$$
- at height $V_v = \sqrt{\left(\frac{\partial X}{\partial V_0} r_{V_0}\right)^2 + \left(\frac{\partial X}{\partial c} r_c\right)^2 + \left(\frac{\partial X}{\partial \theta_0} r_{\theta_0}\right)^2}$
- at direction $V_p = \sqrt{\left(\frac{\partial Z}{\partial \Psi_0} r_{\Psi_0}\right)^2 + \left(\frac{\partial Z}{\partial W_z} r_{W_z}\right)^2 + \left(\frac{\partial Z}{\partial W_{za}} r_{W_{za}}\right)^2 + \left(\frac{\partial Z}{\partial Z_d} r_{Z_d}\right)^2 + \dots}$

whereby are:

differential coefficients: $\frac{\partial X}{\partial V_0}, \frac{\partial X}{\partial c}, \frac{\partial X}{\partial \theta_0}, \dots, \frac{\partial X}{\partial W_x}; \frac{\partial Z}{\partial \Psi_0}, \frac{\partial Z}{\partial W_z}, \frac{\partial Z}{\partial W_{za}}, \frac{\partial Z}{\partial Z_d}$.

Probable variations:

- r_{V_0} – initial velocities,
- r_c – ballistic coefficient,
- r_{θ_0} – starting angle,
- r_m – projectile mass,
- r_{W_x} – mean expected variation of longitudinal wind,
- $r_{W_{xa}}$ – mean expected variation of longitudinal wind in the active phase,
- r_{W_z} – mean expected variation of lateral wind,

- r_{Wza} – mean expected variation of lateral wind in the active phase,
- r_p – of rocket engine thrust,
- r_{tN} – of moderator operating time,
- r_{tM} – of rocket engine operating time,
- r_{v0} – of direction and
- r_{Zd} – of derivation.

Probable variations values are defined on the base of data from the shooting tables.

3. TRAJECTORY ELEMENTS REPAIR BECAUSE OF THE PROBABLE VARIATIONS

To repair any trajectory element, it means to reduce those trajectory elements from normal, tabular calculated on instantaneous conditions, and on the base of instantaneous measured meteorological and ballistic shooting conditions. Projectile range correction is done by particular conditions summing:

$$\Delta X = \Delta X_{V_0} + \Delta X_{\theta_0} + \Delta X_{C_0} + \Delta X_{t_N} + \Delta X_{t_M} + \Delta X_m + \dots + \Delta X_{W_x}$$

Particular corrections are:

- range correction due to the initial velocity variation $\Delta X_{V_0} = \frac{\partial X}{\partial V_0} \Delta V_0$
- range correction due to the starting angle variation $\Delta X_{\theta_0} = \frac{\partial X}{\partial \theta_0} \Delta \theta_0$
- range correction due to the ballistic coefficient variation $\Delta X_C = \frac{\partial X}{\partial C} \Delta C$
- range correction due to the projectile mass variation $\Delta X_m = \frac{\partial X}{\partial m} \Delta m$
- range correction due to the wind longitudinal velocity variation $\Delta X_{W_x} = \frac{\partial X}{\partial W_x} \Delta W_x$

whereby the probable variations are:

- initial velocities $\Delta V_0 = V_{0tren} - V_{0tab}$
- starting angle $\Delta \theta_0 = \theta_{0tren} - \theta_{0tab}$
- ballistic coefficient $\Delta C = C_{tren} - C_{tab}$
- projectile mass $\Delta m = m_{tren} - m_{tab}$
- longitudinal wind $\Delta W_x = W_{xtren} - W_{xtab}$

Differential coefficients are calculated by differences method:

- initial velocity $\frac{\partial X}{\partial V_0} = \frac{X(V_0 + \Delta V_0) - X(V_0 - \Delta V_0)}{2\Delta V_0} \left[\frac{m}{s} \right]$
- starting angle $\frac{\partial X}{\partial \theta_0} = \frac{X(\theta_0 + \Delta \theta_0) - X(\theta_0 - \Delta \theta_0)}{2\Delta \theta_0} \left[\frac{m}{^\circ} \right]$
- ballistic coefficient $\frac{\partial X}{\partial C} = \frac{X(C + \Delta C) - X(C - \Delta C)}{2\Delta C} [m]$

- projectile mass $\frac{\partial X}{\partial m} = \frac{X(m + \Delta m) - X(m - \Delta m)}{2\Delta m} \left[\frac{m}{kg} \right]$
- longitudinal wind $\frac{\partial X}{\partial W_x} = \frac{X(W_x + \Delta W_x) - X(W_x - \Delta W_x)}{2\Delta W_x} \left[\frac{m}{\frac{m}{s}} \right]$

3.1. Shooting probability of space target

For the case when the mid hit matches with the target center, total shooting probability is:

$$P = P_X \cdot P_Y$$

whereby is:

- shooting probability at distance
-

$$P_X = P(X_1, X_2) = \frac{1}{2} \left(\frac{2\rho}{\sqrt{\pi}} \int_0^{\frac{X_2}{V_d}} e^{-\rho^2 X^2} dX - \frac{2\rho}{\sqrt{\pi}} \int_0^{\frac{X_1}{V_d}} e^{-\rho^2 X^2} dX \right)$$

$$\frac{2\rho}{\sqrt{\pi}} \int_0^{\frac{X_2}{V_d}} e^{-\rho^2 X^2} dX = \Phi\left(\frac{X_2}{V_d}\right); \quad \frac{2\rho}{\sqrt{\pi}} \int_0^{\frac{X_1}{V_d}} e^{-\rho^2 X^2} dX = \Phi\left(\frac{X_1}{V_d}\right); \quad P_X = \frac{1}{2} \left[\Phi\left(\frac{X_2}{V_d}\right) - \Phi\left(\frac{X_1}{V_d}\right) \right]$$

Follows:

- shooting probability at direction

$$P_Y = P(Y_1, Y_2) = \frac{1}{2} \left(\frac{2\rho}{\sqrt{\pi}} \int_0^{\frac{Y_2}{V_p}} e^{-\rho^2 Y^2} dY - \left(-\frac{2\rho}{\sqrt{\pi}} \int_0^{\frac{Y_1}{V_p}} e^{-\rho^2 Y^2} dY \right) \right)$$

as the shooting probability more distant and closer to the target limit at direction

$$\frac{2\rho}{\sqrt{\pi}} \int_0^{\frac{Y_2}{V_p}} e^{-\rho^2 Y^2} dY = \Phi\left(\frac{Y_2}{V_p}\right); \quad \frac{2\rho}{\sqrt{\pi}} \int_0^{\frac{Y_1}{V_p}} e^{-\rho^2 Y^2} dY = \Phi\left(\frac{Y_1}{V_p}\right)$$

mid hit matches with the target mid at direction, so that is:

$$Y_1 = Y_2 = Y$$

follows: $P_Y = \Phi\left(\frac{Y}{V_p}\right)$ - shooting probability at direction.

Total shooting probability of projected space target is

$$P = P_X \cdot P_Y = \frac{1}{2} \left[\Phi\left(\frac{X_2}{V_d}\right) - \Phi\left(\frac{X_1}{V_d}\right) \right] \cdot \Phi\left(\frac{Y}{V_p}\right).$$

3.2. Programme solution concept

Programme solution TVERP is bound for testing and using of subprogramme VERP for projectile trajectory calculation with three degrees of movement freedom, corrections, dispersions and shooting probability. Programme solution is made in programming language (java) FORTRAN on personal computer. It is consisted of three data files (FILE), and that are:

- 1) Programme TVERP.FOR – main programme,
- 2) Data file VERP.DAT –input data file and
- 3) Data files VERP.IZL i VERPDK.IZL – destination data files.

Programme TVERP is organised such as the trajectory elements calculation is performed by integration of projectile motion differential equations with three degrees of movement freedom by method Runge-Kuta. Programme TVERP calculates the trajectory elements, differential coefficients, dispersion and shooting probability in the shooting to the vertical target or range. It is consisted of six subprogrammes and one functional subprogramme. Programme calls in subprogramme with CALL OJLRAS (VI, CE, XZ, RVO, RT0, RC, RPSI, TS, TET0S, TETCS, DXWX, DXV, DXC, DXT, DZWZ, VV, VP, VZ), whereby are:

- VI – initial velocity,
- CE – ballistic coefficient,
- XZ – shooting distance,
- RVO – initial velocity probable variation,
- RT0 – starting angle probable variation,
- RC - ballistic coefficient probable variation,
- RPSI – probable variation of angle at direction,
- TS – projectile flight time,
- TET0S – starting angle,
- TETCS – fall angle,
- DXWX, DZWZ – differential coefficient for longitudinal and lateral wind,
- DXV, DXC - differential coefficient for initial velocity and ballistic coefficient,
- DXT - differential coefficient for the air temperature,
- VV, VD – probable variation at height and distance and
- VZ – projectile definitive velocity.

By command READ are loaded data from data file OJLRAS. DAT. Using the DO-loop in programming language (java) FORTRAN for each level are calculating the trajectory elements. Data file OJLRAS.DAT is bound for entry of input values and in following sequence:

First line content:

- Initial velocity, ballistic coefficient, initial velocity probable variation, starting angle probable variation, ballistic coefficient probable variation, yaw angle probable variation,

Second line content:

- *Distances number, initial distance, distance increment, target height, target depth and target width.*
- Input data file example:
VI, CE, RVO, RT0, RC, RPSI,
NX, XP, DX, HC, DC, LC

Data files OJLRAS.IZL and OJLKD.IZL are creating during the programme performing. In them are inserting the informations got by WRITE run of programme command.

Those are the external ballistic calculation results. They are organized such as there are tabular shown the trajectory basic elements, dispersion values, shooting probability and differential coefficients. Subprogramme OJLR is bound for trajectory elements calculation of classic projectile with three degrees of freedom movement with stopping on defined x or y. Subprogramme is called in CALL OJLR (V, TETA, IYX, XYZ, YS, TC, XC, YC, ZC, VC, TETAC), whereby are:

- V- projectile initial velocity,
- TETA – starting angle,
- IYX – the mode of calculation stopping 1=Y, 2=X,
- XYZ – stopping distance X or height Y,
- YS – trajectory apex ordinate,
- TC – projectile flight time,
- XC, YC, ZC – fall point coordinates,
- VC – projectile fall velocity and
- TETAC – fall angle.

Subprogramme DIFJED calculates the increment for each differential equation during the one approximation. Also, for each increment it calculates the relative velocity (VR) and the air drag deceleration (RJ). At that, the subprogramme calls in the subprogrammes ATMOS and CXM. Subprogramme is called in with CALL DIFJED (CK, DT, WX, WZ, TAU, L), whereby the parameters are:

- CK – ballistic constant,
- DT – integration initial step,
- WX – longitudinal wind component,
- WZ – lateral wind component,
- TAU – ground temperature,
- L – integrating constant in DO-loop at Runge-Kuta method.

Subprogramme ATMOS for standard Ventcel's atmosphere is bound for the projectile flight velocity value and Mach's number calculation, in current weather conditions on different projectile flight heights.

Subprogramme is called in with CALL ATMOS (Y (2, 1, L), VR, TAU, B, SM), whereby the parameters are:

- Y(2,1,L) –instantaneous projectile flight height,
- VR – instantaneous projectile flight velocity on the instantaneous flight height,
- TAU – the air temperature in the instantaneous meteorological conditions on the instantaneous flight height,
- B – pressure function p/p_0 ,
- SM – Mach's number for instantaneous velocity and meteorological conditions.

Subprogramme CXM calculates the air drag coefficient (CX) on the base of Mach's number value (SM) for Law of resistance from the 1943rd year.

Subprogramme is called n with CALL CXM(SM,CX), whereby the parameters are:

- SM – Mach's number defined value,
- CX – etalon of the air drag aerodynamic coefficient for Law of resistance from the 1943rd year.

3.3. Programme solution of numeric scheme with calculation results

In Figure 1. is shown the algorithm of programme solution TVERP.

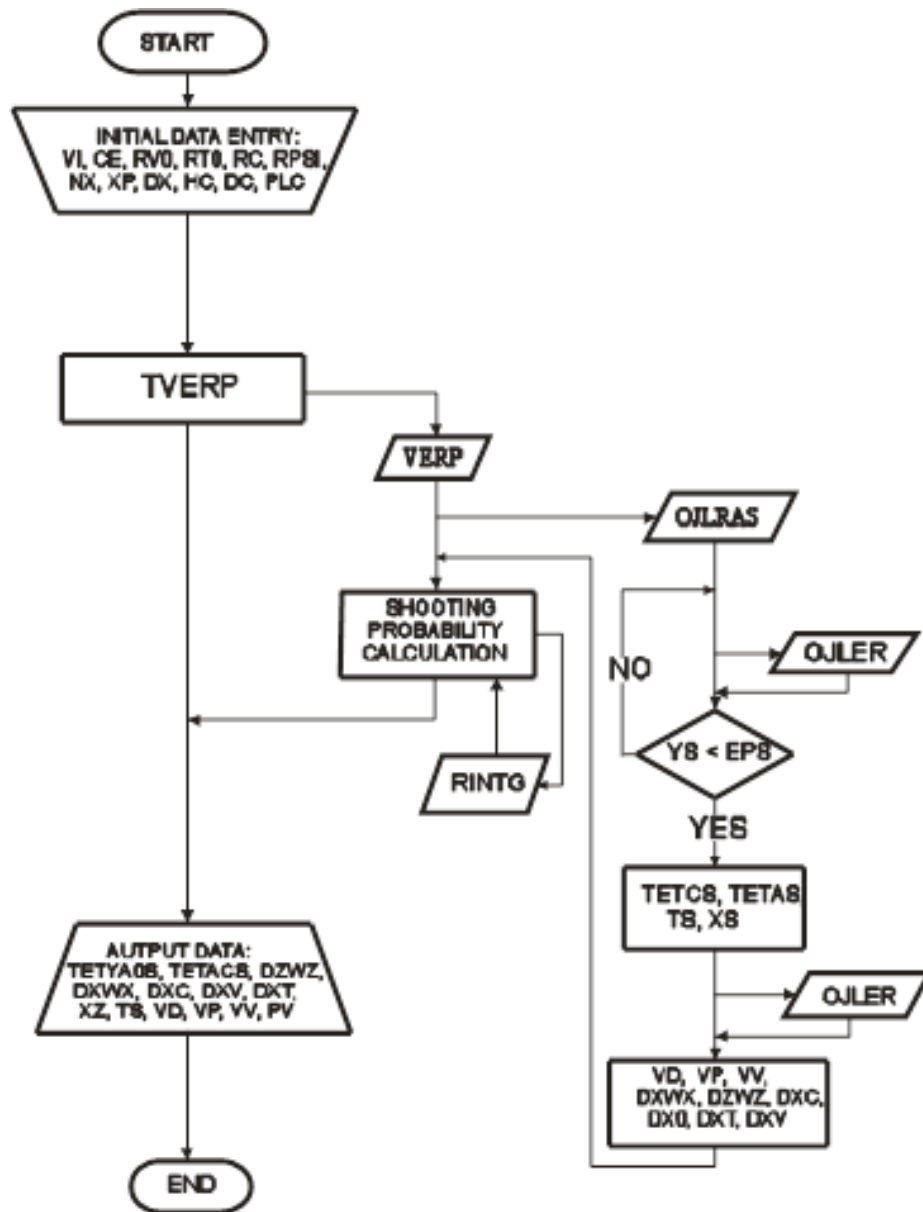


Figure 1: algorithm of programme solution TVERP

4. RESULTS OF THE PROGRAM SOLUTION OF THE TRIALS

The results in the following examples were obtained by testing the dispersion of 122mm projectiles using the PROBA software solution. During these tests, examples were made with different values of probable initial speed deviations. Since the initial speed deviation of 10% from the nominal value is allowed, examples with a probable initial speed deviation of up to 15% were made in the calculation. The goal is a 3mx3mx3m cube.

INPUT FILE (for RV0=5m/s):

```

690.  0.6  5.0  1.0  0.46  0.46
20  100.  100.  3.0  3.0  3.0

```

X [m/s]	T [s]	V _v [m]	V _p [m]	V _d [m]	PV []
99.	.0139	.010	.046	9.631	1.00
200.	.0346	.021	.092	9.886	1.00
300.	.0145	.033	.138	10.218	1.00
400.	.0897	.047	.184	10.775	1.00
500.	.1656	.064	.230	11.614	1.00
600.	.0724	.082	.276	12.369	1.00
700.	.1500	.104	.322	13.294	1.00
800.	.2284	.129	.368	14.231	.99
900.	.0015	.158	.414	15.271	.99
1000.	.0817	.190	.460	16.370	.97
1100.	.1627	.225	.506	17.395	.95
1200.	.2446	.266	.552	18.548	.93
1300.	.3274	.308	.598	19.634	.91
1400.	.4111	.356	.644	20.791	.88
1500.	.4957	.407	.690	21.904	.85
1600.	.0303	.463	.736	23.053	.81
1700.	.1169	.523	.782	24.187	.77
1800.	.2044	.587	.828	25.315	.72
1900.	.2929	.656	.874	26.467	.67
2000.	.3824	.730	.920	27.608	.62

Table 1: Output file tt.izl (za rv0=5m/s)

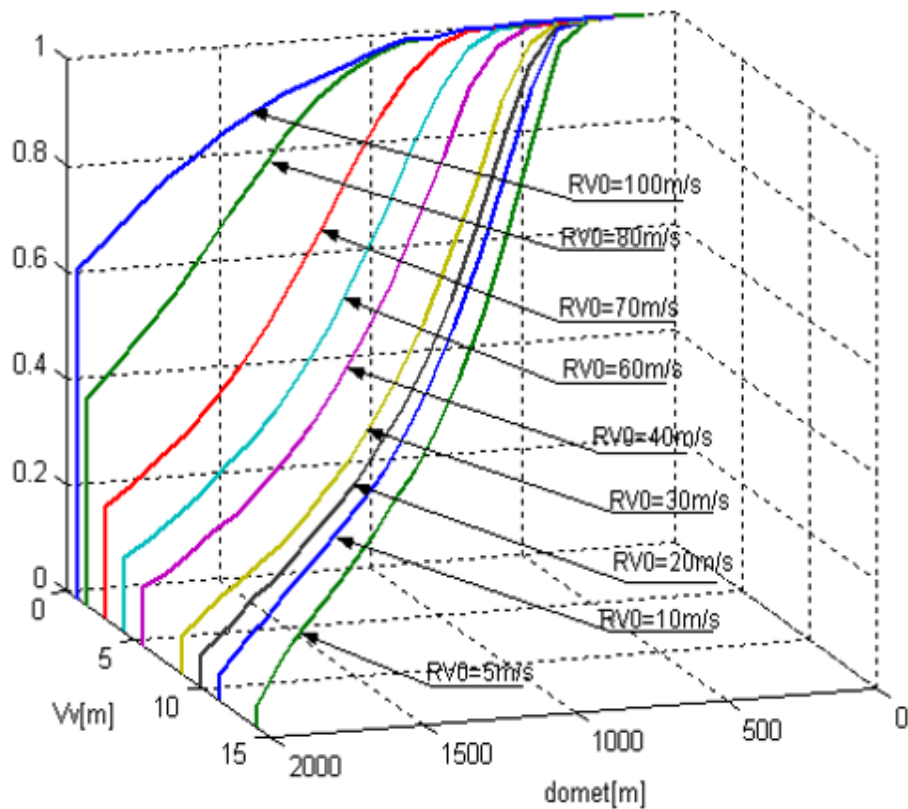


Figure 2: Dependence of hit probability on range spreading by 122

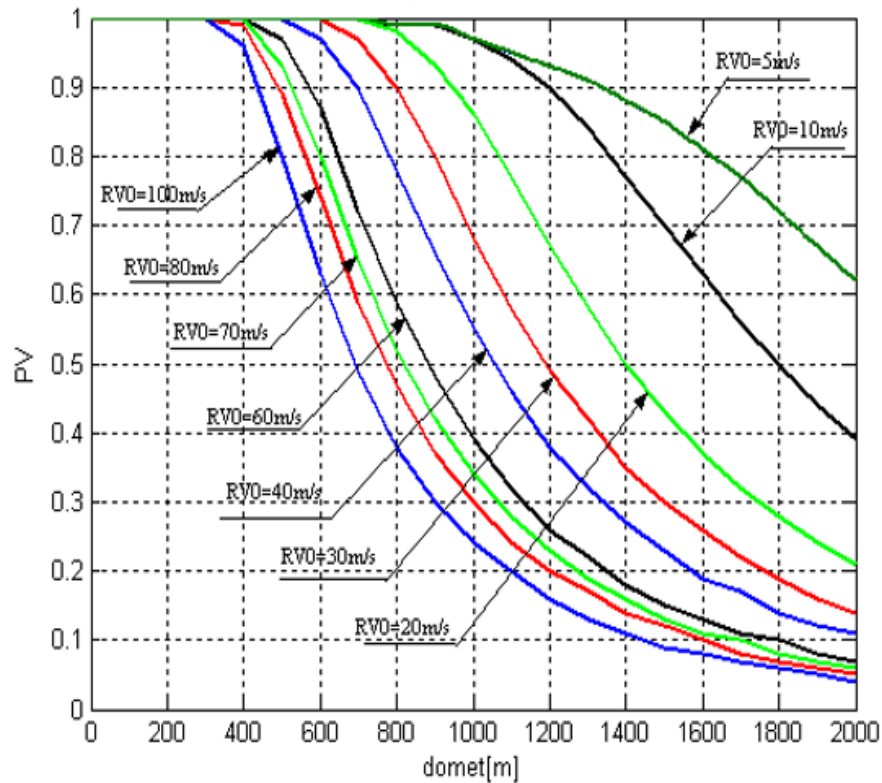


Figure 3: Dependence of hit probability on range spreading 122 mm

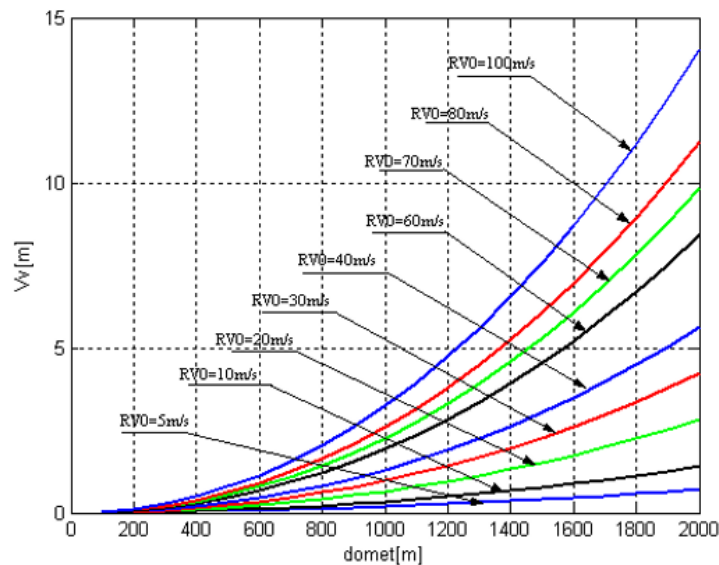


Figure 4: Dependence of the dispersion of hits by height on the range

In Figures 2, 3 and 4 it can be seen that the probability of hitting and the dispersion of hits by height decrease with the increase of the shooting distance. The research was carried out on a model of a projectile body with a length of about 5 reference calibers and a mass of about 20 kg, modeled on real models. The aerodynamic body model consists of a life-like front section, a cylindrical middle section and a tapered cone-shaped rear section. The semi-empirical calculation of linear aerodynamics was used for the purpose of the work to determine the aerodynamic coefficient of axial force in axisymmetric flow for all three flow regimes. The aforementioned prediction made it possible to determine the shape coefficient and determine the calculated nominal value of the ballistic coefficient, in relation to the standard of the law of air resistance.

Label	Magnitudes and values of probable deviations of the initial movement conditions applied in the model		
	The size of the probable deviation	Unit	Value
r_{v0}	Initial speed	%	1
$r_{\theta 0}$	Initial vertical angle	mrاد	12
$r_{\psi 0}$	Starting horizontal angle	mrاد	12
r_m	Body mass	%	0,3
r_C	Ballistic coefficient	-	0,002
r_{Wx}	Longitudinal wind intensity	m/s	10
r_{Wz}	Lateral wind intensity	m/s	10

Table 2: Values of probable deviations

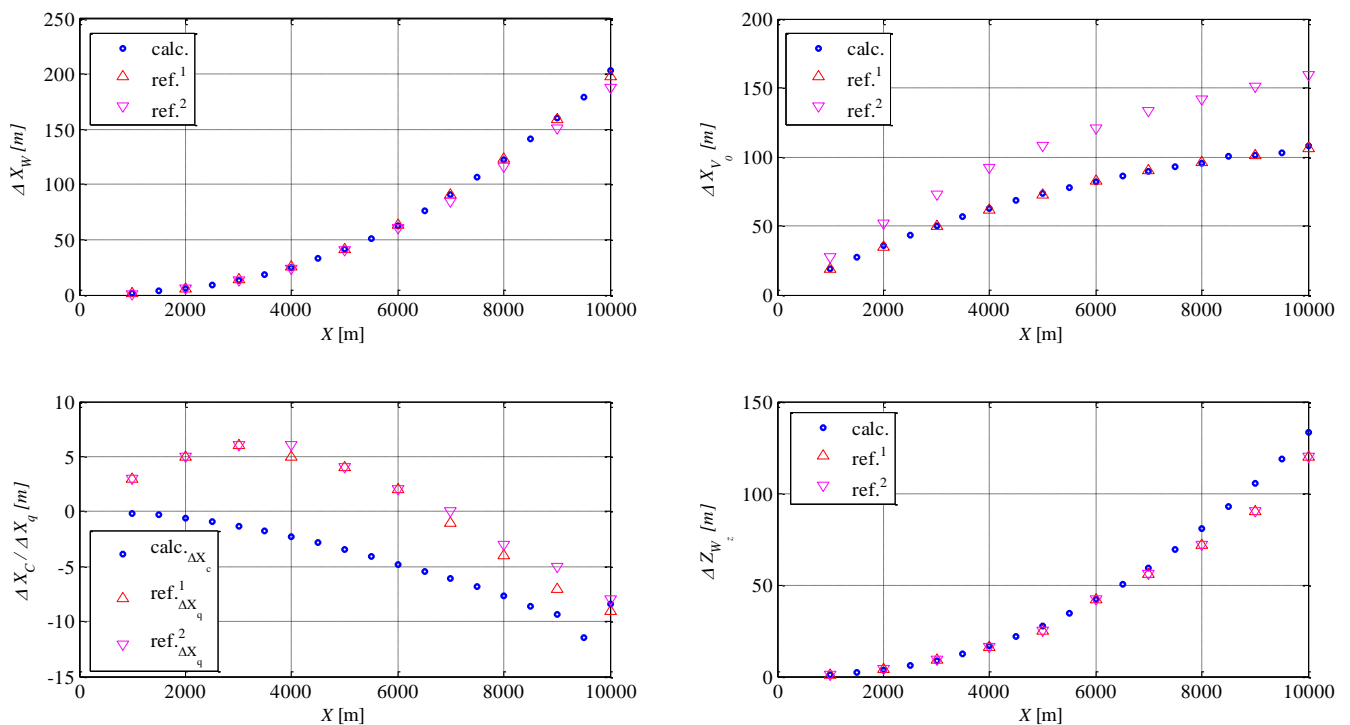


Figure 5: Systematic deviations of the trajectory as a function of the final abscissa of the trajectory

On the basis of the program solution, for the defined conditions of movement and probable - mean expected deviations, the values of systematic deviations were determined depending on the final abscissa of the path. The results are shown in Figure 1. The values of systematic deviations determined on the basis of the difference method by the movement model are presented on the diagrams marked (calc.), Figure 6. A comparative analysis of the calculated systematic deviations was performed in relation to two reference data sources - the shooting table, (ref.1), according to [10], or (ref.2), according to [9], obtained on the basis of experimental tests. The consistent character of the changes and the level of certain values of the quantities are shown. After the assessment and analytically confirmed values of systematic deviations, random deviations were determined, in the form of an assessment of probable deviations in relation to defined axes of body movement orientation. The calculation is based on the presented equations for calculating the probable deviations and in accordance with the

estimated values of the probable deviations of the conditions - parameter disturbances. A characteristic picture of dispersion, a measure of random deviations at different distances from 1 to 10 km, is given, according to the results of the calculation of the assessment of random deviations in the research.

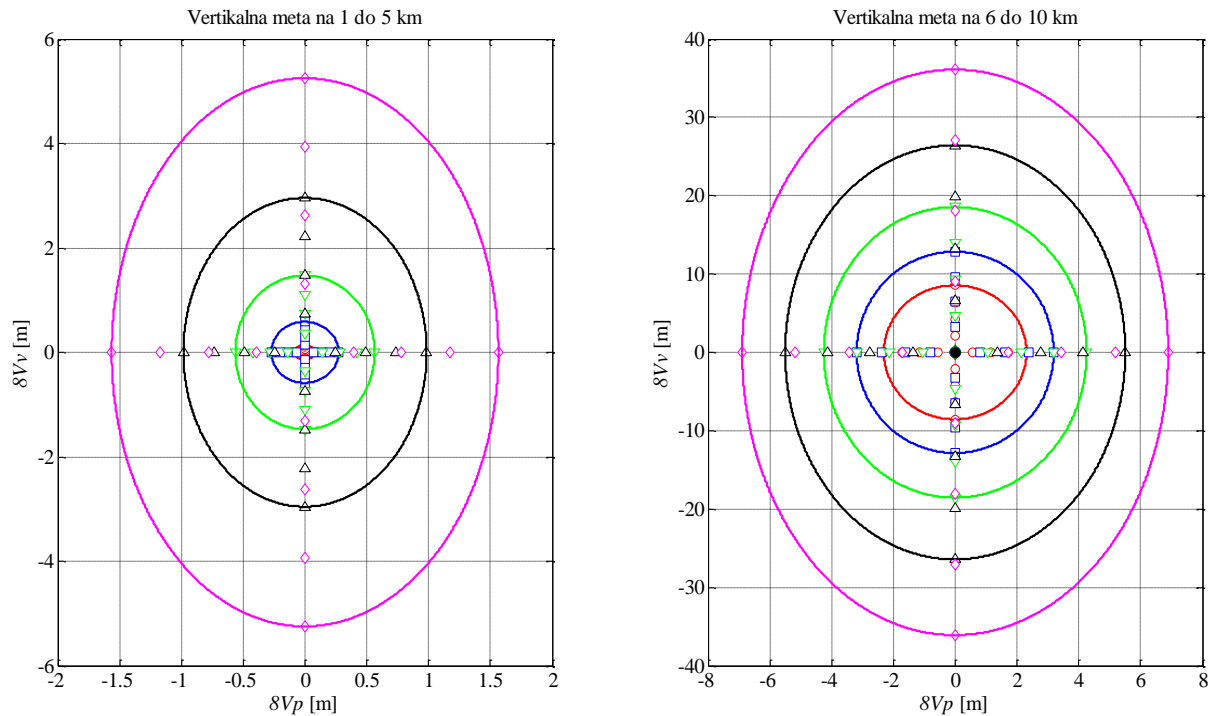


Figure 6: Image of scattering in the vertical plane at different distances

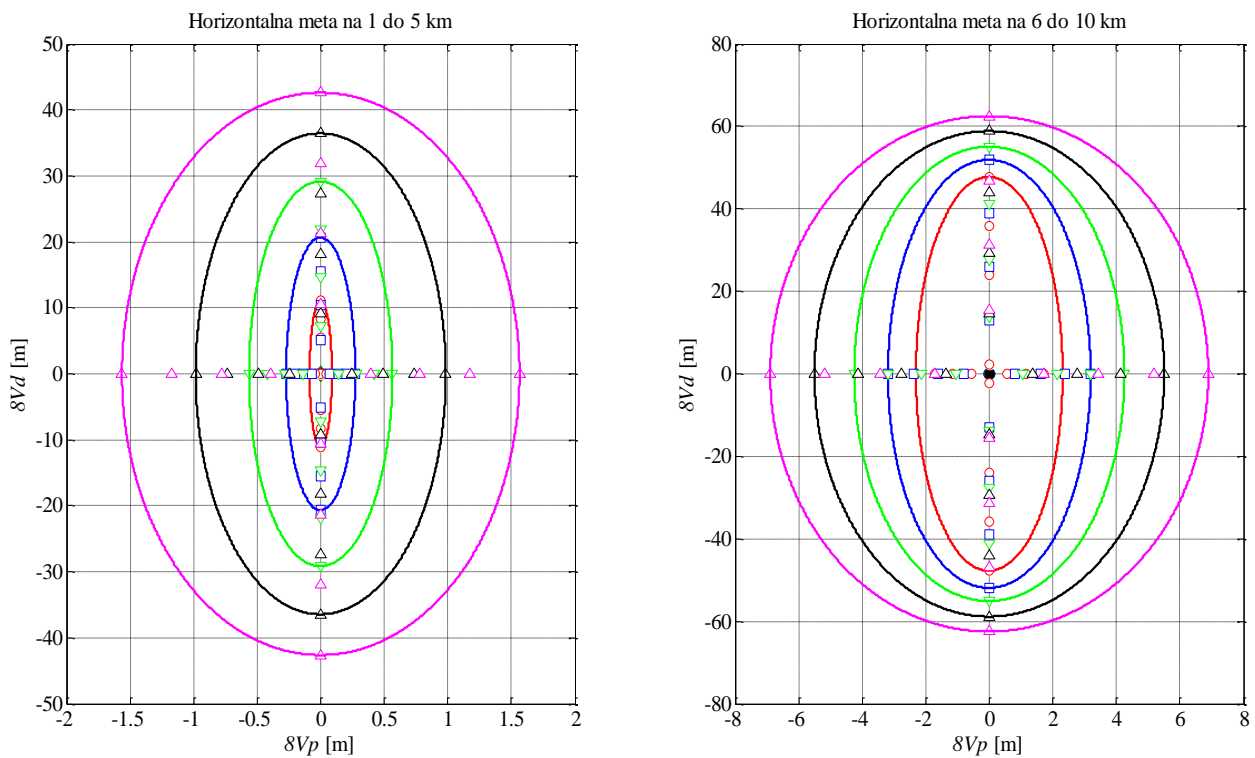


Figure 7: Image of scattering in the horizontal plane at different distances

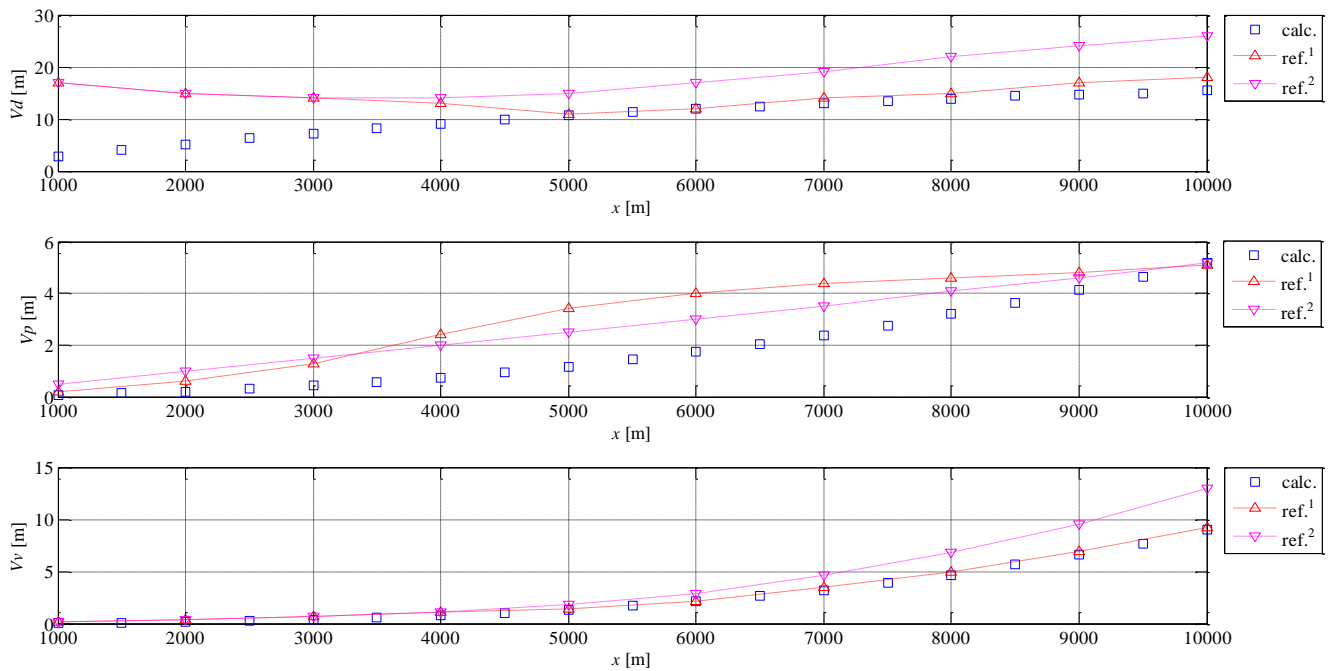


Figure 8: Random deviations along the axes of movement in relation to the final abscissa of the flight

5. CONCLUSION

Flight simulation with the applied movement model, with variation of individual movement conditions, as a way of solving deviations of flight parameters, made it possible to determine the qualitative values of systematic deviations of the trajectory. This is demonstrated by the values and character of the differential coefficients determined by the presented model, in relation to the reference results of experimentally applied research. The values of the systematic deviations of the trajectory determined by the model, and the values of the random deviations calculated on that basis, enabled a visual representation of the image of the random deviations, represented by an ellipse of scattering in the planes. The magnitudes of probable deviations, a measure of random deviations, for different distances in relation to the reference results, showed a level of deviation, which is partly expected and, on the other hand, enables a reliable framework assessment of precision measures. This is significant in the project and research phase of the research, because it allows to quickly assess, in the initial part, the final outcomes of the development of specific combat systems of weapons and missiles. The expected deviations originate, in a significant part, from the simplicity of the mathematical model of body movement, which observes the movement of a material point in one plane. The estimation of the deviation in relation to the other two planes by projection onto them is part of the approximation of the calculation model, and is considered insufficiently precise. The flight model, and the models for determining both systematic and more complex random deviations, do not take into account particularly significant transitional and dynamic disturbances at the initial part of the trajectory, that is, the model does not contain equations to mathematically describe these disturbances. Based on the assessment of the size and character of certain systematic deviations and estimated probable deviations of the trajectory, presented in the paper, it is necessary to improve the calculation model in order to increase the reliability for the final stages of research and development. The model would basically be developed with a more complex and computationally demanding motion model and variations in motion conditions. The expected results of such a model would be of a higher level of reliability, but they would have to be fully checked and confirmed by experimental research.

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DO WE REALLY NEED “HUMAN-CENTRIC LEADERSHIP” AND NEW COMMUNICATION CONTENT?

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ABSTRACT

The business environment has been rapidly changing after the Covid-19 pandemic. Many organizations have been adopted a hybrid workforce. Employees can work from the corporate office, their home, or an alternative third space. Employee location became more important than company location, so countries started to create incentives to attract individuals. Organizations need new skills, they look to reskill capabilities of existing workforce or to “rent” talents to fill those skills gap. In 2022, exactly 35,174 foreigners worked in Serbia, which is about 12,000 more than in 2021. The most work permits were issued to citizens of China, Russia, followed by Turkey and India. Some authors suggest that next wave of flexibility will be around the question „when” employees are expected to work. The new work conditions had changed employee expectations as well. They expect flexibility in work policies, new well-being benefits, they want their organizations take actions on issues they care about and that their organization see them as a person, not just employee. Those trends are challenging traditional definitions of the manager and HR manager role. Managers will have to put more attention on employee outputs then on the processes. Kropp, Cambon and Clark (2021) said “When interactions become primarily virtual, managers can no longer rely on what they see to manage performance, and when relationships become more emotional, they can no longer limit the relationship to the sphere of work”. We will probably need new methods and content in communication, empathic leaders and human-centric leadership. HR function will have to develop empathy skills in existing managers and show them how to use it as management tool or will have to find new managers. The paperwork will analyze the new circumstances in which organizations should function and the expectations and demands of employees today.

Keywords: *Business environment, Communication, Empathy, Human-centric leadership, Hybrid workforce*

1. INTRODUCTION

The Corona virus pandemic is probably the most significant change in the last hundred years that has affected the whole world, our business and our personal lives. Although new strains and mutated versions of the corona virus are still appearing, we can say that we are slowly entering a new reality which implies new behaviors, new emotions and priorities in people as well new global business trends. Many indicate that the new circumstances will require a review of the way of doing business, management style and communication to all stakeholders.

2. MAIN EMERGING TRENDS THAT SHAPE OUR „NEW“ FUTURE

There are a lot of emerging trends that mark our lives. Transformations towards digitalization is certainly one of the key trends. Lot of companies were not concerned about digitalization before the pandemic.

However, Covid 19 led to the fact that almost everyone had to find a way to digitize themselves in order to ensure survival first and then further development. Acceleration of digital transformations becomes a business imperative. We witness that new jobs or ways of doing business appear while some old ones disappear. „Almost all markets, unlike retail, healthcare, hospitality, along with education and discovery, will certainly need to change service design to stay viable. Businesses can no longer appreciate the convenience of running a company normally“ (Sikder, 2022). In that sense digital adaptation will surely be a leading issue for companies in the post-Covid world and it will shape our lives. This issue will also have a wider implications, such as change in organizational culture, organisational structure, measurement system and further on the management system and the role of the manager and the HR department. Today, almost every business requires smart software applications. Artificial intelligence should make our lives easier and simpler and it is also applied in the field of human resources management, for activities such as identification and attraction, deployment, development, retention, etc. Covid-19 pandemic had a big impact on education as well. Faculties around the world have started to apply the oline systems for teaching, taking exams etc. Many suggests that after Covid nothing will be the same, new reality will continue to challenge the typical method of the education and learning system, as well as training systems in companies. Working from home during Covid became so normal to the extent that many companies used it even after the pandemic struck or they switched to a hybrid workforce. We are still asking will this be a long-lasting switch or just a short term trend? Remute work can make companies more productive and profitable, but employees and leadres will have to adopt new management tools and roles. “Many giants like Amazon, Adobe have already gone remote in 2020. They might not even have an office at all in the near future. Moreover, the companies like Uber, Airbnb, Expedia, and Zappos are also evolving in a similar way. The logic behind it is very simple –greater flexibility as firms can hire from anywhere in the country, and give more people chance to live the kind of “flexible” lifestyle that many desire” (Sikder, 2022). The location of the workplace becomes the next important issue. Previously, the question was what kind of office space do we need. Today, employee can choose the place from which to work. “The workplace will no longer be simply an office where people come to each day, and leave to go home each night. With major changes on the horizon, a need to reimagine the purpose of a workplace will arise” (Kumar, 2020). So countries will compete to attract individual talents, rather than asking companies to relocate. Talent mobility has become a trend that is taken into account when searching for and attracting candidates and jobs. Employees expectations have changed as well. They think more about work-life balance, they need more supportive managers, who take care about their mental health, among other things. Virtual interactions replaced lot of physical face-to-face meetings. All of this will have implications on the way companies are managed and the role of and human resources management department. All these trends are interconnected, and are primarily related to the introduction of new IC technologies into our business and private lives. However, the increasing number of resignations by employees, due to dissatisfaction, depression, different expectations from work and life is trend that particularly came to the fore during the pandemic. Many researchers refer to the "Great Resignation" as a trend that was hinted at before the Covid-19 pandemic, but came to the fore after it.

3. PROBLEMS WITH “GREAT RESIGNATION”

Great Resignation is the term coined in 2021 to describe the record number of people in some advanced economies who have left their jobs since the onset of the COVID-19 pandemic (WEF, 2023). Employees across different sectors realized during pandemic that they were not happy with their jobs. They were not happy with work environment, work-life balance, the industry in which they are working etc. and left their jobs. „The Great Resignation isn't just a

hypothetical idea; it's an economic movement backed up by statistics from the U.S. Bureau of Labor Statistics. Between April 2021 through April 2022, 71.6 million people separated from their jobs, which averaged 3.98 million people quitting each month“ (Hetler, Kerner, 2023). In 2021, according to the U.S. Bureau of Labor Statistics, Job Openings and Labor Turnover Survey (JOLTS), over 47 million Americans voluntarily quit their jobs and about 50.5 million people quit their jobs in 2022 (U.S. Bureau of Labor Statistics, 2023). Layoffs affected almost all industrial branches, but not with equal intensity. Primarily people in the leisure, hospitality, food services industries, retail, in professional and business services and healthcare industry quit their jobs.

Among those who quit a job at any point in 2021, % saying each was a ____ why they did so

	Major reason	Minor reason	Net
Pay was too low	37	26	63
No opportunities for advancement	33	30	63
Felt disrespected at work	35	21	57
Because of child care issues*	24	24	48
Not enough flexibility to choose when to put in hours	24	21	45
Benefits weren't good**	23	20	43
Wanted to relocate to a different area	22	13	35
Working too many hours	20	19	39
Working too few hours	16	14	30
Employer required a COVID-19 vaccine	8	10	18

*Among those with children younger than 18 living in the household.

**Question provided health insurance and paid time off as examples.

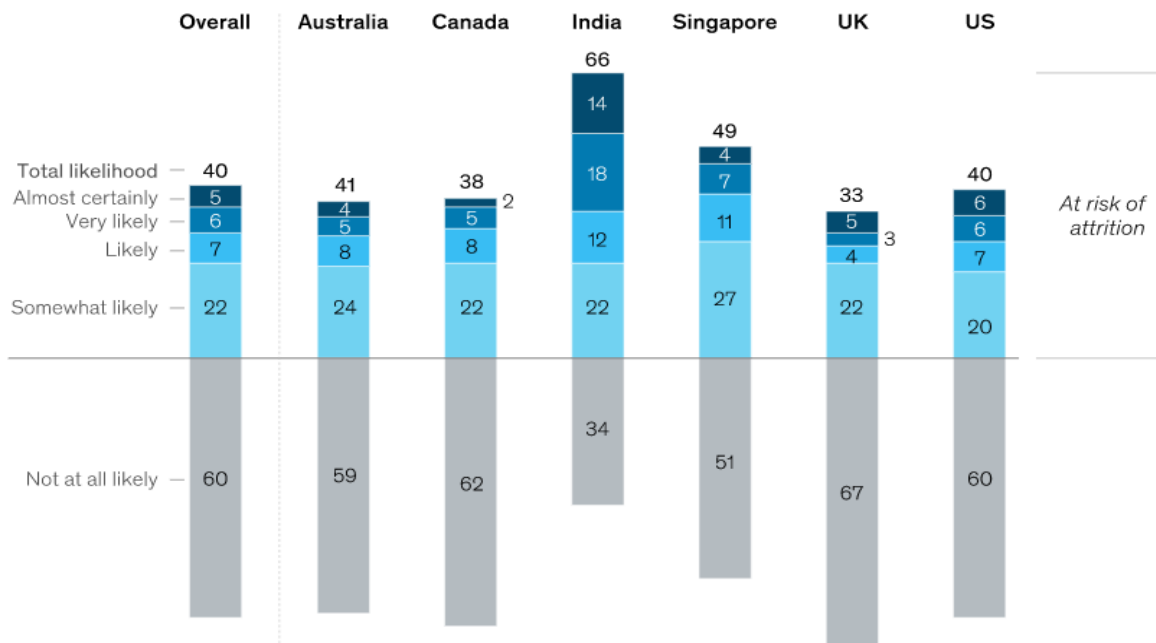
Note: Figures may not add to subtotals due to rounding.

Figure 1: Top reasons why U.S. workers left a job in 2021: Low pay, no advancement opportunities

(Source: PEW Research Center, Survey of U.S. adults conducted Feb. 7-13.2022.)

Pew Research Center survey finds that low pay (63%), a lack of opportunities for advancement (63%) and feeling disrespected at work (57%) are the top reasons why Americans quit their jobs in 2021 (Parker, Menasce Horowitz, 2022). During the Covid-19 pandemic, essential workers (e.g. workers in groceries, retail stores, hospitals and restaurants etc.) found themselves under-compensated, even they worked more than ever and exposed themselves to significant risks. On the other side, those who started to work from home, found that as good way to achieve work-life balance and to save a money on child and pet care. During the 2021 and 2022. with job openings workers had more options and many workers who weren't satisfied with current jobs started looking for new ones (usually more flexible and better paid job). McKinsey conducted a large global survey in six countries to learn more about what is driving people to stay, leave, or return to their jobs.

They found that this workforce discontent is a global phenomenon and 40% of workers globally said that they might leave their jobs in the near future. Situation was not the same in all markets. „In India, more than 60 percent of respondents expressed a desire to leave their current posts, well above their counterparts in Australia, Canada, the United Kingdom, and the United States. Workers in Singapore showed the second-highest level of job discontent, at 49 percent“(McKinsey Quarterly, 2022).



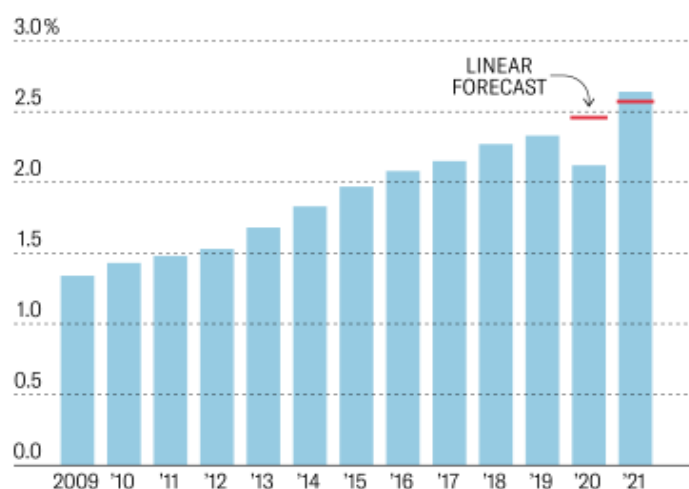
*Figure 2: Likelihood that respondents will leave their current job in next 3-6 months, %
(Source: McKinsey Quarterly, 2022)*

According to Harvard Business Review five factors, exacerbated by the pandemic, have combined to yield the changes in today's labor market: retirement, relocation, reconsideration, reshuffling, and reluctance. They found (Fuller, Kerr, 2022):

- “In 2021, older workers left their jobs at an accelerated rate, and they did so at younger ages. They made these decisions out of a desire to spend more time with loved ones and to focus on priorities beyond work.
- Relocation has not played a material part in the Great Resignation.
- Many deaths and instances of serious illness brought about by the pandemic have caused people to reconsider the role of work in their lives.
- Many workers are “reshuffling” — that is, moving among different jobs in the same sector, or even between sectors and many workers are both able and willing to accept jobs that are sufficiently attractive.
- Fear of contracting Covid in the workplace has made many workers reluctant to return to the office”.

However, Fuller and Kerr (2022) found that in USA „From 2009 to 2019, the average monthly quit rate increased by 0.10 percentage points each year. Then, in 2020, because of the uncertainty brought on by the Covid-19 pandemic, the resignation rate slowed as workers held on to their jobs in greater numbers.

That pause was short-lived. In 2021, a record number of workers quit their jobs, creating the so-called Great Resignation“. But they said that number includes many workers who likely would have quit in 2020 but didn't because of the pandemic.



*Figure 3: Average Monthly Quit Data – Share of workers voluntarily leaving jobs
(Source: Fuller, Kerr, 2022)*

Yet, according to a Microsoft report from March 2021, 41% of the total global workforce plans to leave their employer in the next year (Microsoft/WorkLab, 2021). PwC found that survey of over 52,000 workers (across 44 countries) „indicates the Great Resignation is set to continue as pressure on pay mounts“. (PwC, 2022). Also,

- “One in five say they are likely to switch to a new employer in the next 12 months.
- More than a third plan to ask for a raise, but finding fulfilment at work is just as important.
- Skilled employees most likely to ask for promotions and pay raises and to feel listened to by their manager, while those lacking skills lack power in the workplace.
- Pressure on pay is highest in the tech sector where 44% of workers surveyed plan to ask for a raise and is lowest in the public sector (25%)“ (PwC, 2022).

When we talk about Serbia, the information obtained by the survey of the Serbian Chamber of Commerce from August 2022 shows that more than half of the total respondents (55%) believe that in Serbia there is no enough adequate personnel. Deficient occupations are C/E category driver, production worker, welder, cook, waiter, tradesman, mason, technologist, mechanical engineer, construction technician, electrical engineer, information technology engineer, etc. Companies started looking for workers from abroad. In 2022, exactly 35,174 foreigners worked in Serbia, which is about 12,000 more than in 2021. The most work permits were issued to citizens of China, Russia, followed by Turkey and India (Blic, 2023). The largest number of foreign workers in the previous year was engaged primarily in the field of construction. A greater number of work permits were issued to IT experts from various areas of IT activity, while a significant number of foreigners were hired as auxiliary workers in various branches of the economy, such as service activities, hospitality and hotel industry. Something has certainly changed with employees around the world after the Covid-19 pandemic. Business leaders across all sectors and industries will benefit from understanding the factors that influence employee and affect turnover in their organizations. They will primarily be able to develop specific responses to reduce the negative effects and retain or attract the required workers. Also, they will have to adapt to new circumstances and new roles that are expected of them.

4. HUMAN-CENTRIC LEADERSHIP AND HYBRID WORK MODEL

„Extreme flexibility and hybrid work will define the post-pandemic workplace“, as found Microsoft in the Work Trend Index Annual Report, from 2021. According to FlexJobs' Career Pulse Survey (with 4,000 respondents, conducted between July and August 2022) „65% prefer a 100% remote work arrangement, 32% would prefer a hybrid workplace and 57% stated they would look for a new job if they couldn't continue to work remotely“ (Howington, 2022). It means there is 97% of workers who desire some form of remote work. Remote.co's Work & Financial Wellness Report surveyed over 1,100 professionals around the world from October 13, 2022, to October 30, 2022. and found „63% of those surveyed would “absolutely” look for a new job if they couldn't continue to work remotely“ (Remote management, 2022). PwC found in survey of over 52,000 workers (across 44 countries) “While an increase in pay is a main motivator for making a job change (71%), wanting a fulfilling job (69%) and wanting to truly be themselves at work (66%) round out the top 3 things workers are looking for. Nearly half (47%) prioritised being able to choose where they work” (PwC, 2022). Gallup found that more than 70 million U.S. workers can do their job working remote. Actually, they found that approximately 56% of full-time employees in the U.S. -- more than 70 million workers -- say their job can be done working remotely from home, so they call them "remote-capable employees" (Wigert, Agrawal, 2022).

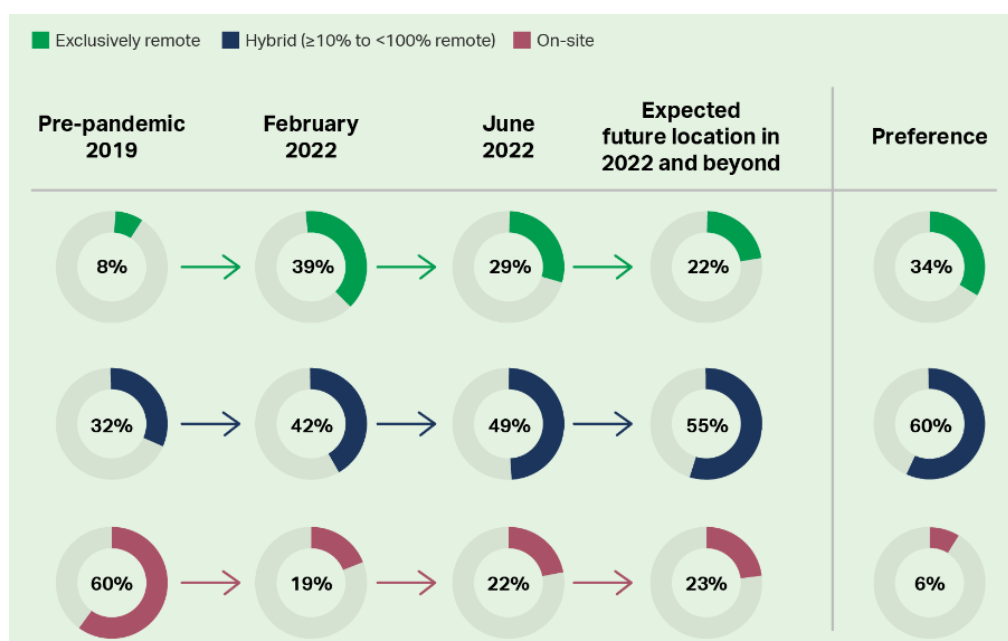


Figure 4: Past, Current, Anticipated and Preferred Employee Work Location for Remote-Capable Jobs

(Source: Wigert, Agrawal, 2022)

In future, many employees will be working in a hybrid world which means that they will have the opportunity to choose where, when, and how much they work. „In fact, while the fully remote workplace model is expected to take a dramatic decline from 2021 (56%) to 2024 (19%), the hybrid model is expected to grow from 42% (2021) to 81% (2024)“ (AT&T Business with Dubber, 2021). “And according to FlexJobs' Employee Engagement Report, 48% of employers are maintaining some form of remote work for their workforce. When asked what their company's post-pandemic workplace plans will be, 26% of respondents said their employer will follow a hybrid model, and 22% said they'll be allowed to work remotely” (Howington, 2022).

Organizations and managers need to accept this new reality and Microsoft (2021) found seven trends that will shape the future of a hybrid work world:

- 1) Flexible work is here to stay
- 2) Leaders are out of touch with employees and need a wake-up call
- 3) High productivity is masking an exhausted workforce
- 4) Gen Z is at risk and will need to be re-energized
- 5) Shrinking networks are endangering innovation
- 6) Authenticity will spur productivity and wellbeing
- 7) Talent is everywhere in a hybrid work world

Offering hybrid and remote work options can be beneficial for companies looking to retain top talent because it gives people more options for where they live, reducing the necessity to live near large metropolitan city centers. If we talk just about remote workers, in sense of location they are totally independent. Also, we saw that having a choice of work environment and location is a key factor for many job seekers when searching for a better work-life balance. Facing a serious illness or death during the Covid-19 pandemic has led many employees to reconsider the role that work has in their lives. Those who burned out on demanding jobs and had no opportunity to care of their families or those who were in daily contact with lot of people, found a solution in resigning and changing jobs. In such new circumstances, the role of the managers changes as well. Managers have started to shift to be more emotional and supportive. Kropp (2021) in Harvard Business Review said "It's become clear that supporting employees in their personal lives more effectively enables employees to not only have better lives, but also to perform at a higher level. According to Gartner's 2020 Reimagine HR Employee Survey, employers that support employees with their life experience see a 23% increase in the number of employees reporting better mental health and a 17% increase in the number of employees reporting better physical health. There is also a real benefit to employers, who see a 21% increase in the number of high performers compared to organizations that don't provide the same degree of support to their employees". Leaders today need achieve their core responsibilities but by leading in a new, more human way. This requires (Turner, 2022):

- Role-model behavior to establish an effective work environment,
- Support teams by addressing their needs,
- Deliver results by managing workflows.




			
Core Leader Responsibility	Role Model Behavior	Support Teams	Deliver Results
Prior Approach	Professional Enable workplace boundaries	Employees Address work needs	Efficient Manage standardized workflows
Work Environment Shift	Social and Political Turbulence High stress and risk of controversy	Work-Life Fusion Increasingly visible personal lives	Hybrid Work More variety in work patterns and norms
New Approach	Personal Enable safe self-expression at work	People Address life needs	Individualized Manage tailored, flexible workflows

Figure 5: Leaders need a new approach
(Source: Gartner, 2022)

The shifting work environment requires from leaders to approach their core responsibilities in new ways by displaying “human-centric leadership” – leading with authenticity, empathy and adaptivity (Gartner, 2022). It means, to act in following way (LeadersEdgeInc, 2022):

- Authentic - Act with purpose and enable true self-expression for themselves and their teams.
- Empathetic - Show genuine care, respect, and concern for employee well-being.
- Adaptive - Enable flexibility and support that fit the unique needs of team members.

Gartner (2022) recommended following actions to build human-centric leadership:

- „Understand how the concept of human-centric leadership and associated behaviors aligns with your organization’s current leadership competency model and identify needed adjustments.
- Identify potential trade-offs that may need to be made between focusing on investing in leadership development programs and other business requirements.
- Assess your own strengths and development areas as a human-centric leader and identify opportunities to display authenticity, empathy and adaptivity with your own team.
- Adjust leadership development programs to develop human-centric qualities (while maintaining a focus on business needs) and update succession strategies to identify successful human-centric leaders in high-impact roles.
- Position HR team members to identify employees who can share diverse perspectives with leaders in order to catalog high- and low-stakes opportunities for leaders to display vulnerable human leadership.
- Ask your leadership team to actively commit to clear expectations for human-centric leadership by providing the option to choose between people-leadership and non-people-leadership career pathways“.

4.1. The need for empathetic managers and the new communication content

There are three disruptive, transformative trends that are challenging traditional definitions of the manager role (Kropp, Cambon, Clark, 2021):

- Normalization of remote work
- Acceleration in use of technology to manage employees and
- Employees’ changing expectations.

Having in mind that remote work will be normal, that we will probably have a hybrid workforce, that either the manager or the employee will be working remotely at least some of the time, the question is what will be the role of managers and how will look their communication with employees? Managers will not be so visible in the daily life of their employees. Also, it will be very difficult to monitor what employees do and how, which means that control of the work process itself becomes an issue. What remains is certainly the determination of the final results of the work (outputs) and feeling of employees or as Kropp, Cambon and Clark (2021) said „in a new era of management it’s less important to see what employees are doing and more important to understand how they feel“. Having in mind that companies during last decade, especially during the Covid-19 pandemic, expanded support they offer to employees (in areas of mental health, child care etc.) their managers started to be more emotional and supportive, as well. “The empathic manager is someone who can contextualize performance and behavior — who transcends simply understanding the facts of work and proactively asks questions and seeks information to place themselves in their direct reports’ contexts” (Kropp, Cambon, Clark, 2021). Empathy will be a top priority of managers in the future, even it is not something new for them.

After the start of the pandemic, together with working from home or in the case of some professions in contact with a large number of people, it became important for employees that managers show understanding and empathy. Empathy implies emotional intelligence, it means that manager is able to understand feelings and behavior of others. Such manager develop a high level of trust and acceptance within the team that leads. But empathy implies that you know each member of the team individually, their professional qualities, but also their personal and family situation and this is only possible if we are talking about small teams overseen by managers or if they have a reduced the number of responsibilities. If we put all of this in the context of a hybrid workforce, the problem becomes even greater. Some employees will work from home, some from office, some from other places and managers should show empathy and keep team members connected with each other, as well as with the organization. But this is valuable because such a managers have a high impact on employees' performance. „Gartner analysis shows that managers who display high levels of empathy have three times the impact on their employees' performance than those who display low levels of empathy” (Kropp, Cambon, Clark, 2021). Obviously, these human-centric managers need soft skills and empathy especially requires developing high levels of trust and care and a culture of acceptance within teams. In order to fulfill this new role, managers must know personal or private information about employees, which implies the specific, often sensitive content of the conversation. It is almost imposible to keep work and life separate. They will have to practice the application of empathy in management, where the HR department should also take a certain role in that.

4.2. The new role of HR function

Today, human resources professionals are taking on more responsibility than ever. They should work on better relationships with employees, they need to help managers to become strong but empathic leaders who can align business goals with current events and employee expectations, as well as to work on talent management strategies. They must find a way to take into account changing employee expectations and a post-Covid world. In this respect, one of the main tasks of HR department will be to allow managers to be able to practice their empathy as well as to provide them with all the necessary support in this. Further, employees want more balance and fairness so they are pushing Human Resources to reconsider its benefits portfolio, in order to addressing issues like paternity leave, childcare, tuition reimbursement, mental health and wellness, and more. The purpose is to keep employees satisfied to improve retention, create a positive work culture, and enhance employer brand. HR department should find ways to attract and retain the right talent – particularly those with digital and data skills. Also „when the employees are satisfied with their job responsibilities, workplace culture, and the people that they work with, they are far less likely to consider changing their job. That is why creating an ideal employee experience is one of the biggest priorities of the HR department” (Kissflow/HRprocess, 2022). HR department should reconsider the organizational structure model in order to establish formal structures and methods to reinforce collaborative practices across the organization, as well.

5. CONCLUSION

Obviously, the new time sets new demands on companies, their managers and the HR department. Companies that have a vision or know how to offer flexibility to their employees will maintain a stable and competitive workforce. On the other hand, companies that offer benefits in accordance with the changing needs of workers will be successful in attracting and retaining talent. However, the prerequisite for everything are human-centric leaders and new communication content that emphasizes empathy.

“People as a social beings, must communicate, receive and send information about how they feel, what they think, what makes them happy or scared, to find out what is happening in their environment, arrange to hang out with friends or the next business activities” (Cvetkovski, Cvetkovska Tomanovic, 2021). This is becoming important today more than ever before.

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DESIGN THINKING IN DIGITAL TRANSFORMATION

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ABSTRACT

Digital Transformation (DTr) is a contemporary and emerging paradigm that enables organizations "to jump", with the use of modern technology and shift in mind a "new way of thinking", in such a way that a new business model is established and/or new value is added to products/services, and/or processes are changed to foster a new way of doing business. These changes push the organization to change itself and enable new ways of comparative advantages to be achieved. In parallel, design thinking (DTh) is a structured way of rethinking, very similar, in a way, also focused on customer needs, and changes in products/services, by fostering innovation and finding new ways of doing, producing, and using things to improve products/services by added new value for customers/clients. It's a way of rapid prototyping and making new ideas for the market, so it is complementary to digital transformation, and transformation mostly starts with the rethinking process in which this structured creative way of thinking could help and improve the transformation by fostering innovation in the initiative. This paper's focus will be on finding the connection in scientific research of both of these topics and seeing how these paradigms are developing in the way of bibliographical numbers and trying to find common ground and see how well are these topics interconnected in global scientific papers and which are new trends.

Keywords: *Digital transformation, Design thinking, Literature review, Bibliography metrics*

1. INTRODUCTION

The objective of this paper is to research two contemporary concepts or paradigms "digital transformation" and "design thinking", and see what they have in common and how current scientific research treats them or emphasize them separately and together. Both paradigms are processes of defining complex business problems and identifying ways of solving them, structured innovation process/ structured transformation process, which ultimately helping foster new ideas and innovations to practice or in way of transformation making a new way of doing business more concurrent and establishing new business model, product/service or business process. Change in the way of digital transformation is so big in such a manner that all essence of organizations is changed in an innovative way by using contemporary technology and rethinking in such a manner that shift in mind is present both in an organization and at customer/client side. From a design thinking perspective, design thinking is a methodology that enables a process of defining, rethinking, developing new ideas, and finally evaluating them so that they can be presented, researched, and analyzed with customers/clients in a manner of prototype or design, and bring ideas about changes into life, supported by digital transformation as a larger process, on a strategic level.

This research focuses on finding the connection in scientific research of both of these topics and seeing how mentioned paradigms are developing in the way of bibliographical numbers and trying to find trends and common ground for using them together. The research will focus on the interconnection of these terms and topics in global scientific papers searched in Google Scholar and the Web of Science (WoS) database. The paper is structured as follows. After the introduction, the research methodology is explained. The following is a literature review as an introduction to both topics digital transformation and design thinking. Furthermore, in following chapter results, bibliometric results are analyzed, presented and discussed. The end of the paper is a wrap-up with the conclusion and literature.

2. METHODOLOGY

Research in the area of "digital transformation" and "design thinking" separately or together, as a term in search across scientific databases and platforms was conducted on Web of Science and Google Scholar. All kinds of contributions were included (papers, books, book chapters, etc.). The research was conducted in May 2023, and in full numbers, it was unlimited to a time span. It has been seen that "digital transformation" papers, published before the year 2002, and maybe some smaller numbers after that period, are focused on other transformations from analog to digital, which is another kind of transformation that we are not discussing in this article. Based on that, bibliographic analysis for "design thinking" was also limited to the year 2002 and onwards, since in years before and starting from 1976 there was a smaller number of papers including design thinking. Bibliometrics in both samples were unlimited in Google Scholar but always used with quotation marks to catch on the real term and not only part of it, since words design and thinking or digital and transformation are pretty common. All searches included titles of research papers or other kinds of bibliographic units, so the research really talks about the topic. Additional searches were conducted on change of focus to title, keywords, and topic. Results, in all categories, gave a little bit different result, but in the same trend, if we watch it all together from a strategic level.

3. LITERATURE REVIEW

Digital transformation and design thinking are both well-known terms in the business and technology sectors. Since new technologies in digital transformation enable new ways of doing business, finding new ways of getting new value to the customers is crucial [Tomičić Furjan, Tomičić-Pupek & Pihir, 2020]. In that search for new ideas, design thinking is imposed as a structured way of developing new ideas and methodology for the innovation process that helps to find new ways to digitally transform. Design thinking [Pap, Vdovic & Baletic, 2019] method brings practical problem-solving and user-centered thinking closer to innovation, which can lead to differentiation and competitive advantage. Since [Brown, 2007] expands design thinking to encompass human-centered processes and services as well as products, by asking designers to create ideas rather than simply dress them up, a new way of seeing things is born.

3.1. Digital Transformation

Digital transformation as a paradigm is widely recognized within the academic community and industry as a digital technology-based improvement of doing business. Digital transformation is the application of digital capabilities to processes, products, and assets to improve efficiency, enhance customer value, manage risk, and uncover new monetization opportunities. (new business models) [Shalmo, 2017]. DTr initiatives vary from the use of digital technologies for improvement of one process, product or service, to the change of the entire work logic and the way how organizations create value for their customers or change of business model [Tomičić Furjan, Tomičić-Pupek & Pihir, 2020]. The change is immanent, if companies want to survive [Mazzone, 2014].

Consequently, it could only lead to three choices to improve [Westerman, 2014] - substitution, extension or transformation. More detail explained in [Pihir, Tomičić-Pupek & Tomičić Furjan, 2018]. Digital transformation is present in all industries [Kutnjak, Pihir & Tomičić Furjan, 2019] and possibilities are wide and in lots of shapes [Lederer, Knapp & Schott, 2017], [Pihir, Tomičić-Pupek & Tomičić Furjan, 2019], [Bosilj Vukšić, Ivančić & Suša Vugec, 2018]. Digital transformation presents the inevitable path for surviving on today's market changing business models and adopting to new conditions [Hrustek, Tomičić Furjan & Pihir].

3.2. Design Thinking

A new way of rethinking things, in a way of designers for non-designers, is seen in the design thinking concept. It started with [Brown, 2008], which raised design thinking to a new level. From that time, several directions are taken such as International Design Foundation [2023] with a five-step model: Empathize; Define; Ideate; Prototype and Test. Also, there is a second model with so-called double-diamond design thinking [Buckley, L. 2018] with four stages Discover/Research - insight into the problem (diverging); Define/ Synthesis the area to focus upon (converging); Develop/Ideation - potential solutions (diverging); Deliver/ Implementation - solutions that work (converging). The third path is on practical perspective to ask questions in four fazes What is? What if? What wows? and What works? [Liedtka & Ogilvie, 2011]. All of them have a combination of explore, define phase, with proposing ideas, prototyping and testing/evaluation at the end. In combination with the need for innovation in digital transformation, a few authors combine these paradigms [Gusakov, 2020], [Magistretti, Tu Anh Pham & Dell'Era, 2021]. They also think that success could be in the agile way of doing the transformation project [Youn, Kim & Chang, 2020] and the use of a shared economy or linking social and private for innovation [Lichtenthaler, 2017]. Authors believe that design thinking could improve digital transformation process and be a solution for innovation in transformation process [Vendraminelli et al, 2022]. In that manner, bibliographical research was conducted to see do the authors that combine design thinking and digital transformation are in the minority, or if there is a larger number of papers mixing two methods. Some examples of real case studies were done in the financial sector in a Hungarian bank [Feher & Varga, 2019], the automotive industry logistics service platform [Stein & Schmidt, 2018], and in the culture a new way of digitally transform museum in covid19 post-pandemic times [Mason, 2022].

4. RESULTS

Bibliometric analysis of papers and other research records such as books, book chapters and etc., were conducted in the Web of Science, as the most prestigious database or platform for scientific records. Both targeted terms are equally treated and results are presented according to the number of records if the term is in the title of the paper. This means some papers or research may be lost if the title does not include the term itself, but most of them include the target term in the title, so they will be in the research scope and final results. Table 1 includes also records from Google Scholar, as an open platform for archiving and indexing research papers and as the most common space where papers can be linked, traced, and found.

Table following on the next page

<i>Source</i>	<i>Term</i>	<i>Cumulative results</i>	<i>Titles 2002-2023</i>	<i>Topics 2002-2023</i>
Google Scholar	<i>"Digital Transformation"</i>	195 000		
	<i>"Design Thinking"</i>	178 000		
WoS	<i>"Digital Transformation"</i>		3041	9157
	<i>"Design Thinking"</i>		1670	4542
Google Scholar	<i>"Digital Transformation" and "Design Thinking"</i>	9950		
WoS	<i>"Digital Transformation" and "Design Thinking"</i>	7		

Table 1: Bibliometrics from WoS and Google Scholar for terms "Digital Transformation" and "Design Thinking"

(Source: authors according to scientific database search results)

In Table 1 we can observe, that the terms separately have a similar number of topics, titles, and documents including titles in Google Scholar records, where digital transformation has a little bit more records, approximately 10% more hits. From the scientific platform Web of Science, number of articles and other records, including terms in the title or in topics, are in both cases in favor of digital transformation. Records, including digital transformation in title or topic, mostly double the number for design thinking records. This means that both topics are very actual in research papers but the digital transformation has been more in research focus and has a larger number of publications in scientific communities. As a further bibliometric characteristic of papers and other scientific research results, in Figures 1 and 2 analyses of a number of records are made in WoS per year (time span 2002-2023). In figures we can observe the actuality of the topic and scientific pick as we can tell from today's perspective. Data for years 2023 and 2022 could still be updated so it is not representative, even if what they show is also clear in the manner of trends observed through the years. Scientific production in the manner of these topics is still rising and both topics are very actual, but results for digital transformation are more aggregated, and rising is rather exponential including 4 times more papers/research records per year in the last 5 years.

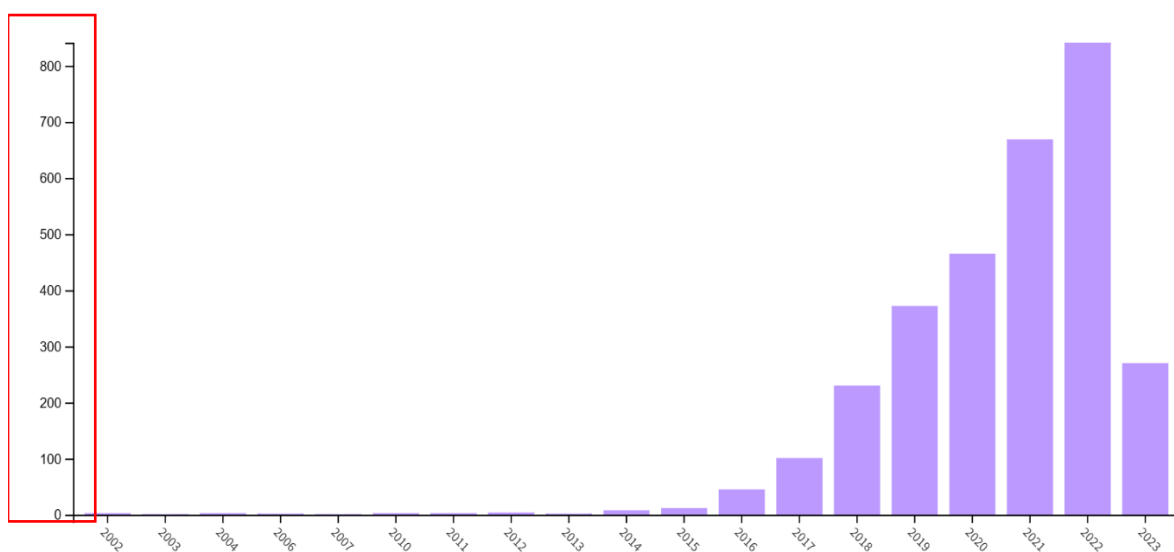
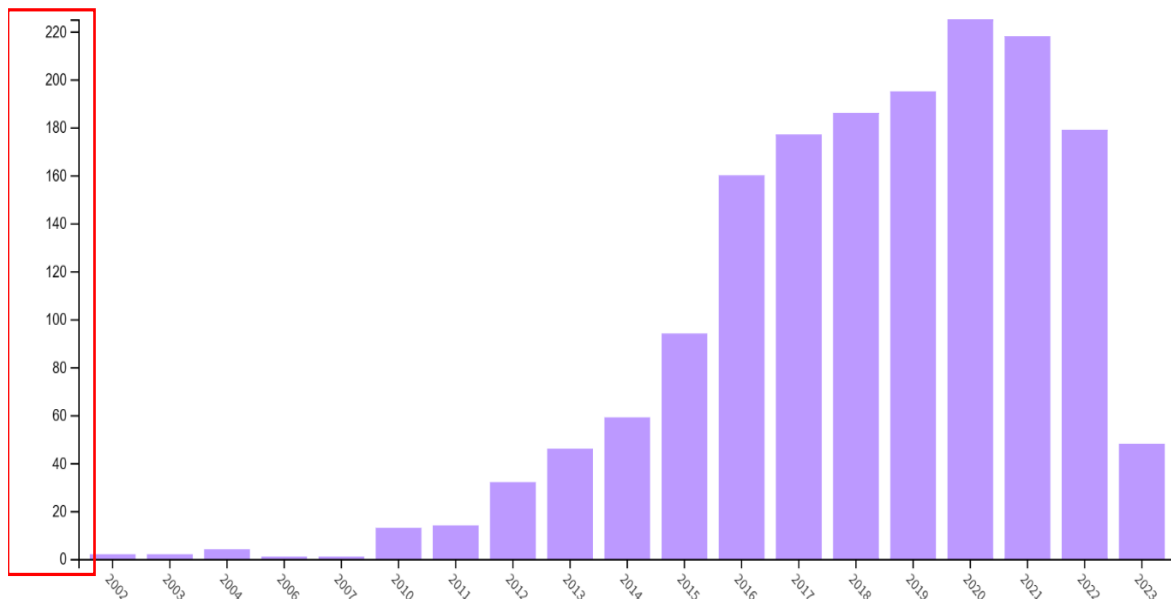


Figure 1: Number of research papers in WoS with Digital Transformation in title per year
(Source: authors according to WoS scientific database search results)



*Figure 2: Number of research papers in WoS with Design Thinking in title per year
(Source: authors according to WoS scientific database search results)*

Figure 2 shows the design thinking papers that have a steady growth of approximately 150-200 papers a year across the 10-12 years' time-span. This in comparison to Figure 1 shows that digital transformation is at the pick of 800 papers a year, that the number of papers rising every year by the rate of double, and that the timespan in which the growth is substantial is shorter than for design thinking (from 2016-2023 or last 7-8 years). This means that digital transformation is a more agile and more scientific actual topic than design thinking but the actuality of both terms is strong and at the peak of scientific research. As a matter of the scientific field or field in which the topics are researched, the next two figures show the intensity chart by field (Figure 3 for digital transformation and Figure 4 for design thinking).



*Figure 3: Number of research papers in WoS with Digital Transformation in title by field
(Source: authors according to WoS scientific database search results)*



*Figure 4: Number of research papers in WoS with Design Thinking in title by field
(Source: authors according to WoS scientific database search results)*

Although first look seems that both terms are more actual in the field of business and management so in economic and organizational circles, a look at the right part of the blocks discovers that informatics, computer science, and technology or engineering together hold approximately the same number of all research records. This means that digital transformation and design thinking is not connected only to technology or technical part of process transformation, but it has large business and organizational implication so it can be common ground for both managers, economic or organizational experts as well as for IT experts, programmers, and architects of new information systems and services. Exposure and number of research records per university as affiliation of authors of papers are presented in the next two figures (Figure 5 and Figure 6).



*Figure 5: Number of research papers in WoS with Digital Transformation in title by affiliation of authors
(Source: authors according to WoS scientific database search results)*

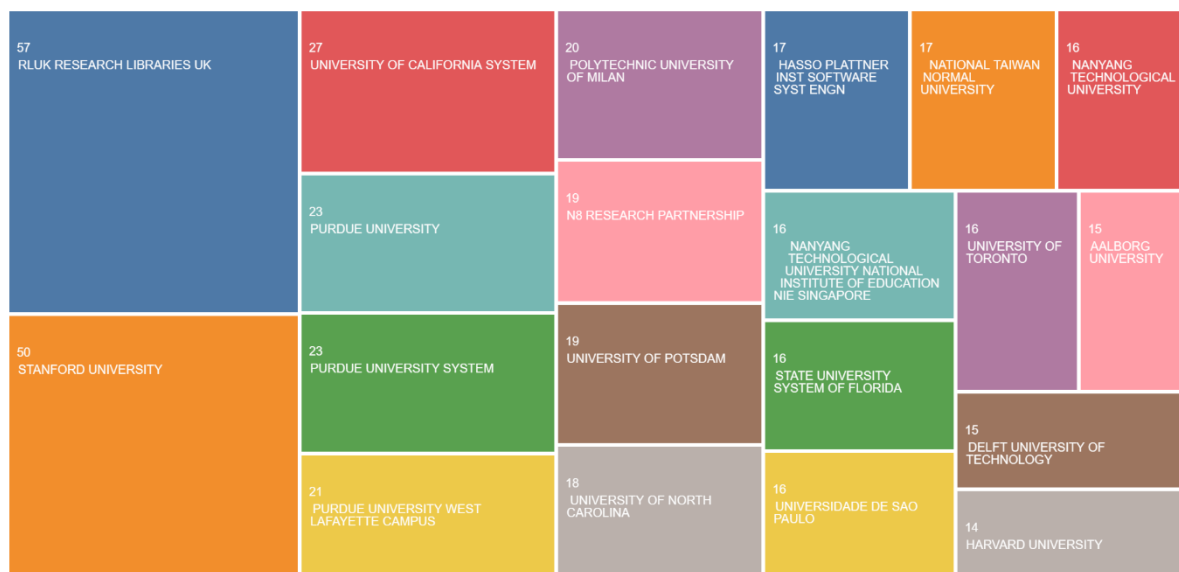


Figure 6: Number of research papers in WoS with Design Thinking in title by affiliation of authors
 (Source: authors according to WoS scientific database search results)

In every block is the number of publications and not the scientific impact that these research papers and scientific results are implying but since it is in the WoS database we can conclude that these universities are leaders in the research of these topics in the world.

5. CONCLUSION

Research into digital transformation and the connection between design thinking and its use in transformation has shown that this connection exists especially in research that is visible on the Google Scholar platform. As for searches and results in knowledge bases, such as the Web of Science platform, a smaller number of papers have directly investigated this connection, although the area of both paradigms is strongly represented in recent research. Several papers, also cited in this research, presented that connection exists and that through bibliographic research connection could be found. Results also show that both topics are still fresh for research and that digital transformation is present in four times scale in direct comparison to design thinking. Both connect the field of business and organization to the digital field of computer systems and informatics so the benefits from the innovation process proposed in design thinking and the complexity of digital transformation could benefit from being used together as tools for developing ideas and rapid evaluation of future digital transformation initiatives.

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THE INFLUENCE OF SOCIO-DEMOGRAPHIC AND ECONOMIC FACTORS ON THE DEVELOPMENT OF TOURISM

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ABSTRACT

Today in public and economic conditions of development, when the natural elements are more endangered, natural and life environment in industrial developed world is polluted. One of the problems is to prevent a negative influences of all activities in economy in general, like in industry of tourism too. The fact that the developed countries, in pursuit of profit at any price (destructing and polluting the basic natural elements: air, water, earth, climate, etc.), desperately depend on the undeveloped ones (the countries with unpolluted above mentioned elements), gives the latter a chance in the future when is development tourism real. The truth of work is explanation causative-resultant impact some the factor on development of tourism.

Keywords: *tourism, economics, ecology*

1. INTRADUCTION

The research is of a theoretical-research character, based on the research of relevant literature and hitherto unpublished research and development strategies, master plans and projects focused on this and similar topics. Research of factors that influence the development of tourism in perspective, by individual continents, indicate numerous events and changes that should be recognized and appreciated in the process of creating a material basis and developing tourism in new tourist destinations. Research on the development of tourism in the future in the Balkans and the EU perceives the determination of a series of changes as trends affecting the further development of tourism and the creation of a material basis in new destinations: an increase in tourist consumption in the EU; increase in trips outside Europe compared to trips within Europe; the increase in travel between the countries of the Balkans and the countries of the European Union in relation to travel within them; increase in visits to mountain centers in summer; faster development of air traffic; increase in trips by older and younger people compared to other age groups; increase in demand for cultural activities, etc. It is especially important to point out that when choosing a destination, the quality of the environment and the quality of the accommodation offer, that is, the compatibility of price and quality in the destination, are of increasing importance. When valorizing space, one should take into account possible negative environmental consequences, which future buildings and their use may cause by their presence. To analyze the spatial distribution of tourist capacities, the number of beds in different accommodation facilities is usually used, while tourist traffic, its volume, spatial direction, fluctuation during the year, the structure of the length of stay are monitored and reported according to the number of overnight stays. Along with the physiognomic transformation of the space of the new destination, the material basis in a certain way enhances the development of tourism and its functional importance. By creating a material base and further developing tourism in a new destination, the geographic environment is certainly affected, but the geographic environment also affects the creation of the material base. "There are numerous approaches to the analysis of the possible interactive relationship between tourism and the natural environment (space). The impact of tourism on the natural environment is related to the influence of factors such as: the intensity of use of the tourist place (space), the elasticity of the ecosystem, the time perspective of entrepreneurs in tourism and the transformative nature of tourism development.

By analyzing these four aspects, it is possible to arrive at different indicators and actually confirm the thesis that tourism simultaneously valorizes space, it preserves it, but also degrades it, it creates its own space, but also trivializes space, and finally, tourism is responsible for the awareness of to the problem of space (Stanković, 1990, 60)". Some scientists (Alfieri, 1957, 125) researching specific ways of interaction between tourism and the geographical environment, link these influences with the fundamental forms of tourist traffic. Some authors draw attention to the symbiotic interdependence of tourism and space, especially when it comes to tourism as a factor in the protection of natural and environmental entities. This is supported by the examples of national parks and the protection of numerous cultural and historical values, historical cities and buildings, where tourism directly contributes to the valorization of the "commercialization" of their values, but on the other hand, encourages "irritation" or contributes to their protection. In such alternating proofs and arguments, the spatial ecological component fully gains legitimacy, precisely because of the strength of the arguments of those who claim that tourism vulgarly transforms and irreparably damages the environment, and that is not because this attitude arises from dominant practice, but because of the real truths that tourism is uncontrolled development destroys its own development base. Accordingly, most authors are of the opinion that, in developing countries, where there are neither funds nor interest in natural attractions and monuments, a moderate development of tourism can come in handy and help their maintenance and preservation. However, the development of tourism, industry on a broad basis (which is a trend in all countries today) poses new and often serious dangers for the environment – its long-term harmful impact often outweighs the short-term benefits (Čerović, 2002, 49). In addition to the material basis of tourism (Vujović, 2005), the axioms of economic, ecological and sociocultural influences and requirements are of fundamental importance for the development of tourism in perspective, implicitly the quality of services and consumer protection. The quality of services is a factor that generates or is a prerequisite for the further development of tourism in general. (Hamović, 2004, 7).

2. GLOBAL TENDENCIES AND MARKET ASPECTS OF TOURISM DEVELOPMENT TRENDS

The dynamics of development flows at the global level, as shown by numerous parameters, could make the world in the near future more ecologically and economically unstable, more prone to disturbances, etc. Strong population pressure on natural resources and the environment can be clearly predicted. According to the forecasts of the World Tourism Organization and the World Travel and Tourism Council (WTTC), despite the increasing material production, the population will be poorer than today, however, tourism as a "world phenomenon" continues to grow and develop.¹

¹ According to forecasts of the World Tourism Organization, the total foreign tourist traffic in the world will amount to one billion tourists in 2010, while in 2020 it would reach 1.56 billion foreign tourists.

According to the estimates of the World Travel and Tourism Council (WTTC), in 2001, tourism participated with 4.2% in the World Gross Domestic Product, while employment in the tourism-related economy comprised 8.2% of total world employment, participation in to total world exports was 12.8%, while the absorption of total investments at the global level was 9%.

If we look at forecasts, WTO international tourist trips will grow from the current 625 million per year to 1.6 billion in 2020, if we ignore disruptions at the global level such as: terrorism, tsunamis, bird flu, sars virus and etc.

By that date, travelers will spend over two thousand billion US dollars (compared to today's 445 billion US dollars), making tourism the world's leading industry. These predictions are based on an annual growth rate of 4.3% for travel and 6.7% for spending, which is much higher than the expected 3% annual growth in the world (GDP). Already in 1997, tourism revenues accounted for slightly over 8% of the total world dollar amount, and almost 34% of the global amount of services.

Electronic technology facilitated this growth by offering access to travel and hotel information, and reservation services. despite constant annual growth (3.1%), Europe will still remain the most favorable destination (717 million international visits can be expected in 2020, twice as much as in 1999), but its market share will drop from 59% to 45 %. The countries of Central and Eastern Europe will record the greatest growth in visits in the continental part - 4.8% per year. At the same time, almost half of the world's tourists will come from Europe. Bearing in mind this dominance, it is not surprising that six European countries are among the world's 10 largest consumers, as well as among the 10 countries with the highest income, the USA holding first place in both categories. With 7% annual growth in international visits, the East Asia Pacific region will overtake America as

"Total tourism spending in the world in recent years accounts for between 10% and 12% of global activity. This makes tourism one of the most important economic activities in the world. The regional distribution of tourist traffic in the world is uneven. Europe has the largest share with over 65%, followed by America, East Asia and the Pacific, Africa, the Middle East and South Asia. Analyzes of tourist trends at the global level point to the leading position of the continent of Europe. This means that Europe has comparative advantages for the development of tourism. The cradle of nations and civilizations, the areas where tourism began to develop, still have primacy in the world tourism movement today. The population of countries with a high demand for tourism (USA, Germany, Japan, Great Britain) spend much more money on foreign tourism. The foreign exchange inflow that these countries achieve from foreign tourism is also significant, but the existence of a foreign exchange deficit is obvious. Therefore, the main directions of tourist movements on the macro and micro level are clearly differentiated. World tourist traffic experienced significant changes in the last decade of the 20th century. Socio-economic turmoil on the world stage has led to a number of positive and negative effects. Tourism reacts with its geographical redistribution. "The expansion of international tourism is supported by the increase in the purchasing power of the population, the increase in the fund of free time, the development of traffic as well as significant investments in the tourist infrastructure" (Štetić, 1999, 13). One of the important factors for the expansion of international tourism is a well-designed and built accommodation offer adequately integrated into a quality material base.

3. THE INFLUENCE OF ECOLOGICAL, SOCIO-CULTURAL AND ECONOMIC PRINCIPLES ON THE CREATION OF THE MATERIAL BASIS AND THE DEVELOPMENT OF TOURISM

The hypothesis that tourism in the world today, when the dissonant tones of the concept of sustainable development are increasingly present, is gaining more and more importance as a general economic integrative factor, fatefully connected to a healthy natural-geographical environment, confirms the reality of the (un)quality of people's lives. The development of tourism, the creation of a material basis and the organization of the tourist offer implies the fundamental role of the socio-demographic factor with maximum respect and study of ecological, economic and socio-cultural principles (Vujović et al., 2012). The ecological orientation of a destination does not necessarily mean a special advantage over the competition, given that the market implies this. Destinations that do not take this into account risk losing clients (Štetić, 1999, 11). Ecological orientation includes the protection and maintenance of nature (garbage dumps, wild construction, architecture and building materials), obtaining energy that conserves resources, protection against the negative effects of noise and social awareness of responsibility. These questions are not only asked by bidders, the responsibility is not only on them, but also tourists must behave in an ecological manner. The heterogeneity of the material basis depends on (primarily natural) conditions and assumptions for the development of a certain type of tourism. Today, the most attractive tourist destinations are those that have a preserved physical environment, protected nature and anthropogenic tourist

the second most popular destination in the world, which will have a market share of 27% in 2020, compared to the US's 18%. But the tourism industry will do its best to win over Asian tourists, as the East Asia Pacific region is predicted to take second place in the number of tourists coming from it and with annual growth of 7%, push America into third place. China is expected to be the fourth largest source of tourists, although it is not even among the top 10 today. Both departures from and arrivals to Africa (especially South Africa), the Middle East and South Asia will record growth of around 5% per year. France, which held the position of the most sought-after destination in the 90s, in the next decade it will be dethroned by China (excluding Hong Kong), which is expected to break out into the top of the list in 2020, although it is currently nowhere near that. Also, it is expected that Russia, Hong Kong and the Czech Republic will enter the list of the top 10 countries in the world. In spite of these predictions of growth, tourism remains, as it has always been, a privilege of the few. The WTO predicts that about 7% of the world's population will travel in 2020, which is double the 3.5% in 1996. The WTO enters the process of liberalization of services with criticism from opponents of globalization.

motives that attract tourists. Those destinations that do not have the opportunity to offer this type of tourist product are faced with a decrease in the number of tourists, and therefore other negative effects that are reflected in a smaller foreign exchange inflow, a decrease in employment. Sustainable development implies three main principles, namely:

- ecological,
- socio-cultural and
- economic.

Ecological principle - as a principle that implies the development of tourism in accordance with ecological processes and biological development of the space, influences and at the same time obligates that the process of creating the material basis itself be in accordance with ecological processes and biological development.

The socio-cultural principle indicates the increased participation of the local community and the local population in decision-making and development planning. This principle has a positive effect on the creation of a material basis, implying efforts for the preservation and development of the region. Not that the economic and social variables of the process of creating a material base should not be neglected, but these aspects must be seriously approached at the very beginning of the process of creating a material base, starting with planning. And the property inequality or the ability to pay of tourists is reflected on the material basis (especially the accommodation offer), some tourists are looking for the most modest accommodation (e.g. in camps), others are looking for more comfortable accommodation (middle-class hotels, tourist settlements, etc.), while others are looking for luxury category of accommodation facilities and thus the corresponding level of other non-boarding services. In all countries that develop tourism, there is a private accommodation offer, so that even the tourist superpowers Italy and Spain have a large number of "non-hotel" tourist beds. This type of accommodation provides a certain number of residents with sources of income for their existence. As an example of how the construction of infrastructure contributes to the development of private accommodation and the development of a number of other economic activities, the Adriatic Highway in Croatia can be cited. After the construction of the highway, all nearby settlements saw their own business opportunities in tourism, they began to rent out rooms for accommodation, opened catering facilities, then various craft and trade shops in the function of non-boarding offers. The simple population settled (settlements or villages) along the highway saw their existence and future in tourism. This directly affected the further displacement of the population in terms of providing better living conditions at home. As positive examples, the broader economic and social reflections of building the material basis of tourism on the economy and society are Switzerland and Austria. In Austria, numerous villages near major winter sports centers and other major alpine routes and centers have significantly prospered economically. That the climate is not the only, but only one of the factors that contributes to the construction and expansion of "other" accommodation facilities in tourism is shown again by the example of Austria and Switzerland. Austria has approximately the same number of beds in hotel and non-hotel facilities, while Switzerland has significantly more beds in non-hotel facilities, Sweden and Norway also have much more beds in non-hotel facilities, even 77% of the total number of tourist beds.²

The economic effects and incentives of creating a material basis and developing tourism in certain areas are reflected, first of all, in faster economic development. The economic importance and value of the material basis as the cornerstone of tourism is manifested over time through: the impact on employment and the standard of living of the population, the stimulation

² Source: http://www.wttc.org/reports/wttc_99_ver1.3_doc

of the development of other economic activities involved in the tourism economy, the impact on investments, the contribution to the development of other underdeveloped areas and a number of other indirect effects. Wars and crises in the Balkans have proven that the political and security situation, i.e. lack/security of movement and stay of tourists in certain destinations affects tourism. There are many examples other than the Balkans where tourists, regardless of the existence of attractiveness, avoid risky (dangerous) areas, as well as those where tourist demand has completely disappeared³.

Tourists are looking for harmony and a social environment in which they will feel comfortable and safe⁴. Experiencing beautiful, untouched nature is the dream of all people today, especially those who live in polluted environments (industrialized countries). Unspoiled nature belongs to the three basic needs of the German as well as the middle and northern European, similarly structured market. In reports on vacation experiences, impressions about nature and the environment make up 77% of all impressions⁵. According to the above and due to the responsibility towards the next generations, the concept of "sustainable development" as decided by the international community of states in 1992 in Rio with Agenda 21, forms the basis of strategic ideas.⁶ The well-known critic of tourism Jost Krippendorf, analyzing the demands of tourists, through the example of observing the Maldives, concludes that the Maldives are of great value for tourism thanks to their specific position (isolated) and that they do not only meet the requirements of the market (demand), but also from the social and natural aspects solution, which in terms of environmental protection is the most affordable (Krippendorf, 1986). One of the prerequisites for the development of tourism is a healthy natural environment, which also implies the concept of sustainable development. Very simply, "sustainable development" is the concept of economic development with minimal use of non-renewable natural resources, and maximum use of renewable energy resources, so that future generations will be able to enjoy the benefits of a preserved environment. As one of the many examples of the impact of ecological, sociocultural and economic factors on the creation of a material base and the development of tourism, we can cite examples from our country - Lake Ludoško⁷ and Obedska bara⁸. The above examples indicate the primacy of natural values over material or natural components of the material base over anthropogenic values.

4. CONCLUSION

Tourism observed at the world level as a socio-economic phenomenon of the last decades, represents one of the biggest phenomena due to its constant growth and development and as such, tourism has become one of the most productive and propulsive economic branches with multiple multiplied effects.

³ Egypt after the terrorist attack in Luxor, Turkey because of the PKK threats, Sri Lanka because of the civil war. One of the most important assumptions for the development of tourism is safety in the broadest sense. Tourism does not only run away from conflicts, but also from regions where it believes that there is crime there or that its health and life will be threatened there. WTO–TOURISM 2020 Vision in "updated Executive Summary", p. 30.

⁴ See, F.U.R. "Urlaubsmotive", p. 22.

⁵ See, F.U.R. u "Reisemotive", str. 31.

⁶ See, DFV, "Nachhaltige Entwicklung: Tourismus und Umwelt

⁷ Lake Ludoško, one of the largest in Vojvodina, is 12 km south of Subotica and belongs to a group of 1,717 wetlands protected by the Ramsar Convention, due to its rich flora and fauna. In order to preserve this natural treasure, the Ramsar Fund granted Yugoslavia about 40 thousand Swiss francs for Lake Ludoško. Ludoško Lake is primarily a realm of resident birds as well as other species that are cared for by the Society for the Protection of Birds of Vojvodina and the Ecological Society. (ip.palic@tippnet.co.yu and www.palic.co.yu).

⁸ Obedska Bara is an animal kingdom located in southeastern Srem, along the Sava River, not far from the settlements of Obrež and Kupinovo, where around 100,000 different birds once nested. Today, Obedska Bara has about 220 species of birds, 50 species of mammals, 11 species of reptiles, 13 species of amphibians, 16 species of fish, over 1,200 species of insects, 200 species of fungi, 200 species of zooplankton, more than 200 species of plants, 50 species of mosses and other species. . Stories about black ibises have a special place in ancient records. (Source: Zorica, Marković. »Treasure in the middle of the swamp«, Reportage/Feljton, Blic Sunday, from February 11, 2001. Belgrade.

Based on numerous researches, monitoring of phenomena and trends, and analytical observation of the changes that occur after the determining factors that influence the development of tourism, the dominant role is played by the creation of the material basis as a prerequisite for the awakening of tourist potential in new tourist destinations. The governments of many countries, aware of the importance of tourism development and the effect it has on the national economy, give great support to the development of tourism through public and private partnerships, investments, create institutions and pass laws, help integrative flows in the region and beyond, the development of all types of transport and quality services, which will lead to the growth of the tourism industry, mass tourist movements and contribute to the increase in tourist trips. Bearing in mind the influence of ecological, sociocultural and economic principles on the development of tourism, and the complexity of this economic activity, as well as the dynamics of events outside of tourism that have a strong influence, it is very difficult to predict what will happen in the future with tourism. Observing globally all the processes and activities that marked tourism in the past time, we can conclude that tourism as an economic activity has become one of the leading industries in the whole world whose future should not be worried because according to the data available from the World Tourism Organization and the forecasts made, the total tourist traffic by 2030 should reach 1.8 billion passengers worldwide. The forecasts of the World Tourism Organization are certainly encouraging, but they are a warning and a signpost that it is necessary to solve the problems of the mass of tourists, which are reflected in ecological, sociodemographic, economic and other fields.

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THE INFLUENCE OF THE MEDIA ON THE CREATION OF POLITICAL REALITY

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ABSTRACT

It is a well-known fact that the process of communication is in continuous changes, accelerations and various technical-technological achievements have not solved the dilemma for modern man which at first glance seems paradoxical, according to many theorists from the media sphere and an unnecessary dilemma about the influence of the media on the creation of political reality. In one part, it is truly redundant in at least two directions of consideration: the first is that such a question, through time and all the transformations experienced by the media spectrum, has received the label of an exclusively rhetorical stereotype; the other direction is more pragmatic and concrete: it leads to the interpretation of the relationship between one influence and another, that is, media and politics and vice versa, in symbiosis, and their common denominator, the impact on the processes taking place in modern democratic societies. And this discourse attracts a lot of attention because its implementation models and directs access to mass information and transparency of government, organized systems and all social subsystems. This is actually where the hub of the entire problem is found in explaining the delicacy of the influence of one in relation to the other, or equalizing and synchronizing in the implementation of both policies, - media and political, - in order to reach the realization of the proclaimed and predefined goals. Although it seems to the average consumer that this duet does not have a visible conductor, that is not true in the premises either.

Keywords: *media, politics, political culture, information, Republic of Serbia, communications, media market, sociological behavior, state*

1. INTRODUCTION

Let's start by analyzing the facts in order to prove that the influence of the media on the creation of political reality cannot be observed separately or in isolation if we leave out of the same context the equality of treatment and politics on media activity. Simply, one does not exclude the other, on the contrary, the immediate or delayed effects of the media and politics only confirm the complexity and complexity of the entire determination, that is, their importance and interweaving in the creation of social flows and the role of individuals in them.

- 1) The media in their activities are under constant pressure from financial moguls and oligarchs, mostly the holders of leadership positions in the broadest media spectrum. In the era of hyperglobalism, they are in most cases the owners of media companies, of course they create media strategies and policies from the second plan, but with a clear concept of how to direct the recipients or users of the offered content.

Therefore, through these levers, there is a constant fermentation and redirection of public opinion and the public according to personal interests, political or economic, economic or cultural, including in all organizational factors of social life.

- 2) Despite the tradition and very well-balanced human and professional resources, media houses are forced to change the ownership structure due to financial devastation, aware that with such a procedure the ethical, aesthetic, moral and professional code is also changing. From such a relationship, - we are talking very often about the initial conflicting positions of media workers and new holders, political and economic powerful, - it quickly moves into the phase of open manipulation, forcing fake news, indoctrination, censorship and self-censorship and redirecting and reshaping the social discourse to a completely a different concept in which means are not chosen to achieve a certain political influence or form a new model of the value system in the general social milieu.
- 3) If we say that they regulate the play between politics and the media, from the leadership position they direct equally one or the other, perhaps we would be the closest to the answer why it is impossible to separate their parallel actions.

However, let's direct the focus on the facts that come from the practical, therefore, the daily activities of the media in relation to political power and vice versa. Today, there is almost no example on a global scale that shows that the owners of media companies are ready for the compromise that we are just announcing: we give money, and let the media houses manage their editorial policies independently. And some business strategies respect the principles of free flow of information, and based on that, achieve circulation, advertising and any other profits in open market competition. Adam Smith's neoliberal concept of capitalism built a new economic political reality on this determinant, but pragmatism found ways to adapt the offered type of challenge to circumstances that do not imply blind and unquestioning implementation into new theoretical doctrines. This is unthinkable from the logic of capital, and almost inapplicable in practice, regardless of language proclamations about freedom of the media, the right to opinions and expressions of will without reprisals, and the unquestionability of how valuable such an approach of media workers would be from the point of view of achieved credibility, preservation of professional ethics and dignity, circulation expansion, increase in listenership or viewership. And a positive impact on improving objectivity, timely and truthful public information about all neuralgic social contradictions, unresolved conflicts, undefined and archived problems that are very skillfully and purposefully transferred to the social margin, without serious attempts to resolve and establish all the necessary assumptions that would contribute to betterment and the expansion of society as a whole. Politics as the art of the possible, behind the screen of which social reality is created, precisely for the reasons mentioned above, has no interest in demystifying the most complex social phenomena through media activity. They consciously fill the public with a lot of information, very skillfully manipulating both the members of the media and the audience they address. It actually encourages social polarization. Everything is moved to the periphery of importance, which is in agreement with the assertion of communicator George Frank "that we live in the age of information and nothing can protect us from it". As well as from the direct interference of politics in the media sphere. Frank is joined in a similar tone by Naom Chomsky. He points out that "the media do not contribute to the functioning of a critical public, but rather to a manipulative one, based on PR techniques, to build consensus." desirable content that has no alternative. "Politics and its bearers very well decoded the message that there is no human activity that is not based on the exchange of information, without which it is almost impossible to imagine the life of a modern person. Although information is immaterial, through it knowledge is realized as a basic prerequisite for even more serious human action" (Jokić, 2009).

According to Manel Castells, man builds a new creation every day - a dual city which, on the one hand, is characterized by the creation of a cosmopolitan elite, which is functionally, economically and culturally in daily contact with the whole world, and on the other hand, tribalistic local communities, which within their local of urban identities oppose it. Both cities are equally alive and real (like the media and politics, op.aut). Each of us lives on the border between one and the other, belonging to them to a greater or lesser extent at the same time, explains Castellás. Media companies have another, we would say, much more complex problem: they have given up their right to freedom of thought due to existential and financial dilemmas, which directly initiates adaptation to certain political options favored by their owners. Thus, the media space narrows, turns into a propaganda magazine, loses its importance and role, and reaches a professional and moral disaster. They tend to favor or show through their content an absolute favor to one or another political or economic bloc, so it sounds absurd but also true, that they have gained the greatest enemies for media freedom in the holders of capital whose plans they adhere to without any critical awareness and deviation due to such a way of editing and controlling the media spheres. Such complicated relations between these partners can be interpreted as uncharacteristic only from the aspect of the logic of capital, and it would have been contained in the mirkons if the media representatives had not surrendered sovereignty, translated into media language, any type of autonomy, independence in implementing the policy of media houses if it is contrary to the financial powers and their intention to reshape the media sphere exclusively according to their goals and needs. Therefore, they generate and direct the media and communication in every society, developed to unimaginable proportions, thus assuming prerogative and leadership positions in the creation of social reality. Information - communication highways directly create or maintain the political power of certain interest groups, big capital, multinational companies, parties, lobbies and lobbyists, and other interested actors of politics as its inseparable part, which puts consumers in a position to agree with the futuristic prediction of Umberto Eco, which is wrote with a high percentage of probability that "the media will become more and more infantile, and this also applies to the electronic media. (Eco, 1973) And another confirmation of the above comes from the address of the sociologist Helmut Šlenski, whose observation "that we know less and less about everything" simply passed into a new paradigm of modern man. In the multitude of information, a person has no more time to classify and recognize the value of communication goods, which means that he is not able to fully understand its value and use value. This kind of media panorama, instead of opening up an informational space, offers the recipients a certain type of selectivity and the monopolization of all those additional explanations that are most necessary in order to classify and understand any social phenomena. The media and politics are packaged and offer the same presentation to consumers only those options based solely on the measure of their own interest and the value scale that they jointly aimed for some completely different goal than, on legal norms and regulations based on rules of action and behavior, which are no longer dealt with even by the state regulatory bodies, obviously act as "accompanying music" to the duo of political power and the media, which with such action destroys and rejects all proclaimed and agreed cultural policies.

2. ABOUT THE MEDIA FROM THE ASPECT OF CONFORMITY IN THE ERA OF MASS-MEDIA EXPANSION

Erich Fromm criticized American society in the 1960s for agreeing to conformity due to the spread of mass media. He believes that conformity leads to the loss of personal identity and that people adapt social norms without thinking. In particular, Fromm criticizes the influence of the mass media as a means of creating and developing conformity, arguing that they are always under the control of ruling structures and that they act subliminally on a wide audience.

Ruling structures want to stay in power by creating a mass of obedient citizens, who do not think for themselves, but accept whatever is given to them, be it buying a product or voting for a political option. According to Fromm's perspective, the question arises as to how social networks today influence conformity through the mass media. (Jakop, 2020) Erich Fromm, a cultural psychoanalyst and philosopher, accuses the mass media of being the main means of supporting and developing conformity. He claims that the mass media are always in the hands of the ruling structures and that they have a wide influence on a wide public. The goal of the ruling structures is to stay in power by forming a mass of obedient citizens who do not think independently, but accept whatever is served to them, be it buying a product or voting for a political option. 70 years later, media has evolved into social media, but its influence on conformity remains the same. They are still used to form a mass of obedient citizens, whose opinions and actions influence the government. The question of how social networks influence conformity still remains relevant and important (Gojković, 2010). People tend to give up freedom in order to escape from it. Freedom comes with no obligations, but it can also be lonely. Running away from freedom leads to seeking authority and fusion with others which can be extremely sadistic or masochistic. This leads to destruction and conformity in the dominant culture. Instead of developing character through responsible choices, fleeing from freedom, people psychologically separate themselves from their own selves. Technological development in the modern age provides an additional opportunity for such separation (Du Toit, 2019).

3. MARKET CAPITALISM AS A TOOL OF MODERN MASS MEDIA

The ideology of market capitalism, which holds that the work of the media is subject to the demands of owners or shareholders and that the media is a recognized business and a powerful tool controlled by multinational corporations, pervades the modern media age. Corporate capitalism is the dominant ideology of the twenty-first century. After a little more than sixty years, the basic ideas of the Frankfurt School are retroactively updated when examining the causal relationship between the advancement of media technology and an increasingly uniform and homogenized media market. Henry Kissinger believes that for the first time in history, international relations have "really become" global, communications are instantaneous, the world economy functions simultaneously on all continents. (Simeunović, 2014) But if we move away from this dystopian model of media theory, we will see that the media actually have an institutional character. We can certainly classify them as cultural institutions in addition to seeing them as political and economic subjects. One of the most important aspects of media in this regard is their educational function, which, in addition to media theorists, is emphasized by social psychologists when they talk about agents. In this view of development, a person's personality plays a significant role in the dissemination of knowledge, the development of taste, and socialization, in addition to family, school, and peer groups. Speaking about the specialized scientific subject of media studies that was created at the end of the 20th century based on the theories of the French philosopher and mediaologist Régis Debré. Mediaology deals with media as cultural institutions. It is clear that the media can be seen as defenders of a country's cultural identity and matrix because of the way collective memory is created and maintained through media transmission, which also includes the transmission of knowledge, cultural history and traditions across generations. A technologically and media-literate audience is increasingly demanding in terms of interpretation of events, social movements and turbulence, and a modern journalist is expected to be both an interpreter and expositor of current and socially significant topics. The promotion of science and culture is expected from the modern media, especially from the public service. Media larpurartism, in which design, or "packaging" defeats content, arises from the fact that the needs of the media market block the media's third function, which is educational (the first two roles are informative and entertaining).

The economic goals of globalization are a single world market, borderless trade, internationalization of production through direct investments by multinational companies, and the construction of a comprehensive system of integrated financial markets. (Simeunović, 2022) Global society has also given birth to the concept of multiculturalism, which represents the parallel existence of several different cultures on the territory of one country. However, this concept of modern society is more an ideal than a reality. Knowing the basic principles of the media is important in order to "provide" the audience with the necessary expertise to interpret the given media reality, as well as a critical perspective on how events are presented in the media. Following the same event from multiple sources shows the value of being able to understand a unique media reality in an age of information overload (traditional and alternative media).

4. EUROPEAN MEDIA POLICY AND REGULATIONS

The concept of media was defined by the Committee of Ministers of the member states of the Council of Europe in several of its political and legal acts.¹ The Committee of Ministers on the right of reply gave the meaning of the term "media" which refers to all means of communication of a periodic character intended for the dissemination of information to the public, such as: newspapers, radio and television. Recommendation no. R (97) 19 of the Committee of Ministers to the member states on the depiction of violence in the electronic media defines the term "electronic media" stating that they mean radio and television programming services such as video on demand, the Internet, interactive television, or products such as video- games, etc., except for all private communications not available to the public". Here we have one important eliminatory criterion - that means of transmitting words, sound and images cannot be media if they are private communications unavailable to the public. Therefore, what can be considered media is decided by the criterion - the possibility of public access to its program. Private communications that are not available to the public are not considered media. Changes in the media area under the influence of digital technology were formulated in several documents that were adopted at the First Conference of Ministers Responsible for Media and New Communication Services in Council of Europe member countries in Reykjavík in 2009, namely:

- 1) Political declaration;
- 2) Resolution: towards a new understanding of the media;
- 3) Action plan: towards a new understanding of the media and the consequences that may arise from it;
- 4) Resolution: Internet Governance and Critical Internet Resources.²

They indicate the necessity of considering the concept of media, which includes editorial responsibility and respect for ethical norms, but also the possibility of redefining the very concept of media in view of the emergence of new forms of media practice on the Internet. Editorial control is a key criterion for determining whether a form of communication in the new media space falls into the category of media. In other words, editorial responsibility is one of the key criteria for determining a new, broader meaning of the term media in European media policy.³

¹ See more: Recommendation on the right of reply – Position of the individual in relation to the press. Res(74)26. <https://rm.coe.int/090000168077c49a>

² See more: MCM(2009)01. Prva konferencija ministara nadležnih za medije i nove komunikacione usluge u zemljama članicama Saveta Evrope. <http://www.ndnv.org/?p=6834>

³ See more: Preporuka CM/Rec(2011)7. Komitet ministara državama članicama o novom poimanju medija 2011. http://www.coe.org.rs/REPOSITORY/3600_zbornik_odabranih_pravnih_instrumenata_saveta_evrope_u_vezi_sa_medijima_2007-2014.pdf

Namely, Recommendation CM/Rec(2011)7 contains a total of six criteria for determining a form of communication as media:

- a) the actor's intention to act as a medium,
- b) the purpose and basic goals of the media,
- c) editorial control,
- d) professional standards,
- e) reach and distribution,
- f) public expectation

Based on the scope of fulfillment of these criteria, we can determine whether a communication service represents a medium or something else, that is, an intermediary or auxiliary activity of a media service. All criteria are not equally important. The binding criteria, according to this Recommendation CM/Rec(2011)7, are:

- a) purpose of media,
- b) editorial control
- c) reach or dissemination

These are essential elements of the concept of media, including digital media. The recommendation elaborates each of these essential criteria through several indicators. Thus, indicators important for the purpose of the media are: "production, collection or dissemination of media content; operating applications or platforms designed to facilitate interactive mass communication or overall mass communication (social networks) and/or to enable large interactive content-based experiences (online games); with the basic media goal(s): to animate and provide space for public discussion and political dialogue, to shape and influence public opinion, to promote values, to enable inquiry and increase transparency and accountability, to ensure educational, entertainment, cultural and artistic expressions, to create new working places, generate income - or most often a combination of the aforementioned; and periodically renewing and updating the content".⁴ Indicators on the basis of which the (non)existence of editorial control is assessed are editorial policy, editorial process, mitigation of user content and the existence of a newsroom. The third important element (criterion) of digital media is reach and distribution. However, the rule applies here "that if the reach and dissemination of the content is at a low level, such a service should not be considered a medium". Differentiation means that the multitude of ways and forms of media activity (content) in the digital environment (eg entertainment or information media) should be taken into account, but that the approach should be adapted to the specific case. In accordance with the role of the media, graded regulation is applied, i.e. different degrees of rights, obligations and responsibilities of the specific media form, i.e. the media, are determined. Differentiated and graded regulation depend on the role of the media and its influence. In the digital media environment, an important role is played by "intermediaries and assistants of media services", who are numerous actors in the digital space but differ from new media because they do not meet all the criteria from the Recommendation, and especially not the essential elements of the "new" concept of media in the digital world. This refers primarily to editorial control and the purpose of the media.

5. CONCLUSION

The influence of the media on the social behavior of individuals and groups can be complex and different. The media can have a positive influence, through the provision of information and education, as well as a negative influence, through the spread of prejudices and untruths.

⁴ See more: Preporuka CM/Rec(2011)7. Komitet ministara državama članicama o novom poimanju medija 2011. http://www.coe.org.rs/REPOSITORY/3600_zbornik_odabranih_pravnih_instrumenata_saveta_evrope_u_vezi_sa_medijima_2007-2014.pdf

It is important for individuals to critically analyze the information they receive through the media and to develop critical thinking. Groups can also be influenced by the media, often forming their views based on the information they receive through them. In general, the media play a significant role in the formation of social behavior, therefore it is important to regulate and monitor their use. However, individuals and groups also have the power to resist the negative influence of the media and to choose what they accept as true and important. Using critical thinking and various sources of information, individuals and groups can build their views on an independent and educated foundation. Increased awareness of the influence of the media may also lead to changes in the regulation and oversight of their content. In short, the influence of the media on social behavior depends on the interaction between the media, the individual and the group, and it is important to harmonize their actions for the benefit of the community. Finally, it is important to note that the media is only one of many factors that influence social behavior. Other factors include family, friends, school, workplace, religion, culture and society as a whole. Therefore, in the analysis of media influence on social behavior, it is necessary to take into account all relevant factors and their interaction. Overall, the conclusion about the influence of the media on social behavior is that it plays a significant role, but that its influence depends on several factors and that individuals and groups have the power to control and regulate it. It is precisely this dimension of media policy that the media interprets as an important factor of European democratic culture, that self-limits the legal competences of the EU in the field of media and culture and leaves these areas to the sovereignty of the member states. On the other hand, by creating a single internal market, the EU enacted laws on cross-border trade in services and goods, including media products. As a result, a component of media policy focused on the business aspects of the media came to the fore. Therefore, the European Union has passed more than a hundred regulations, directives, recommendations or programs that affect the work and circulation of media in Europe without direct competence for the adoption of media regulations in which this area would be treated in a quality manner, while the respect of non-economic (social, ethical, identity, etc.) function of the media product. The goods and services of the media industry are primarily treated as consumer goods according to the prescribed norms, which reduces them to the market dimension. In this way, indirectly, by regulating only aspects of market positioning and treatment of this type of goods, non-media regulations also act in the sphere of creating media products. In the given regulatory context, the principle of economic efficiency has a teleological character and implicitly imposes those standards in the media sphere that direct towards profitability. All additional rules related to the non-market functions of media products - serving the public interest, protecting democracy, acting as the fourth branch of government, etc. - are not legally binding and belong to the category of "soft law". According to the prevailing neoliberal value matrix, Europe can best benefit from the latest technological revolution by liberalizing markets and creating optimal conditions for business expansion. Political culture is a concept that came from the field of political sociology and became one of the most important in the field of political science. He belongs to the political dimension of politics, as Radivoj Stepanov correctly notes. It indicates or defines the orientation of citizens towards politics, their perception of political legitimacy, tradition, political ideas and options. In a word, political culture as a term expresses the majority views of citizens on the body of political values and norms that define politics and configure political relations in a political community. "Political culture can be briefly defined as 'the total sum of actions and thoughts' or as the way of life of a nation. Political culture determines, first of all, the matrix or type of orientation of society for political actions, that is, it contains a set of meanings and goals in which a given political system is embodied. Political culture includes, in addition to the rules of political governance and norms of prescribed behavior, types of social/political actions, as well as processes in which individuals are prepared for social participation, such as: socialization, especially political socialization, formation of social

character, symbolization and rituals which express the accepted types of beliefs and ideologies, as well as the dominant mentality". Under the most general definitions, political culture would be that part of the general culture of a society that includes values, beliefs, attitudes, symbols, preferences and patterns of behavior in relation to politics and political issues, such as those issues that relate to the general conditions of common life in a society and on the choice of directions and goals of overall social development (development management). One of the most learned people in Serbia in the first half of the 20th century, Westerner and liberal, jurist Živojin Perić, wrote after the First World War, which he saw as the collapse of Europe: "There are not only cemeteries of dead people, but also cemeteries of dead ideas." How spacious cemeteries are not only of ideas but also of entire systems". However, the historical dying of ideas takes a long time: they undergo various metamorphoses and go through several cycles until they are reduced to their essence. Deciphering that process is not the job of one science, as historical ones are usually thought of, but of several sciences. Without its realization and understanding, society cannot be aware of its real possibilities. Because democracy is not a goal, but a means for society to arrive at rational solutions, which are based on the following assumptions: compatibility of ambitions and opportunities, taking into account the Other and predicting one's own development in a world historical perspective. The essence of democracy in Serbia in the last quarter of a century is reflected in the currency: everyone has the right to their opinion. It is, as Jovan Cvijić said after the Balkan wars, elementary, natural democracy. Especially if your own opinion encroaches on the same right of everyone else. There is a hierarchy of opinion. Modern totalitarian ideologies and systems were created precisely on its leveling in the name of a social or national goal. Without respecting the diversity of opinion that is in the nature of things, but also the hierarchy of opinion that finds its expression in the institutional separation of the modern state and society - there is a general crisis of trust and the fatalistic belief that there is no choice. And the choice always existed and still exists. No one, therefore, can say that he is innocent of the effects of the election. Because every choice is assuming responsibility, such as rejecting all realistically possible choices, without offering one's own, actually rejecting responsibility. I like to quote the Russian thinker, the progenitor of narodnik socialism, Alexander Herzen: "History, like nature, never puts everything on one map." What, or what cards, did the history of modern Serbia "play"? Looking for an answer to this question, a group of Serbian historians has been studying the political culture of modern Serbia for years. This means: leading ideas, that is, the cultural-civilizational circle in which they originated - because nineteenth-century Serbia could not initiate them: it took them over and that already as "reworked". That is, the bearers of those ideas in Serbia, the organizations they created, the goals they set and the means they used. And especially: the reception of those ideas, their social resonance and their duration. The alternative pattern of political culture in Serbia has been called differently in science: liberal to populist, populist in all variants that marked the history of modern Serbia (socialist, radical, communist); individualistic versus collectivistic; Serbian to All-Serbian. The alternative pattern in Serbia's political culture is historically most justified to be called liberal. Liberalism as a doctrine of modern European society in Serbia, as well as in the Balkans, has no history. But, viewed in a real historical context as a desire for economic and political independence, the rule of law, respect for political and cultural diversity - its trace is recognizable in all periods of modern history, including the Yugoslav period, as the second card that history "played". It has always been, and today, when we are standing on the ruins of a long-term symbiosis of populism and nationalism, a brave and responsible alternative. Ready to, with the help of Europe, change the matrix of the dominant cultural pattern that was reduced to its essence in the wars of the nineties. To extract from his historical memory a fragile but unbroken liberal tradition: about individual freedom, the rule of law, and the solidarity of people and nations.

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SOFT LAW INSTRUMENTS OF THE EUROPEAN UNION IN SHAPING INTERNAL SECURITY

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ABSTRACT

The European Union exercises its authority by enacting secondary law, which together with the founding treaties or primary law serve as the foundations the EU legal system. In addition to legislative acts, soft law norms or instruments like strategies, action plans, agendas, conclusions, resolutions, and guidelines aid in the formulation of some EU policies. The instruments adopted by the EU institutions are the focus of the research, which demonstrates how soft law norms can shape a very sensitive area like internal security, which is an essential component of one of the main goals of the Union, which is to create and provide citizens with a common area of freedom, security, and justice. More specifically, this paper analyzes several important soft law instruments adopted by the EU institutions for the area that represents the heart of the member states' national sovereignty. It will be shown that EU soft law instruments have a significant impact on shaping the internal security of the Union, as a support and incentive for the application of hard law acts, even though the former do not have full legal effect and legal obligation. This also have implications for maintaining the internal security of member states that are not highly enthusiastic about any EU intervention in this area.

Keywords: *Action plans, Cross-border operational police cooperation, Internal security, Soft law, Strategies*

1. INTRODUCTION

Normative creativity and regulation of European integration with norms that do not have legally binding force are the specificities of the legal order of the Union and the functioning of the institutions since its foundation. It seems that the authors of the founding treaties of the Union consciously set a flexible framework in the Union's law for the creation of extraordinary "creative practice" by the EU institutions, primarily the Commission and the Council, in shaping different domains and policies, from economic to political cooperation. Essentially, these are special rules of conduct and directions for common policies of the Union that are not contained in primary and secondary law but are instruments of soft and legally not quite strict regulation that free member states from the obsession with transferring national sovereignty and, from their perspective, the ubiquitous excessive legal regulation and domination of the Union. That particularity of theirs does not refer to the independent legal regulation of Union policies but has an auxiliary function in areas where member states and the EU share

competences and where the principle of subsidiarity represents the border of separating domains under the control of member states or the EU. Thus, the gradual development of soft law within the Union related to economic cooperation, social policy, employment policy and environmental protection since the entry into force of the Treaty of Amsterdam is expanding to internal affairs and internal security. Later, with the adoption of the Treaty of Lisbon, a wide range of institutional shaping of internal security and the entire area of freedom, security, and justice was created using soft law instruments. These instruments are the subject of research in this work, where after a general analysis of the legal basis and the development of soft decision-making in the Union, the second part of the work will be devoted to the newer soft law instruments of the Council and the Commission, which shape, supplement, encourage and improve the existing cooperation of the member states established with "hard law", i.e. legislative instruments of primary and secondary law.

2. SOFT LAW IN THE LEGAL ORDER OF THE EUROPEAN UNION

Without claiming to provide a precise, comprehensive definition of the role and place of soft law in the legal order of the EU, we can start from the international legal perspective, where the term "soft law" has been used for over 40 years. Soft law refers to a broad category of instruments that exist in a gray area between law and politics, embodying legal and political obligations (Kreća 2019, p.111). Soft law consists of non-binding norms of international law that are considered legally imperfect because they lack direct legal sanction, i.e., they do not determine the rights and obligations of subjects and have no binding legal force (Dimitrijevic et al. 2012, p. 58). Although not legally binding, these rules exert strong factual influence on states and the general opinion, tending to grow into hard law. Soft law is used to establish norms for individual sensitive areas that hard law cannot access instantly due to various reasons (political, moral, economic, psychological, social) (Avramovic 2011, p. 274). With soft law and a soft orientation of legal and political routes, the first step is made towards hard law. Despite the literature's emphasis on the non-binding nature of soft law, it is created with the expectation that factual obligation will evolve into legal obligation. Therefore, soft law serves the function of legitimizing the penetration of various external ideological and other influences. It opens the way for various international political and economic pressures that directly affect states' sovereignty (Avramović 2021, p.109). Different variations of soft law can be found in the formulation and implementation of EU policies. Soft law in EU law refers to rules of conduct that are established by institutions using instruments that do not have binding legal force, but have an indirect legal effect and practical impact in achieving specific policy goals (Senden 2004, cited in Seden and Brink 2012). This heterogeneous and hybrid phenomenon of EU soft law seeks to correct existing rules and establish new rules of conduct or policy direction that are not contained or implied in existing primary or secondary EU law. In fact, acts of soft law can be classified as tertiary sources of EU law (Đurđev 2013, p.106). They seek to bring about a certain change of behavior on the part of member states and other actors regarding the realization of certain legal or political goals, with no use of legally binding instruments. Soft law rules are manifested through various forms and ways, primarily through the use of Council instruments that are not provided for in treaties, such as conclusions, declarations, resolutions and codes of conduct. Declarations mainly aim to guide the future actions of the Union, while resolutions, codes, and more recently, conclusions, aim to foster closer cooperation or a coordinated approach among member states. For instance, the third chapter of this work presents police operational cooperation as an area where closer cooperation is established through such instruments. As for Commission, it exercises its executive powers not only through delegated and implementing acts, but also through various soft law instruments such as strategies, action plans, communications, notifications, guidelines, and codes. Strategies, action plans and communications are mentioned as instruments of soft law in the 'Better regulation'

toolbox from 2021 (European Commission 2021, p.388). Through soft law instruments, the Commission seeks to provide additional auxiliary rules and instructions to national authorities and interested parties on the interpretation, transposition and application of EU law, aiming at increasing transparency, legal certainty and correct and uniform interpretation of EU law. On the other hand, it is important to differentiate between preparatory and informative instruments, including white and green papers and certain communications and notices, which are difficult to classify as soft law instruments due to the absence of any reference to political, legal or administrative action and behavior (Seden and Brink 2012, p.12). The aforementioned normative activities of the Council and the Commission using soft law instruments do not only affect the national legislator responsible for transposing the EU law, but also the administrative bodies and national courts that must apply EU law (Seden and Brink 2012, p. 14). It can be said that from its inception until today, the Union has developed quite solid mechanisms for avoiding hard action, that is, mechanisms for integration by acting from the bottom up, precisely through the use of soft law instruments. The Treaty of Lisbon does not codify the long practice of using soft law instruments and does not define all its forms, leaving two soft law instruments that have always been part of the institutional framework of the Union and are often referred to in EU law theory as non-binding legal acts of secondary legislation. These are recommendations and opinions that are explicitly stated to have no binding legal force (Article 288 TFEU). For their application, there is a prescribed procedure that the Council must observe, first of all, when making recommendations. The Council acts on the basis of the proposal of the Commission when it is foreseen to adopt acts on the proposal of the Commission and decides unanimously when this is foreseen in the Treaty. This means that the Council must have a legal basis for its recommendations and applies the same procedure that is required for the adoption of a binding act of the Union (Article 292 TFEU). However, no similar requirement exists for the adoption of recommendations by the Commission. The choice of the type of act to be adopted is also related to the discretionary right of the institutions to choose the act in each individual case if the type of act is not determined by the contracts, in accordance with the procedures that are applied, as well as respecting the principle of proportionality. Legal acts contain explanations and refer to proposals, initiatives, recommendations, requests or opinions required by the Treaties (Article 296 TFEU). In addition to the contractual definition of the conditions for the adoption of legislation, the EU institutions have adopted a special inter-institutional agreement for better coordination in that procedure. The European Parliament, Council and the Commission concluded an Interinstitutional Agreement on Better Law-Making in 2016. The three institutions recognised their joint responsibility to deliver high-quality legislation:

- in areas where it has the greatest added value for European citizens and strengthen the competitiveness and sustainability of the Union's economy;
- which delivers the Union's policy objectives in the simplest, most efficient and effective way possible;
- which avoids overregulation and unnecessary administrative burdens for citizens, administrations and businesses and particularly SMEs; and
- which is designed to facilitate its transposition and practical application (European Commission 2021, p.8).

Regardless of the legal non-binding nature of EU soft law instruments, their scope and disputes over interpretation are an integral part of the judicial practice of the European Court of Justice. The Court has developed different jurisprudence, reviewing the general premise of whether soft law acts are generally admissible for determining their legality, first considering whether soft law instruments are designed to have external effect, general application, and some kind of obligation depending on their content. The jurisprudence indicates that soft law acts which do not result in some kind of binding legal effect, but only have factual implications, are not subject

to the annulment procedure by the Court of Justice. The Court also confirmed that giving a preliminary opinion includes acts of soft law, specifically recommendations that are not eligible for annulment, but they are subject to review of validity and interpretation in the previous procedure, like all acts of institutions without exceptions (Seden and Brink 2012, p.57).

3. SHAPING INTERNAL SECURITY WITH EU SOFT LAW INSTRUMENTS

Along with the previously mentioned grounds for the adoption of various soft law instruments by the EU institutions, there is another important reason for the area of freedom, security and justice, and therefore internal security as an integral part of it. The real basis for action in this area is reflected in the authorization of the Union „[...] to ensure a high level of security with measures to prevent and fight against crime, racism and xenophobia and measures for coordination and cooperation between police and judicial authorities and other competent authorities, as well as mutual recognition of judgments in criminal matters and, if necessary, approximation of criminal legislation (Article 67 (3) TFEU). In addition to legally binding legislative acts, the EU has long been developing and implementing non-legislative acts and other relevant measures to coordinate cooperation and support, i.e. soft law instruments in the field of internal security (European Commission 2020, p.3). Excluding the period of validity of the Maastricht Treaty, during which the legal obligation of joint positions and joint actions was unclear and appeared more like legal acts of soft law, the most productive period of using strategies, action plans, codes, guidelines, conclusions, and other soft law instruments by the EU institutions to shape internal security and internal affairs occurred after the entry into force of the Treaty of Amsterdam. During this period, the European Council, the Council, and the Commission seemed to be competing in their efforts to create the conditions for establishing and developing an area of freedom, security, and justice. From then until now, soft law instruments have remained an essential legal, political, and administrative corrective and support for the implementation of primary and secondary legislation of the Union in the legal systems of member states. The conclusions of the European Council, which cover a 15-year period and are also known as action programs, such as those from Tampere, The Hague, and Stockholm, are of immeasurable importance in this field. Between 1999 and 2015, they served as a par excellence indicator of the successful application of soft law in sensitive areas and turbulent periods, which led to changes in the legal and political vision of member states and EU institutions regarding joint security solutions. These conclusions were ambitious five-year action programs that resulted in many far-reaching acts of secondary legislation in the field of internal affairs, particularly criminal justice cooperation. Without the enthusiasm of the European Council and the collaboration among the member states and the usual triangle of the Commission, the Council, and the European Parliament, it would have been difficult to accept these acts. Today, the initiative and action in the field of internal security through soft law instruments are in the hands of the Council and the Commission as institutions deeply involved in the formulation and adoption of a significant number of codes, recommendations, conclusions, strategies and action plans in the last three years. In this chapter we will briefly refer to some of the most significant of them. Each of these instruments contains a legal basis for adoption and a list of goals and actions that should support, improve and contribute to a more efficient application of the existing legislation.

3.1. Conclusions of the Council for Internal Security and European Police Partnership 2020-2025

The first of the recent soft law acts aimed at shaping the internal security of the Union is a set of conclusions that include two significant and related areas. The Council's conclusions therefore consist of two documents: Council's conclusions on internal security and European police partnership and Council's conclusions on improving cross-border cooperation in law

enforcement (Council of the European Union document 2020). In the framework of the first document, the Council defines milestones for improving the cooperation of EU institutions, member states and relevant agencies to support the functioning of the area of freedom, security and justice. The conclusions of the Council for area of Internal Security and the European Police Partnership should improve: 1) the availability of information necessary for effective law enforcement in all member states; 2) application of innovative technical solutions that enable law enforcement authorities to conduct confidential mutual communication safely; 3) the practice of using EU-wide crime warning instruments, for example, warnings about persons or objects through SIS; 4) implementation of legal acquis on cross-border police cooperation, for example, establishment of adequate powers for cross-border surveillance and cross-border prosecution; 5) the practice of law enforcement authorities to use advanced technologies, digitization and artificial intelligence in their daily work; 6) equipment of law enforcement authorities of member states and Europol for intensive work, collection and sharing of information with third countries; 7) the ability of law enforcement agencies to work with public and private partners around the world, and in particular have access to the necessary information to fight serious crime, violent extremism and terrorism on the Internet (Conclusion 13, Council of the European Union document 2020). The Council's conclusions on improving cross-border cooperation in law enforcement prioritize the enhancement of existing instruments of cross-border police cooperation over the creation of new forms of cooperation through Union legislative acts (Conclusion 18, Council of the European Union, 2020). To ensure successful cross-border police cooperation, the Council emphasizes the need to improve mechanisms for information exchange, joint training, exercises, seminars, and workshops, reduce technical and language barriers, and create updated manuals and work catalogs that include national and EU competencies and procedures (Conclusion 39, Council of the European Union, 2020). These conclusions illustrate what a soft law instrument looks like, in which the Council proposes improvements, guidelines, and references to existing legislation in the field of internal security, to influence member states and EU institutions to elevate the level of joint cooperation, leveraging both the currently valid hard law norms and new technologies and innovations.

3.2. Police Cooperation Code

The Code of Police Cooperation in the EU is the name for the package of measures, meaning proposals for amending EU legislation aimed at improving police cooperation. It regulates separate special acts of police cooperation for the enhancement of information exchange and cross-border operational police cooperation. The Code is a Commission's package that comprises proposals to amend two acts of secondary law aimed at improving the exchange of information, as well as proposals of Council recommendations that encourage and enhance all existing forms of cross-border operational cooperation. Although the Treaty of Lisbon confirmed the legal basis of operational police cooperation, it is mostly based on provisions of the Schengen Convention that were adopted more than 30 years ago. These provisions serve as a starting point for the adoption of non-binding legal acts, such as recommendations, which the Council uses as a soft law instrument to encourage the improvement of cross-border operational police cooperation and preserve internal security within a single space without internal border controls (European Commission, COM/2021/780). Taking into account the fact that the recommendations are not binding, the Council uses them as a soft law instrument and recommends the member states implement the recommendations by linking them to the legal acts of the Union that have binding force. In particular, the Council calls on member states to significantly increase the importance of the recommendations by implementing them into national legal systems by amending existing laws and by-laws and tying them to valid EU legislation with mandatory legal force, such as the provisions of the Schengen Convention or the Prum Framework for the Promotion of Cross-Border Police Cooperation (point 10 of the

Preamble of Proposal COM/2021/780). Despite operational police cooperation being the sole responsibility of member states, current practice demonstrates that states cannot ignore the specific recommendations of EU institutions due to the unique features of contemporary challenges, risks, and threats to internal security, which endanger the entirety of the Union's area of freedom, security, and justice. As a pioneer and creative player in this field, the Commission frequently suggests soft law instruments that it constructs and offers to the Council for adoption. It could be said that the Council's preferred method of regulation in the field of internal security is soft law instruments, which it accepts more readily and frequently than binding secondary acts, to which member states are quite sensitive, allergic, and suspicious. The adoption of binding secondary acts implies long, slow, and difficult negotiations with uncertain outcomes.

3.3. EU Security Union Strategy 2020 -2025

The EU Security Union Strategy is an upgrade and a natural continuation of the Commission's previous documents with strategic priorities for the area of security in accordance with global social changes and the evolution of security threats. The strategy emphasizes that although security is primarily the responsibility of member states, current changes in the security environment require joint action by the Union and member states, as it becomes undeniable that the issue of internal security in one state is in fact a common security issue for all member states. The Strategy emphasizes the link between security and respect for human rights. They do not threaten or exclude each other but are complementary and inseparable values, whose protection is the basis of the action of the Union and its member states. The Strategy covers the period 2020–2025, in which the Commission, through related chapters, proposes measures and procedures related to the implementation of the existing legislation, concrete measures for improving security cooperation, and monitoring the measures foreseen by the Strategy in each member state. The strategy is a coordinated package of measures aimed at amending, supplementing, and more effectively applying the existing legislative framework and operational action in response to rapid transformations in security threats and the defense of society as a whole (European Commission COM/2020/605, p. 2). The creation and construction of the EU security union are foreseen through four strategic priorities. The first strategic priority aims to ensure a secure environment that is resistant to future changes, with a focus on: 1) protecting and improving the resilience of critical infrastructure, 2) enhancing cyber security, and 3) protecting public spaces. Another priority is addressing emerging threats by strengthening cooperation in: 1) combating cybercrime, 2) enhancing modern criminal prosecution capabilities, 3) fight against illegal content on the Internet, and 4) tackling hybrid threats. The third priority is protecting citizens from terrorism and organized crime. The fourth priority aims to create a strong European security ecosystem by: 1) enhancing information exchange, 2) strengthening external borders, 3) promoting research and innovation in the security field, and 4) enhancing skills and knowledge. These priorities form the central part of the Strategy, which serves as a soft law instrument, outlining concrete actions for all actors at the EU and national levels to achieve the security of all Union citizens.

3.4. EU agencies in the field of internal security and soft law instruments

A large number of agencies, bodies and networks operate within the legal order of the EU, which primarily have the role of supporting institutions and member states in the implementation of certain policies and the achievement of integration goals. It is necessary to distinguish between bodies and agencies as well as between the agencies themselves. Decentralized agencies (35 in total), depending on the mandate and role assigned to them by primary law or founding acts or both, may have a control, supervisory, administrative, auxiliary or other role.

There are also executive agencies (6 in total) established for a limited period of time to manage specific tasks related to EU programs (European Union 2023). The Treaty of Lisbon does not contain a general legal basis for their establishment, but it does contain an explicit legal basis for the establishment of agencies in the field of freedom, security and justice, namely: Europol, Eurojust and the Office of the European Public Prosecutor. It is also necessary to mention Frontex as the European Border and Coast Guard Agency as the fourth agency established by an act of secondary legislation with significant powers in the control of the external borders of the EU. According to Chamon EU agencies may be defined as (I) permanent bodies, (II) under EU public law, (III) established by the institutions through secondary legislation, and (IV) endowed with their own legal personality (Chamon 2016, p.10). The powers of agencies vary depending on their founding acts, roles and tasks. A number of agencies do not have any regulatory authority, others have the authority to adopt some soft law acts, while others can adopt soft law acts that later represent the basis for legally binding acts and conclude international agreements. All the mentioned agencies operating in the field of freedom, security and justice are empowered with powers from the third group. They use soft law instruments to create common standards and good practices, but also as agencies are an example of how certain soft law norms can influence the creation of hard law norms, that is, their analyses, evaluations, assessments, recommendations and opinions are an integral part of the recommendations and proposals of the Commission for adoption of legislative acts of the Union. As good examples of the creation of common standards and good practices by adopting soft law instruments in the area of border controls are the Schengen Manual for Border Controls (European Commission, 2006) and the Schengen Catalogue, Recommendations and Good Practices for Police Cooperation (Council document 2011) with the support of Frontex and Europol. The current involvement of Frontex in the development of an operational and technical strategy for the Integrated Borders Management, which will be binding for all member states after the establishment of the multiannual strategic policy for European integrated border management by the Commission, is perhaps the best illustration of the adoption of soft law instruments, which shows the contribution of agencies in providing support to member states (European Commission, 2023 Annex 2). These examples confirm the fulfillment of one of the objectives of the soft law instruments, which specifically impose the behavior of the border services of all member states, which the Commission examines within the evaluation mechanism of the application of the Schengen acquis in accordance with the agreed common standards, basic principles and norms, which contributes to the good functioning of the Schengen area (point 4 of the preamble of Council Regulation (EU) 2022/922).

4. CONCLUSION

Soft law has been an integral part of the functioning of the legal order of the European Union since its inception. In several sectors and policies of the Union, EU institutions deploy soft law mechanisms. Apart from recommendations and opinions, they are not specifically mentioned in the Lisbon Treaty, but are usually disguised by phrases such as "taking measures", "adopting measures" or "prevention and coordination measures" to ensure that the various objectives are met. In this article, we examine recent examples of conclusions, recommendations, and strategies as soft law instruments that are currently used to shape internal security, as a substitute for the adoption of hard law acts, which are binding acts of the Union's secondary legislation. Although legally non-binding with predominantly political weight and responsibility, their adoption and implementation in the field of internal security is the preferred model of cooperation for member states for two reasons. Firstly, soft law instruments do not require a lengthy adoption procedure within the Council, as they do not create rights and obligations suitable for full judicial review and imposition of sanctions for their violation.

Secondly, the use of soft law instruments avoids encroaching into the essence of state sovereignty, as they are employed in a specific case to encourage and improve cooperation in the field of internal security, police operational cooperation, and the implementation of strategic priorities for the suppression of security threats that endanger the states and the Union as a whole.

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EPISTEMOLOGICAL-METHODOLOGICAL APPROACH TO THE RESEARCH OF THE MORAL AND SOCIAL-PSYCHOLOGICAL SPHERE OF ARMED CONFLICTS

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ABSTRACT

The subject of this paper is the epistemological –methodological approach to the research of moral and social-psychological sphere of armed conflicts. The aim of this study is to offer to the scientific and wider public, based on the scientific analysis, the epistemological-methodological approach to the research of the moral and social-psychological factors of armed conflicts, which present basic factors in every armed conflict. The purpose of researching the moral and social-psychological factors of armed conflicts is to, through the realization of basic and applied research in this most sensitive sphere of social life, reach new scientific discoveries and practical social experience necessary for adequate strategic decision-making on the justification of entering into armed conflicts and for the rational and efficient management of that armed conflict led by states and coalitions of states participating in it. Almost all basic analytical and synthetic methods of knowledge and research were used in the paper, with an emphasis placed on analysis, synthesis, abstraction, classification, generalization and the inductive-deductive method. From the corpus of general scientific methods, hypothetical-deductive, axiomatic, statistical and comparative methods were applied. From the group of methods used for data collection, the survey method was used, primarily the technique of a poll, as well as the method of document content analysis, with qualitative and quantitative techniques of analysis. The results of research on modern armed conflicts conducted at the end of the 20th and the beginning of the 21st century confirmed the initial hypothetical assumption that the continuous research into the moral, social-psychological and other factors of armed conflicts can influence the final decision on the termination and outcome of the conflict based on scientific arguments. The main result of this study is the realization that without basic and applied, diagnostic and prognostic research into the moral and social-psychological sphere of armed conflicts, it is not possible to reach new knowledge, axioms, postulates, principles, laws and theories, which in modern conditions of technical and technological achievements, based on scientific arguments, refute the motives and goals of each armed conflict and prove the futility of conflicts between people, social groups, ethnic and religious communities, peoples, sovereign states and military-political alliances and blocs.

Keywords: *armed conflicts, moral and social-psychological factors of armed conflicts, methodological approach to the research of armed conflicts, conceptualization of the research project of armed conflicts*

1. INTRODUCTION

For a more complete explanation of the subject of this paper, first it is necessary to define the main categorical terms, such as research and scientific research of the moral and social-psychological sphere of armed conflicts. At the same time, it should be necessarily pointed out that research is a basic categorical concept in science, that is, the general, universal method of scientific knowledge in general, as well as in armed conflicts, and that it is defined in different ways from different scientific perspectives. For the subject of this paper, the epistemological-methodological definitions of the research of the moral and social-psychological sphere of armed conflicts, which contribute to the general methodology and special methodologies of various fields of science and scientific areas that are legitimately intertwined in armed conflicts,

are particularly significant. The investigation of the moral and social-psychological sphere in armed conflicts is an extremely complex research process, in which new gnoseological and epistemological knowledge is necessarily reached, and it originates from the attitudes and beliefs of participants (actors) of the armed conflict and their perception and experience in conflicts (Gilli, 1974: 12). This research is not just the realization of facts regarding the objective war reality, but the new systematic knowledge which was collected, arranged and systematized with the help of scientifically verified methods and which was derived from the personal experience of the participants of the armed conflict, which reflected their own attitudes and beliefs about the experienced war horrors as the immanent part of armed conflicts (Milosavljević, 1980: 9; Danilović, 2023). Although every mental process, which takes place in different social conditions, is a component of scientific knowledge, not every opinion of the participants of an armed conflict is research oriented and objective, just as not every research of attitudes, judgments and beliefs of participants of one of the parties to the armed conflict is scientific. This is confirmed by findings of numerous studies that have been conducted in armed conflicts in the second half of the last century and in the twenty-three years of this century. In order for the attitudes and beliefs of participants in armed conflicts to be scientific and objective, “they as a component of scientific research must have the characteristics of objectivity, scientific soundness, logic, gradualness, consistency and coherence, realism, complexity and systematicity and only as such, in synergy with the whole series of intellectual, manual and combined, creative, routine and technical research procedures and activities of researchers produce new scientific knowledge (Danilović, 2023). The scientific research of attitudes and beliefs of participants of armed conflicts about personal moral and social-psychological characteristics experienced in the armed conflict is not a simple collection of facts about their experience, but “an organized, systematic and complex process of acquiring scientific knowledge, that is, a new level of scientific knowledge, structured within itself from harmonized systems of existing scientific and other experiential knowledge, mental processes, technical and routine research actions and procedures connected into one logical and coherent meaningful whole, oriented towards the main goal – the acquisition of new scientific knowledge about the moral and socio-psychological factors of an armed conflict” (Milosavljević, 1980: 9, Danilović, 2023). The scientific research of moral and social-psychological factors of an armed conflict is, therefore, a systematic, planned and objective study of attitudes and beliefs of participants in an armed conflict, according to certain epistemological-methodological rules, whose aim is to reliably determine their objective moral and social-psychological state, based on which legal and legitimate state authorities can assess and make decisions about the continuation or termination of an armed conflict and about finding alternative peace solutions that are acceptable to both parties to the armed conflict (Danilović, 2023; Frascati, 2015). The research into the moral and social-psychological sphere in an armed conflict is any “creative systematic activity of objective researchers undertaken with the help of verified scientific methods aimed at increasing the existing fund of scientific knowledge and gaining new knowledge about the moral and social-psychological state of participants in an armed conflict” (Danilović, 2023). The scientific research of the moral and social-psychological sphere of armed conflicts is a gradual and studious process of examination, that is, a separate research which is conducted with the help of verified research procedures and scientific methods, in order to collect the attitudes and beliefs of participants in the armed conflict (citizens and members of the army), discover and interpret their new moral and social-psychological states, revise the accepted strategic decisions in the light of new realizations gained from the research results aimed at the continuation or cessation of armed conflict and finding solutions for sustainable peace (Danilović, 2023; <https://www.merriam-webster.com/dictionary/research>, accessed on 1st September 2022).

Therefore, the subject of this paper is focused on the epistemological-methodological approach to the research of moral and social-psychological factors of armed conflicts that have a decisive influence on the behavior and attitude of participants in the conflict, and thus on the character and outcome of the armed conflict.

2. EPISTEMOLOGICAL-METHODOLOGICAL APPROACH TO THE RESEARCH OF MORAL AND SOCIAL-PSYCHOLOGICAL FACTORS OF ARMED CONFLICTS

Starting from the research subject which was determined in this way, the epistemological-methodological approach to the research of moral and social-psychological factors in armed conflicts will be presented in the following part of the paper, with an emphasis placed on the conceptualization of problems and research subjects, possible scientific and social goals, hypotheses, methods, techniques and research instruments, which were confirmed in an extensive research project of the same factors during the NATO aggression against the Federal Republic of Yugoslavia. The research of moral and social-psychological factors of armed conflicts is conducted, as a rule, within a separate macro project or a sub-project within the wider macro research project related to the structural factors of armed conflicts. The subject of such research project most often includes the attitudes and beliefs of citizens and members of the armed forces of warring parties about the social, moral and psychological factors of the armed conflict. Such research projects mainly fall into the category of basic or complete applied, explanatory, diagnostic and prognostic research (Danilović, 2023). The general scientific aim of research in such a project is defined as description and classification of empirically collected attitudes and beliefs of citizens and members of armed forces of the conflicting parties and the scientific examination and explanation of moral, social and psychological factors of success or failure of the parties in the armed conflict, which are of essential importance for making state decisions on the continuation of the conflict or finding the possibility of sustainable and compromise peace (Danilović, 2023). The general scientific aim of researching the moral, social and psychological factors of armed conflicts that is set in this way would imply the formulation of several specific scientific aims, first of all:

- 1) determination of forms and manifestations of behavior and attitudes of participants in the conflict, based on social, moral and psychological components of parties to the armed conflict;
- 2) identification of political, social-demographic, moral and psychological factors of the unity of citizens, army and state leadership as significant indicators of the continuation or termination of armed conflict;
- 3) revealing the factors of behavior and attitudes of participants in the conflict that encouraged or hindered the establishment and maintenance of success or failure in the armed conflict.

In the conceptualization of this structural factor of the subject of research of armed conflicts, it is epistemologically most important to set a good and reliable hypothetical framework including the formulation of hypotheses and identification of a set of predictor and criterion variables, with precise operationalization of research indicators. According to the previous experience from the research of moral and social-psychological factors of armed conflicts, it would be necessary to include the following variables in the set of predictor variables, depending on the character of the armed conflict (Danilović, 2023):

- 1) attitudes towards the country (countries) participating in the conflict and those which help them;
- 2) the perception of political, economic and military power of the countries participating in the conflict and their supporters;
- 3) the role of political factors in countries affected by the conflict in the preparation and execution of an armed conflict, as well as in the further development of the country;

- 4) the role of state institutions after the end of the armed conflict;
- 5) the importance of basic values for carrying out the armed conflict;
- 6) emotional reactions of the population of the parties to the armed conflict during the duration of the conflict;
- 7) sources and symptoms of fear during the armed conflict;
- 8) social-demographic characteristics of respondents who participated in the research of moral and social-psychological factors of the armed conflict;

“Attitudes towards the country (countries) participating in the armed conflict, their supporters and friendly countries may possibly be examined in the most objective way by using indicators, such as the following: attitudes towards influential countries, developed countries and neighboring countries” (Danilović, 2023). The perception of the political, economic, and military power of countries participating in an armed conflict can greatly influence respondents’ attitudes about their role in the course of the conflict. In this regard, it is possible and desirable to examine the assessment of those types of power for countries that are directly and indirectly involved in the armed conflict. Attitudes towards political parties and political figures of the parties to the armed conflict can be examined through a larger number of items, given that various political parties have different attitudes towards the specific armed conflict. The contribution of certain institutions of the state in providing support to the parties to the armed conflict and in the reconstruction of the country destroyed by the war can be examined with the help of the following indicators: attitude towards the parliament, the President of the state, the government, the academy of sciences and churches of the parties to the conflict, while in complex countries, these indicators include the attitude towards the Parliament and government of republics, entities, provinces, regions; attitude towards the army and attitude towards the police (Danilović, 2023). Starting from the perspective that different things are important for different people, in basic and applied research of moral and social-psychological factors of armed conflicts, it is possible to examine the importance of basic values for the parties to the conflict by evaluating the following indicators: interest, democracy, human rights, freedom, independence, patriotism, pride, honor, people, justice, tradition, state, survival of the nation, courage, comfortable life, personal peace, self-respect, wisdom, security of the country, faith in God, peace in the world, equality between people, family security, obedience, responsibility, conciliation, humanity, prudence, masculinity, enduring difficulties, order and discipline, success in life, happiness, contentment, intelligence and solidarity (Ibidem). The experience from the research during the NATO aggression against the Federal Republic of Yugoslavia showed that emotional reactions in the armed conflict, with minor modifications for individual parties in the conflict, can be examined with the help of the following indicators: anger, contempt, ridicule, defiance, spite, fear, anxiety, insecurity, uncertainty, sadness, disappointment, hatred, affection, concern and indifference. The experience also showed that timidity, as a legitimate accompanying psychological manifestation in any war, can be examined with the help of the following indicators: nuclear warheads, hypersonic weapons, modern aircraft, helicopters, drones, long-range cruise missiles, bombs, explosions of bombs and rockets, mines, snipers, capture of soldiers, wounding, deaths, burying under the rubble, wounding or killing of one’s loved ones, capturing of loved ones, encirclement, intervention from a distance, indiscriminate destruction of property, hunger, shortage of oil, gas, electricity and water, partial or total mobilization, mental disorders of a person or his loved ones etc. The appropriate set of variables in an armed conflict includes the symptoms of fear, which can be examined by assessing the following indicators: trembling, pallor, difficulties experienced while speaking or loss of speech, dry mouth, rapid heart rate, difficulties experienced while breathing or faster breathing, loss of appetite, stomach problems, diarrhea, frequent urination, insomnia, constant hunger, constant thirst and uncontrolled movements (Danilović, 2023).

The socio-demographic characteristics of respondents in basic and applied research on moral and social-psychological factors of armed conflicts generally include the following: educational, residential and economic status, nationality and religion. Depending on the character of the conflict, it is necessary to include the following in the set of criteria variables for examining the moral and social-psychological factors of the armed conflict: attitudes towards the parties to the armed conflict; attitudes about the ways of execution and the ways of enduring difficulties in armed conflicts; attitudes towards the immediate participants in the conflict; attitudes towards the outcome of the armed conflict, as well as the attitudes towards the future of the country (countries) that participated in the conflict. Attitudes towards parties –participants in the conflict can be assessed by evaluating the following groups of indicators: readiness to engage in an armed conflict, willingness to actively engage in an armed conflict; readiness to engage in an armed conflict again in case of military necessity; attitudes towards parties in an armed conflict; attitudes towards those who support capitulation or surrendering and attitudes towards those who are ready to betray the country in an armed conflict. Attitudes towards the ways of participation of parties in an armed conflict can be examined through a number of indicators such as the following: participation in the coalition forces, armed or police forces of a country (countries) in conflict; participation in protests and demonstrations for one side in an armed conflict; physical participation (as a human shield) in defense of important infrastructure facilities of the parties to the armed conflict; work in bodies or organizations that help one of the parties to the armed conflict; engagement in professional or other associations that fight for the continuation of the armed conflict and other indicators. The variable related to the way of enduring difficulties in armed conflicts can be examined through the following indicators: constant combat readiness, wanton killing of civilians and destruction of civilian infrastructure facilities, willingness to make sacrifices, going to shelters; participation in protests and demonstrations and infrastructure protection; work obligation; shortage of goods; shortage of energy, water and electricity; mobilization; direct participation in army units; bombs and rockets; the sound of airplanes and cruise missiles; possibility of injury and death and other indicators. The perception of the significance and role of coalition and armed forces of the countries in conflict and in possible future conflicts can be examined through the following indicators: the attitude towards the role of coalition and armed forces in a possible new conflict between the warring parties or in some other part of the territory; trust in coalition and armed forces in a possible new conflict; the attitude towards strengthening the fighting ability of participants in the armed conflict; attitude to providing assistance to coalition forces with modern weapons; attitude towards the separation (increase) of funds for modern weapons and other indicators. The perception of the outcome of armed conflicts as a criterion variable can be treated through the following indicators: attitude about the conquered territory; position on the preserved territorial integrity; position on the violated sovereignty of the attacked country; position on preserved sovereignty; position on the defeat of coalition and armed forces; attitude towards the losses of victims in the conflict; position on losses of victors in the conflict; attitude towards one's own losses; attitude towards material destruction; attitude towards signed agreements on ceasefires, cessation of hostilities and cessation of war; attitude towards the role of international organizations in solving the problems that caused the armed conflict and other indicators. For an armed conflict, attitudes towards the importance, state and future of states in armed conflict are of crucial significance. These attitudes can be evaluated through the following indicators: assessment of the country's importance in the region and international community; assessment of the situation in countries affected by the armed conflict; position on what should be the future status of countries that participated in the armed conflict, etc. Researching the attitudes and beliefs of the population of the parties to the armed conflict is a very complex research procedure, while the proper construction of the sample of respondents and the design of reliable measuring instruments are of great significance for the objectivity of

results. Since empirical research is necessary for basic and applied research projects of this kind, it is not possible to implement it on the entire population of citizens and members of the armies of conflicting parties, but on a properly selected and composed representative sample that will faithfully reflect all the important features of the population as a whole. Creating a valid sample is a complex and demanding research task and represents the first critical point in the research. Hence, the sample must be designed by the most prominent experts for the creation of a sample. There are several possible types of samples for such research, but the research practice of the author of this paper suggests the use of three-stage sampling that would include all adult citizens of the conflicting parties between the ages 18 and 80. In addition to a good and representative sample, the construction of valid and reliable measuring instruments for the collection and analysis of data is of great importance for the successful implementation of basic and applied research on moral and social-psychological factors of armed conflict. The most suitable measuring instrument for this type of research is the Survey Questionnaire that is specially prepared for this occasion, for the research of moral and social-psychological attitudes and beliefs of participants in the armed conflict. This measuring instrument should contain specially constructed scales for collecting information on a large number of dependent and independent variables. Such an instrument, first of all, must have the required metric characteristics in order to obtain reliable, objective and true results. Since armed conflicts do not happen often and that there are no standardized instruments for measuring the attitudes and beliefs of participants in armed conflicts about their moral and social-psychological factors, pilot research on a smaller sample of respondents is recommended. Previous research practice has confirmed that in order to collect basic data about respondents, it is necessary to construct one general questionnaire that would contain the required number of general questions that seek to obtain personal data and information about whether the respondents or any of their immediate or extended family members participated in the armed conflict. In addition to personal data, the Questionnaire as an instrument for data collection should be constructed from several measuring scales. The research experience of the author of this paper, who has conducted several empirical studies on the same or similar topic, indicates that some of the following scales could be applied in the research of moral and social-psychological factors in an armed conflict:

- 1) "The scale about personal behavior and actions during the armed conflict, which would consist of several statements about different types of behavior or actions during the armed conflict with alternative answers "Yes" or "No", as well as the possibility to write the activities that the respondents engaged in during the war, which were not included in the offered statements.
- 2) The scale on the way of enduring hardships during the armed conflict, which would contain several types of hardships endured by residents of conflicting countries during armed conflicts, with the possibility of adding some more hardships, with the offered answers according to a four-point Likert-type scale ("very difficult", "difficult", "easy" and "did not feel it", or "did not do (something)").
- 3) The scale on the intensity of emotions aroused by the armed conflict in the country (countries) at war, which would contain several different types of emotions with answers offered on a five-point Likert scale about the intensity of certain types of emotions ("very weak", "weak", "moderate", "strong" and "very strong").
- 4) A five-point Likert scale on the presence of source of fear among the residents and army during the armed conflict, which would be used for the residents to state to what extent they were afraid of certain sources of fear ("not at all", "little", "moderate", "a lot" and "very much").
- 5) A five-point Likert scale on the presence of symptoms of fear among the residents and army during the armed conflict, which would consist of several different symptoms of fear with

- offered answers ("yes, often", "yes, sometimes", "yes, rarely", "I did not have it" and "I did not feel fear").
- 6) The scale of attitudes about the country (countries) participating in the armed conflict and their supporters. This scale could consist of several countries in relation to which the respondents should express their attitude ("positive", "negative" or "they do not have it") before, during and after the armed conflict.
 - 7) The scale of attitudes towards the armed forces, the army and the police, which would contain the answers offered on a five-point Likert scale about their attitudes towards the armed forces, army and police of countries in the armed conflict ("very positive", "positive", "I did not think", "negative" and "very negative") before, during and after the conflict.
 - 8) The scale of attitudes about the parties to the armed conflict. These scales could contain several statements about ways of preventing aggression (intervention) and ways of defending against aggression and intervention in an armed conflict, to which respondents would answer with "true", "not sure", and "false".
 - 9) The scale of attitudes about the preference of value orientations, which would contain several dozen standard value orientations with answers offered on a five-point Likert scale ("very important", "important", "does not matter", "unimportant" and "not at all important").
 - 10) The scale for assessing the economic power of states in an armed conflict and their supporters, including several countries, whose economic power respondents choose on a five-point Likert scale ("very large", "large", "moderate", "weak" or "very weak").
 - 11) The scale for assessing the political power of states in the armed conflict and their supporters, which contains several types of states whose political power is evaluated by respondents on a five-point Likert scale ("very large", "large", "moderate", "weak" or "very weak").
 - 12) The scale for assessing the military power of states in an armed conflict and their supporters, on which several states are offered and whose military power is chosen by respondents on a five-point Likert scale ("very large", "large", "moderate", "weak" or "very weak").
 - 13) The scale for assessing the possibility of avoiding the armed conflict depending on the activities of the leading political forces in the country. The scale contains as many parties that passed the electoral census in the previous legal elections and make up the composition of national parliaments (with the possibility of adding another relevant party), whereby respondents decide on a three-point scale ("yes", "maybe" and "no") whether the armed conflict could have been avoided and the crisis resolved by political means if the aforementioned parties had previously pursued a different policy.
 - 14) The scale for assessing the political parties in power and opposition to carry out aggression (intervention) or provide general resistance to aggression (intervention) in countries participating in the armed conflict. The scale could contain all types of parties that have entered the national parliament (with the possibility of adding other parties), for which respondents determine the level of commitment of those parties to carry out the attack or to offer resistance to the aggressor in an armed conflict on a five-point Likert-type scale ("very little", "little", "moderate", "much", "very much").
 - 15) The scale of evaluation of the efforts of state institutions in countries participating in the conflict to carry out aggression (intervention), that is, to offer general resistance to aggression (intervention). The scale should contain the most important state institutions for which respondents would decide on a five-point Likert-type scale what their support was for aggression (intervention) or to resist aggression (intervention) ("very little", "little", "I do not know", "much" and "very much").

- 16) The scale for assessing the contribution of state institutions to successful aggression (intervention) or successful development and reconstruction of a country destroyed in an armed conflict. This scale could contain the most important state institutions for which respondents would decide on a five-point Likert-type scale ("completely false", "mostly false", "not sure", "mostly true" and "completely true") how much they trust them when it comes to successful aggression (intervention) or successful reconstruction and development of the destroyed country after the end of the armed conflict.
- 17) The scale for assessing the degree of unity of the people, armed forces and the leadership of the state in an armed conflict. On this scale, respondents can be given the opportunity to choose one of four possible answers ("very little unity", "little unity", "great unity", and "very great unity").
- 18) Five-point Likert scale on the success of the state leadership and armed forces in carrying out aggression (intervention) in the armed conflict ("very successful", "mostly successful", "cannot decide", "mostly unsuccessful" and "completely unsuccessful").
- 19) The scale for assessing the success of preserving the territorial integrity, independence and autonomy of the state. As far as this type of the scale is concerned, respondents could declare themselves on a three-point scale ("unsuccessful", "not sure" and "successful").
- 20) The scale for assessing the fact who won in the past armed conflict. In this section, respondents should be offered answers such as: "_____ won", "there was no winner in this war", and "_____ lost".
- 21) The scale of the assessment of losses of aggressors and defenders in an armed conflict (military and civilian losses). Respondents should be allowed to give answers on a three-point scale: "negligible", "small" and "great".
- 22) The scale of the assessment of the agreement on the cessation of armed conflict, which should give respondents the opportunity to state whether the agreement should have been accepted (three-point scale), then to give their opinion on the character of that agreement (four-point scale), and to state whether it is more favorable than some similar agreements (three-point scale) and whether it would be better for a country in conflict if the United Nations, instead of other international organizations, took responsibility for solving the problems of countries in armed conflict (four-point scale).
- 23) The scale of assessment of the importance of a part of the territory belonging to the parties to the conflict, over which the war is being waged. In this scale, the respondents should be able to declare themselves on a five-point Likert-type scale about the importance of that part of the territory for the country ("very small", "small", "I do not know", "great", and "extremely great").
- 24) The scale for assessing the situation in a part of the territory that is the cause of the armed conflict, on which respondents could declare what the current situation is in that part of the territory on a five-point Likert scale ("very bad", "bad", "I do not know", "it is good", and "it is very good").
- 25) The scale for assessing the future status of a part of the territory due to which an armed conflict broke out, on which the respondents should be able to choose one of several answers with different variants of the status of that part of the territory.
- 26) The scale for assessing the state and capabilities of the armed forces of countries in an armed conflict, which could contain several statements about the state and capabilities of the armed forces of countries in conflict, as well as multiple answers offered for each statement "disagree", "not sure" and "I agree" (Danilović, 2023).

A valid research sample and reliable measuring instruments for data collection are prerequisites for conducting empirical research. Interviewers and controllers who carry out such surveys must be well prepared.

Field testing, with the prior preparation of interviewers and controllers, should be practically carried out by well-trained interviewers, often with the ensured escort, with double control of the implementation of the survey based on a predetermined sample of citizens and members of the armed forces. Ideally, such research should be carried out by authorized scientific institutes and marketing agencies, through their network of interviewers and controllers in warring countries, or by a neutral specialized agency for social-psychological research and public opinion research of the UN and other credible international organizations, with mandatory approval for conducting the research and a special authority that should be issued by the highest rank of management in the coalition and armed forces of the parties – participants in the armed conflict. As a rule, data entry from completed surveys into software statistical packages for data processing is carried out by licensed statistical institutes or other representative and specialized institutions for this kind of data entry into software programs. Logical control of entered data and statistical analysis of data should be done by expert psychologists and other scientists, who know well empirical research procedures, as well as the general scientific method and all its techniques and procedures. The statistical analysis of collected data on moral and social-psychological factors of armed conflicts is done with the help of techniques for the analysis of numerical and non-numerical data, including the assessment of their reliability, recoding of variables, estimation of parameters and standardization of variables, analysis of latent structures, analysis of clustering, and analysis of correspondence between different variables or sets of variables (Danilović et al., 2002). Depending on the nature of examined variables, in such situations, it is necessary, first of all, to determine the frequency of certain modalities (frequencies and percentages), then carry out the exploratory, informational and component analysis of nominal variables, entropic and canonical analysis of the association of nominal variables, quasi-canonical and controlled quasi-canonical analysis of relations of nominal variables and analysis of homogeneity and component analysis of optimally scaled variables (Danilović et al., 2002). Also, from the collected data on the moral and social-psychological factors of the armed conflict, it is possible to perform the analysis of contingency tables (canonical and informational analysis), analysis of variance (multivariate and canonical analysis of variance) and cluster analysis (hierarchical clustering using Ward's method and clustering with the help of the method of moving clouds). The difference between individual categories of respondents in relation to individual latent dimensions can be examined by discriminant analysis in Mahalanobis distance and canonical discriminant analysis of quantitative changes. In addition, from the collected data, it is possible to perform the analysis of diluted taxons and diluted types (with the partialization of control variables and nominal variables), as well as metric and non-metric multidimensional scaling (Danilović et al., 2002). Due to the sensitivity and secrecy of data, the preparation of the scientific report on the conducted research and the report on the results of the research on the moral and social-psychological factors of the armed conflict should be carried out by chosen scientific research institutions of the highest governing bodies in cooperation with licensed institutes for sociological and psychological studies and research in the conflicting states or international organizations that, due to the nature of data and complexity of research procedure, can hire the renowned and recognized experts from specialized scientific research institutions of the army and coalition forces. Given that basic and applied research into the moral and social-psychological factors of armed conflicts are multidisciplinary and very complex, the results of this research have strategic importance, first of all, for polemology, political science, sociology, management sciences, psychology, social psychology, law, communicology and other scientific fields of social and humanistic sciences. Without basic and applied research of various structural factors of the subject of modern armed conflicts as the most complex social realities, it is not possible to reach new scientific knowledge, new data, facts, categories about the moral, social-psychological and combat condition of parties to the conflict, and based on them, to new

axioms, postulates, principles, laws and theories that, in the modern conditions of technical and technological achievements, would prove the futility of every war and every conflict between people, social groups, ethnic and religious communities, nations, states, military-political alliances, blocs and coalitions.

3. CONCLUSION

Having in mind the existing diagnosis and prediction of future international relations, which will most likely be dominated by political, economic, military and other conflicts between peoples, states, coalition of states, military-political alliances and blocks, as well as the fact that the existing elites and international organizations, due to their conflicting interests, do not have adequate solutions and methods for overcoming these conflicts, it is of greatest importance to invest significant resources in basic and applied research into various aspects of armed conflicts. The world has fallen into a structural civilization crisis to a significant extent, due to the lack of objective and systematic basic and applied research in this field. Without going deeper into the epistemological discussion whether there was sufficient basic and applied research into political, economic and armed conflicts, the methodological experience from research into various aspects of armed conflicts has been very scarce so far. The experience from the epistemological-methodological research into moral and social-psychological factors of armed conflicts has been particularly scarce. The existing knowledge of this most significant factor in armed conflicts has not been synthesized, described and scientifically explained and does not provide a sufficient basis for the methodological development of sciences regarding armed conflicts, as well as the development of their specific scientific methods for the research of this dominant structural factor in every armed conflict. Starting from this premise and current events at the global and regional level, we come to the epistemological justification and necessity of greater investments in basic and applied research into moral and social-psychological factors of armed conflicts. Without basic and applied research into the moral and social-psychological factors of modern armed conflicts, it is not possible to reach "new scientific knowledge, new axioms, postulates, principles, laws and theories, which in the conditions of enormous technical-technological achievements, on scientific grounds, would prove the futility of conflicts between people, social groups, ethnic and religious communities, peoples, states and military-political alliances and blocks" (Danilović, 2023). In order to encourage basic and applied research into the moral and social-psychological factors of modern armed conflicts, in this paper we offered the scientific public epistemological-methodological experiences in the conceptualization of projects for such research, while emphasis is placed on the formulation of problem and determination of the subject of research, setting the scientific and social goals, hypotheses, methods, techniques, instruments and research procedures and determining the scientific and social contribution of such research to the theory and practice of modern armed conflicts at global, regional and local levels. The special value of this paper is the proven epistemological-methodological framework for researching the moral and social-psychological factors of armed conflicts, which was tested in the research of attitudes and beliefs of citizens and members of the Army in aggression, without the consent of the UN Security Council, the North Atlantic Alliance NATO on the Federal Republic of Yugoslavia as a sovereign, independent and internationally recognized member of the United Nations.

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ILLEGAL MIGRATION AS A FORM OF ORGANIZED CRIME AND SECURITY RISK

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ABSTRACT

Nowadays, migrations are primarily caused by crisis in the migrants' home countries. Security concerns as well as economic and sociological aspects encourage the local population to migrate, most often from North, East and West Africa and Asia to Europe and from Latin America to the USA. Due to mass migrations, the destination countries of migrants are forced to change their migration policy and to introduce more restrictive conditions for "ordinary" migrants such as e.g. migrant workers, thus causing an even greater influx of illegal migrants, with all the negative consequences that result from it. This type of illegal migration can be labeled as a type of organized crime which, among other things, can lead to the emergence of security issues and crises. This threatens important political and economic interests, even the very functioning of a number of countries – destination as well as transit countries on their route. These circumstances raise the question of the preservation of world peace and security. In order for illegal migrants to reach their desired destinations today, they most often get connected with international organized criminal groups, consequently causing security risks for transit and destination countries, which makes it necessary to consider them in relation to national states and the international community. In the paper, illegal migration is presented from the aspect of organization and security in relation to people, the national security of transit countries and international security.

Keywords: *migrants, illegal migration, organized criminal groups, security, human rights*

1. INTRODUCTION

Human migrations can be viewed through two basic types, depending on whether they occur legally or illegally, in both cases they lead to certain changes, both in the transit and destination countries, where they are most pronounced in the demographic, cultural and social-economic spheres. The scale of the changes depends on whether it is a matter of controlled migration or uncontrolled mass illegal migration of the population. Migration is a term that refers to the movement of people, the relocation of the population, individually or in groups, from one geographical area to another, in search of something better: standard, society or security. It is about the physical movement of individuals or groups, of a permanent or temporary nature, regardless of whether it takes place within the borders of the national territory of the state or between two states. In the second case, we are talking about emigrants who leave their places of residence in their original environment, move out of that environment - emigrate, and move into a new social environment - immigrate. In the new environment, those who move in for a long time are called immigrants. Migrants and migration are not a limited phenomenon, it is a situation in which everyone can find themselves. In fact, population migrations are a phenomenon that is not particularly characteristic either for a certain geographical area or for a certain time, that is, an epoch. A large number of people, in search of a better life or seeking protection from persecution, violence or a poor quality environment, have always left their geographical area of origin and settled in new territories.

2. CONSIDERING ILLEGAL MIGRATION FROM A SECURITY ASPECT

Emigration is a phenomenon that occurs when people leave their environment in which they have been permanently settled for the reason that they cannot satisfy their economic needs there

and where their safety is threatened due to the bad political situation, and at the same time they have made the decision to meet their social needs; the possibility of employment, obtaining higher incomes and raising the standard of living. The issue of security and protection of a state and its citizens from migration and migrants is one of the most relevant issues in today's society. The security of the citizens of the state depends on the security of the internal and external borders of the state. Due to the expansion of various security factors, which are consequently connected with the dynamic development of global circumstances, the security of the state and its citizens is of increasing importance. Looking from the aspect of security, the most common irregular migrations are caused by war conflicts in the Middle East, from North Africa, South Asia, which caused new security risks that threaten states and citizens in Europe. This phenomenon of migration and irregular migrants in the world today also has its scientific significance, especially from the aspect of security and development of modern societies. The International Organization for Migration, as an organization that deals with the comprehensive overview of migration in the world and strives for a humane regulation of migration, defines migration as the movement of persons or groups of persons, across state borders or within state borders. For persons who are in the process of migration, the general name "migrants" is used, which means persons who move within the country itself, outside the place of their permanent residence or who have crossed the international border, regardless of the cause of movement and length of stay and legal status. Today, migration is seen as a global problem, which is caused by the large number of individuals who seek to emigrate and the increasingly restrictive migration policies of transit countries and those that are designated as the desired destination countries. From the aspect of state security, contemporary international migrations are today associated with transnational organized crime and terrorism, which causes the emergence of different security concerns that migrations might have on society, for a state and the international community. The developed countries of Europe are the most desirable final destinations for migrants, so due to the massive influx of migrants in a short period of time, it has influenced significant political, demographic and security changes within the framework of the European Union. The territory of the European Union (hereinafter: the EU) with a suitable natural, economic, social and security climate, imposed itself as a reasonable choice of the final destination of migrants, due to the generally accepted policy of recognizing the right of migrants to non-refoulement and the right to asylum, which, among other things, confirmed by Art. 18-19 of the EU Charter of Fundamental Rights (Charter of Fundamental Rights of the European Union, 2000). Considering that migration is seen as an international problem with significant political, economic, societal and security risks, this phenomenon must be responded to in a coordinated manner at the global, regional and subregional levels (Refocusing Migration and Security: Bridging National and Regional Responses, 2016) . This is further reinforced by the fact that the latest migrations are forced and illegal and as such carry security risks for people, the nation-state, and the international community. Looking at the past experiences of the current migrant crisis in Europe, it can be concluded that illegal migration is a form of organized crime that affects the security systems of countries globally in many ways.

2.1. Smuggling of migrants as a form of organized crime

Any area of social life where illegal property gain can be realized can be subject to organized crime. Depending on the criminal activities, organized criminal groups choose the way and means of execution. They are very dynamic and very easily transformed, reshaped and organized in the manifestation of new forms in their criminal activities. Among the forms of organized crime represented in the Republic of Serbia, the following stand out in particular: drug trafficking, extortion, kidnapping, blackmail, human trafficking, human smuggling-illegal migration, corruption, money laundering, abuse of official position, counterfeiting of money and other means of payment, prostitution, trade in weapons and explosives, vehicle smuggling,

excise goods smuggling and high-tech crime. The subject of research in this paper are only some of the mentioned forms of organized crime that are directly related to migration and certain forms of crime that are indirectly related to migration. Mass migrations have occupied the attention of a large number of countries, both transit and migrant destination countries, and therefore the international community. Countries that are threatened with irregular migration try to protect their borders within the framework of their normative law by frequently changing their policy towards migrants. They do this, first of all, because they are burdened by a large number of migrants who, legally or illegally, want to reach their desired destinations as soon as possible and thus provide themselves with an adequate life as soon as possible. States that are faced with such a large influx of migrants increase the level of security of their state borders, whereby the security of the state border represents an obstacle for migrants to their goal, which is why they decide to overcome it in an illegal way. This determination of migrants leads to a series of problems on their way from their country of origin through the countries of transit to the countries of destination. Aware of the difficulties and impossibility of illegally crossing state roads on their route, they ask for help from the local population and from the leaders of organized crime who use the opportunity and help them to illegally reach their destination. By providing such services, the holders of organized criminal groups illegally acquire huge amounts of money. International law qualifies this type of activity of organized criminal groups as human smuggling, for which adequate sanctions are provided. The Protocol against Smuggling of Migrants by Land, Sea and Air (2000) defines in Art. 3/1/a smuggling of migrants by specifying that it is the facilitation of illegal crossing of the state border and entry into a foreign country by persons who are not its citizens, with the aim of achieving financial or other material benefits (Protocol against the Smuggling of Migrants by Land, Sea and Air, supplementing the United Nations Convention against Transnational Organized Crime, 2000). The Protocol is an annex to the UN Convention against Transnational Organized Crime (2000) and by which the member states have committed themselves to establish a criminal offense in their legislation, regarding the sanctioning of perpetrators who mediate illegal migration, which is done with intent for the purpose of obtaining illegal property benefits. Analyzing the smuggling of illegal migrants at the beginning of this century, INTERPOL points to the regional and international representation of organized criminal activity through three basic parameters, namely, the country of source, transit and destination for people smuggling (Uljanov S., Ivanović Z., 2011, 79-91). The largest number of migrants arrive in Europe from the countries of North and West Africa and from Asia, and from the beginning of 2022. from Ukraine. A huge number of them are primarily motivated by economic reasons, with a significant part also represented by classic refugees seeking salvation from the war that is being waged in their country. Here it is enough to note that if, according to the estimates of the UN High Commissioner for Refugees in the world in 2016 there were 65.3 million forcibly displaced persons, the number of those who were forced to leave their homes reached about 89.3 million people in 2021, and exceeded 101.1 million by the end of 2022 (Refugee Data Finder, 2023). The majority of these people were internally displaced persons (60.1 million in 2022), followed by refugees (26.3 million in 2022) and other categories, with a large part also being various illegal migrants. Here is an opportunity to explain that human smuggling and human trafficking are among the most common forms of illegal migration. They are similar, but fundamentally different, and not only because human trafficking is, in principle, possible within the same country (and not only outside its borders), while human smuggling is always cross-border. Two moments are even more important: 1) in human smuggling there is consent of the immigrants, which is not the case in human trafficking and 2) human smuggling ends when the immigrant reaches the final destination, while human trafficking implies constant exploitation (Paunović M., Krivokapić B., Krstić I., 2021, 150-151). Of course, a person who finds himself in another country because he was a victim of human trafficking is not a migrant

in the strict sense of the word, but essentially he has a similar position in the sense that he is in the territorial state illegally. After all, even those who ended up there as victims of human trafficking, when they regain their freedom in some way, often want to stay in the country to which they were brought by force, especially when it has a much higher standard of living. Illegal migrations, both those that consist of human smuggling and those that are part of human trafficking, can also be viewed as organized from the aspect of organized crime, where a high degree of organization of criminal groups is manifested, the leaders of which successfully commit crimes of human smuggling across high-security state borders of Western European countries, which indicates the need to determine the way this organized criminal activity functions. Looking at organized illegal migration from the perspective of organized crime, it was determined that for some national and transnational organized criminal groups, organizing and carrying out illegal migration is a basic activity, for others it is only one of many activities, while still others engage in these activities only occasionally. Depending on the countries that are on the migration path, each of the criminal groups applies a specific smuggling strategy and tactics, which depends on the structure of the organized criminal groups. The structure of organized criminal groups, which deals with the smuggling of migrants, is influenced by numerous factors: the distance of the country of destination from the place of origin of the migrants; the number of migrants being smuggled; traffic connections between those places and transit points; the organization of helpers to smugglers and, in particular, the corruption of officials from the national security system of the countries of transit and destination, primarily in securing the state border.

2.2. Organization and functioning of criminal groups

Observing the movement of illegal migration from the place of origin to the country of destination, we come to know that there are several principles of organization and functioning of criminal groups, their level of organization and functioning, namely: informal leadership, which has the task of organizing the entire process of migrant smuggling on a certain route; transnationally connected criminal groups that act in connection with each other in the countries of origin, transit and destination; organized groups for smuggling people across specific border lines and local population in the border zone, who are entrusted with specific tasks. When it comes to people smuggling, members of organized criminal groups are called migrant smugglers or people smugglers. They are divided into: local initiators-recruiters operating in the countries of origin, who find migrants and connect them with smugglers and organize their departure to the place where they will be transferred across the border; cashiers - mediate in monetary transactions between illegal migrants and smugglers; guides who know the places where the state border can be crossed unnoticed; local transit smugglers who transport migrants from the place of illegal entry into the country to the place from where the illegal border crossing with the next country will be organized; intermediaries, who pick up migrants from the place of organizing illegal border crossing and take them to the next carrier who will transport them by land, sea or air to the final destination and other intermediaries, who participate in various ways in the realization of smuggling enterprises, and cannot be brought under previous classification (Icdyugu A., Toktas S., 2002, 35-36).

2.3. Stages of migrant smuggling

Organization for the purpose of smuggling migrants can be seen in three phases: 1) recruitment, 2) transit and 3) destination. The recruitment phase takes place in the country of origin, whose citizens have expressed their willingness to leave the country of their permanent residence for economic, political or security reasons and to illegally enter the country of destination. There, organized smugglers recruit potential illegal migrants and then use various methods and ways to convince them of the possibility that they will surely reach their desired destination through

them, with payment for this service. The transit phase is the most significant and risky part of the process of smuggling and transfer of migrants. It consists in the illegal transfer of migrants across the state border, which is fraught with many challenges. Illegal transfer of migrants across the state border includes any action by which a migrant, with or without a means of transport, is moved from one side of the state border to the other, i.e. across the state border. The state border can be crossed illegally through the official border crossing, outside it or combined, by means of land and water or air transport. Migrant smuggling is carried out through the official border crossing in several ways: falsified travel documents; by hiding people in secret spaces-bunkers of means of transport, that is, by adapting means of transport that allow hiding people for the purpose of illegal transportation across the state border; corruption of public officials in charge of controlling the crossing of the state border, where migrants are in a means of transport or in secret areas of means of transport; by diverting attention and misleading members of the state border crossing control services, using coercion against members of the state border crossing control services or persons close to them, etc. (Mijalković S. 2009, 34). Outside the border crossing, smuggling of migrants is specific for each country, and depends on the way and place of crossing the state border; on land, hard-to-reach but passable places are used, mostly inadequately controlled by the border services. Mostly, it is crossed on foot or by using primitive means of transport: carts, horses, donkeys; across bodies of water, migrants are smuggled by swimming and by means of transport using boats, rafts, ships that avoid encounters with the services that secure the border and means of air transport, by which migrants are smuggled to places with designated areas suitable for landing and take-off, mostly away from urban areas environment. The destination or final stage is the stage in which the smuggling of migrants takes place in the country of destination. It can be unsuccessful and risky for many illegal migrants. It can be unsuccessful in the sense that migrants are discovered by the authorities of the country of destination and returned to the country of origin or to one of the countries of transit, or that, staying and working illegally in the country of destination, in order to ensure their existence, they accept inhumane and degrading jobs, and other forms of cruel exploitation and humiliation. It can be risky when they are taken over in the country of destination by a local organized criminal group that recruits them to commit criminal acts for it or become the object of human trafficking, i.e. fall into modern slavery.

3. ILLEGAL MIGRATION AS AN ORGANIZED CRIMINAL THREAT TO NATIONAL SECURITY

Illegal migrations on their movement route threaten the national security of the territorial state by manifesting various forms of criminality, such as classic and organized crime. Classic criminality is reflected in the commission of individual crimes on the territories of states that are on the path of illegal migration, such as crimes of illegal crossing of the state border, fraud, theft, robbery, rape, murder, etc. Organized crime is reflected in the organization of local or transnational criminal groups, primarily for the smuggling of migrants, but also organized criminal groups within illegal migration, whose members commit organized crimes for the illegal acquisition of property benefits, such as crimes in the field of narcotics, weapons, human trafficking, terrorism etc. In this context, illegal migration threatens the security of people, the personal security of illegal migrants and the national security of transit countries, final destination countries and the international community. On his way from the initial to the final destination, the illegal migrant many times pays for the services of members of organized crime groups to mediate their smuggling. This, among other things, often results in the person being left without means for further existence. Smugglers are well aware of the material condition of illegal migrants. Those among them who are unable to pay for the services of smugglers, expose themselves to the risks that the carriers of organized crime can use them for their own profit goals.

Although migrants do not have documents for entry, work and residence in the country of destination, they obtain these through well-organized criminal groups and their illegal mediation between illegal migrants and government officials. Smuggling of migrants is one of the most lucrative ways of profiting and business of transnational criminal organizations. This is reflected in good organization, the way of charging for smuggling services and good connection with the state authorities. This type of crime represents a systemic security threat to the national security of the state. A smaller number of illegal migrants become victims of organized crime, that is, "commodities that are traded and unscrupulously exploited" (Mijatović S. 2004, 172-192). The desire of illegal migrants to reach their desired destination at any cost contributes to the smuggling of migrants, which results in the increased corruption of public officials in the security systems of state borders and in public services in charge of monitoring migration and working with migrants. Organized human smuggling by organized criminal groups is a high-profit, low-risk activity. The question arises as to why this is so, especially since this type of crime has all the characteristics of a security threat to the national security of the state. Namely, every country has a national security system, which protects national values, in such a way that it systematically undertakes measures and actions against the bearers of threatening activities. This has the consequence that they take maximum risks during their actions. The question arises why, unlike the perpetrators of some other criminal acts, the perpetrators of the mentioned criminal activities take minimal risks? The answer lies in the rule of law at a low level in the countries of transit and destination, first of all, because "the key factor in determining the extent of organized crime is the quality of the institutions responsible for the rule of law, including the competent police services and independent courts in accordance with the standards of professional integrity" (Van Dijk J. 2007, 46). Which means that the normative and institutional security failure of the state favors the carriers of organized crime to take minimal risks by smuggling migrants, because the states do not have quality legislation and institutions that would apply it in the sense that every perpetrator of a criminal act is discovered, prosecuted and sanctioned.

3.1. Organized smuggling of illegal migrants

Organized smuggling of migrants is a criminal offense of an international nature, which represents a security threat and a risk to the national security of transit and destination countries. Organized smuggling of migrants is carried out by international criminal groups that are interconnected and whose composition includes officials from several countries, which depends on the route itself and the number of transit countries and destinations on the route. Organized criminal groups for committing criminal acts in the area of migrant smuggling are organized hierarchically with a clear division of work for each individual member, which operate at the level of two neighboring countries. Criminal groups organized in this way, which also include civil servants in border security, are numerically strong and hierarchically well-organized and operate very successfully at the international level, thanks to the infiltration of their members into the public services of several countries. The total number of such organized criminal groups depends on the security situation of the countries that are on the migration route. According to the Interpol report, more than 100 such organized groups were active in Europe in the last decade of the 20th century, which mediated the smuggling of migrants (Nađ I. 1998, 578-579). In order to objectively assess the scope and consequences of security risks and threats to national security, which are caused by smuggling of migrants, in addition to overcoming the state border, we should also take into account many other illegal actions related to organized smuggling of migrants. These issues are particularly regulated by the aforementioned Protocol against the Smuggling of Migrants by Land, Sea and Air, along with the UN Convention against Transnational Organized Crime (Protocol against the Smuggling of Migrants by Land, Sea and Air, 2000).

Illegal migrations and their organized movement on certain routes must be connected with the causes that led to mass migrations. We can look for them in the hidden factors of the conflict between Atlanticist and European countries. The Atlanticist countries provoked armed conflicts in the Middle East and North Africa with the aim of suppressing, disuniting and more effectively controlling European economic competitors; which consequently resulted in the movement of a formidable number of migrants (Despotović Lj., Jevtović Z. 2010, 104). The French geopolitician Del Val writes about this factor, who observes and registers certain geopolitical contradictions and the combination of the interests of the Atlanticist factor with the Islamic factor, which aims to slow down the economic growth and strengthening of Europe and Russia, while Marija Đorić believes that "America manages migration, by tends to direct them towards Europe for economic reasons" (Val Del A. 1997; Đorić M. 2018, 18). The migrant crisis, caused in 2015, led to the fact that a huge mass of people moved from the Middle East along the Balkan route to Western Europe. On this route, migrant groups were well organized and illegally transferred through transit countries to destination countries. Illegal migrants were well acquainted with the route of movement and reacted very quickly to changes in the route of movement, with good coordination within a certain ethnic or religious groups and between groups. They also had sufficient funds and could withdraw money in transit countries from their debit cards they had with them or through Western Union, using their mobile phones to which they received withdrawal codes. The money they raised was used for daily needs and to pay members of organized criminal groups for illegal transfer services to the desired destination. There is evidence of the organized preparation of refugees in refugee camps in Turkey, where they were given a video presentation about the route of their movement and how to get to Germany, as well as how to withdraw the money paid on the travel route when transferring to the desired destination in the EU (Gajić S. 2016, 89). Considering that for the organized transfer of large groups of migrants, huge funds should be allocated, both for their personal needs and for members of organized criminal groups, who organize and mediate in the illegal transfer of migrants to their final destination, the question of funding arose. There is knowledge that organizing the financing of illegal migration is encouraged by an alliance of various non-governmental and other organizations that are connected to the media, espionage, financial, and other circles, which represent the global economy through the banking sphere and aim to legally influence the EU economy (Milošević Đ. 2015).

3.2. Illegal migration as a national security threat

The functioning of smuggling channels that take place through the territories of transit countries represents a systematic security threat to the national security of those countries and the personal safety of the migrants themselves. Due to the favorable geographic location, the Republic of Serbia has become an important part of the illegal migration route to Western Europe. In other words, many migrant smuggling channels pass through the territory of Serbia, which threatens its security. Smuggling of migrants is legally defined as a criminal offense against the national security of the state, which primarily violates the law and legal regulations on crossing the state border, and which criminally sanctions perpetrators who engage in smuggling, while smuggled migrants are often sanctioned as perpetrators of misdemeanors, if they are found outside centers and areas where they are allowed to stay and move. Migrant smuggling can also be seen from the aspect of the security of the illegal migrants themselves, because such activity also implies a violation of guaranteed human rights. Which mostly depends on the decision of the migrant who, with the help of smugglers, has the intention to illegally cross the state border and reach the desired destination, while he can always give up such an intention on the way. Organized criminal groups that engage in the recruitment and smuggling of illegal migrants for money often have the hidden intention of offering their services to migrants who are unable to pay for the service and who later become victims of

human traffickers in a fraudulent manner or under serious threat and coercion. The difference in the operation of organized criminal groups is that in some cases a transit migrant asks for a favor from members of a criminal group, while in other situations members of organized criminal groups find and recruit potential victims with the aim of exploiting them by violating their basic human rights. Observing human trafficking as a form of organized crime, by which people are turned into slaves, it must be concluded that such criminal activities do not only mean humiliation, mistreatment and exploitation of the immediate victim, but also threaten the public and national (state) security of the state, undermine the rule of law and , which is particularly important, encourage other criminal activities. Although human trafficking as a criminal offense does not necessarily require crossing a state border, there are multiple connections between migrant smuggling and human trafficking. The increase in the number of organized illegal migrations also leads to an increase in human trafficking, which leads to the understanding that human trafficking is one form of illegal migration. It follows from this that organized criminal groups that deal with human trafficking tend to maintain mass illegal migrations, keeping already existing routes and routes of movement for human smuggling, which they also use for human trafficking. On the other hand, states of transit and final destinations have an obligation to protect migrants from the danger of becoming slaves in their territories, as well as to eliminate the systematic threat to the national security of the state by transnational organized crime.

4. CONCLUSION

Illegal mass migration marks the beginning of this century. They are very organized on certain routes from the place of origin through transit to the final destination countries. We can say that mass migrations today are mostly political because they are caused in areas affected by armed conflicts or they are artificially initiated and well thought out and financed. The movement of illegal migrants from the place of origin, through the countries of transit to the desired destinations, takes place organized by transnational organized criminal groups, which operate in a geographical area, which for centuries has a national state as its sovereign. Intolerable political, economic and social conditions for a dignified life, caused by armed conflicts, result in mass migration whose identity feature is illegality. This leads to a mutual connection with organized crime, which represents a complex of security challenges and threats. This leads to the need for the international community to intervene in these relations. The humane and normative regulation of illegal migration aims to protect the psychological and physical integrity of migrants, their human rights, as well as the protection of state borders. Therefore, the security of the state, which is threatened by organized illegal migration, should be viewed from the perspective of people's safety and the security of the state, not in the context of conflict or mutual exclusion, but within the framework of understanding that the security of the state cannot be achieved without respect for human rights.

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ARE CONTRACTUAL RESTRICTIONS ON THE POSSIBILITY OF CONCLUSION OF INDIVIDUAL EQUIPMENT AND ENDORSEMENT AGREEMENTS ALLOWED?

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ABSTRACT

The issue of economic exploitation of the individual image of the athlete, both by himself and his sponsors, and by the sports organization and its sponsors as well, is regulated by the agreement between the sports organization and the professional athlete. In practice, these are standard agreements that impose significant restrictions on athletes' ability to independently exploit their individual image economically. Whether such restrictions are legally permissible is the subject of the author's attention in this paper. The issue is considered on the basis of the relevant provisions of the standard agreements concluded between a sports organization and a professional athlete in the Bundesliga, Premier League and NBA.

Keywords: *equipment agreements, endorsement agreements, individual image, standard agreements, contractual restrictions.*

1. INTRODUCTION

The career of a professional athlete is relatively short. In order to provide for a living after the end of their professional career, athletes are undoubtedly interested in additional sources of income beyond the salary they receive from the sports organization for which they perform. However, due to the maximum commitment required by professional sports, in the form of hard training, constant trips to away matches, performances for the national team and etc., it is difficult for a professional athlete to have free time for any additional work. However, there is one possibility for additional earnings at their disposal. Namely, it is about the fact that athletes can economically exploit their individual image, more specifically, conclude lucrative sponsorship agreements.¹ In sports, sponsorship agreements come in two forms, as equipment agreements and endorsement agreements. Equipment agreements are concluded with manufacturers of sports equipment as sponsors whereby the athlete receives money and sports equipment from the sponsor, and in return he undertakes to wear only the sports equipment of his sponsor. Endorsement agreements are concluded with companies that make products or provide services that do not belong to the world of sports. As sponsors, they give the athlete money, and the athlete in return allows them to use his name and image for advertising purposes, thus endorsing the quality of their sponsor's products and services. Hence comes the name of endorsement agreement.² Just like athletes, sports organizations for which they perform are interested in sponsorship agreements as additional sources of funding. They cover current expenses with that income, pay salaries to their athletes, make new signings, etc. So, sports organizations economically exploit their collective image and conclude equipment

¹See more about the sponsorship agreement, Ječmenić, M. (2022). Jesu li kauza ugovorne obaveze i svrha ugovora isto?. Odlučujući časopis za menadžment, pravo i finansije. 136-139.

²See more about equipment agreements and endorsement agreements, Roskopf, J. (2009). Der (Sport-) Sponsoringvertrag insbesondere Anwendungsbereiche, Rechtsnatur, Struktur. Seminar im Sommersemester, Sportrecht, insbesondere (Sport-) Sponsoringverträge, bei Prof. Dr. Peter W. Heerrmann, LL.M., Thema 1. 12.

agreements and endorsement agreements. With the equipment agreement, the sports organization receives money and sports equipment from its sponsor, and in return undertakes that its professional sports team wears only the sponsor's sports equipment. In the endorsement agreement, the sports organization grants its sponsor the right to use the visual identity symbols of the sports organization, such as the logo or emblem, as well as the team photo of the athletes who perform for it, for advertising purposes, in return for money. The sports organization is also interested in economically exploiting the individual image of athletes in order to promote the sports organization and sell jerseys, souvenirs, fan articles and so on. If we add to that that the sponsors of the sports organization are interested not only in using the collective image of the sports organization for advertising purposes, but also the individual image of its athletes, as well as the fact that they are also interested in exclusivity, along with the dizzying sums of money that are spent on sponsorship, that issue represents a constant source of conflicting situations that professional sports cannot afford. If the sports organization and the athlete performing for it had the same sponsor, that would be a win-win situation. But that will rarely happen, as usually the sponsors will be competitors with each other. Let's say a sports organization has an equipment agreement with the Adidas company, and an athlete has an individual equipment agreement with the Nike company. If both sports organizations and athletes would stubbornly insist on their sponsorship agreements and would not be ready for any such compromise, both of them would very soon be left without sponsors, and thus without a significant source of income. However, in practice, the 'compromise' is that athletes have to accept significant restrictions on the ability to independently exploit their individual image economically. The issue of economic exploitation of the individual image of the athlete, both by him and his sponsors, and by the sports organization and its sponsors as well, is regulated by the employment contract between the sports organization and the professional athlete. In the following, we will show how the issue of economic exploitation of an athlete's individual image is regulated by agreements between an athlete and a sports organization in the Bundesliga, Premier League, and NBA League, by citing the relevant contractual clauses that are related to the subject of our interest. But before that, we should mention the minimum conditions for an agreement between a player and a club of the Federation Internationale de Football Associations (hereinafter referred to as FIFA), as well as the minimum conditions for an agreement between a player and a club of the Union of European Football Associations (hereinafter referred to as UEFA), which provide certain guidelines for compromise between the sports organization and the athlete regarding the economic exploitation of the individual image of athletes. We will also deal with an interesting way to resolve this conflict in French sport and Italian football.³ In the conclusion of this paper, we will try to generalize, ie. to establish in what way the sports organizations limit athletes' opportunities to independently exploit their individual image economically, as well as to answer the question whether such restrictions imposed on athletes by employment agreements are legally permissible. The answer to this question is exactly the goal of this paper.

2. PROVISIONS OF THE FIFA AND UEFA MINIMUM AGREEMENT TERMS BETWEEN THE PLAYER AND THE CLUB RELATING TO THE ECONOMIC EXPLOITATION OF THE INDIVIDUAL IMAGE OF FOOTBALLERS

In 2008, the FIFA Executive Committee drew up the minimum requirements for standard player agreements in professional football.⁴ These are minimum standards that include the most important and fundamental rights and obligations of both contractual partners, the professional

³In detail about the so-called marketing clauses in athletes' agreements with their sports organizations and their legal analysis, for Serbian law, Ječmenić, M. (2018). Sukob interesa između sportista i sportskih organizacija u vezi sa pravom na komercijalnu upotrebu imidža sportista. *Harmonius. Journal of Legal and Social Studies in South East Europe*. 374-389.

⁴Professional Football Player Contract Minimum Requirements, available at: https://www.google.rs/?gws_rd=cr,ssl&ei=C3CHVOjzIsb7ywO3koCwBA#q=fifa+minimum+standard+for+players+contract+in+professional+football.

football player and the football club. Based on these standards, the club and the footballer can negotiate and conclude an individual agreement. In doing so, they must take into account the national legislation, the general collective agreement if it exists, as well as the legally binding acts and decisions of FIFA, UEFA, national federations and professional leagues. The minimum requirements for standard player agreements in professional football cover 13 areas, and one of these 13 areas relates to image rights. In this regard, it is foreseen that the club and the player must agree on how the rights related to the image of the player will be used (cashed out). In principle, it is recommended that each player may use his rights on his own, if this does not lead to a conflict with the club's sponsors/partners, while the club may use the rights related to the player's image as part of a group and/or team. UEFA, the Association of European Professional Football Leagues (EPFL), the European Club Association (ECA), and the International Association of Professional Footballers - European Branch (FIFPro) concluded in 2012 the Agreement on the minimum conditions for standard agreements with professional football players in the European Union and elsewhere territories under the jurisdiction of UEFA.⁵ The aim of the agreement was to determine the minimum conditions for agreements with professional football players in Europe. Regarding the right to use the player's image, it is said that the club and the player are expected to agree on how the rights to use the player's image will be used. As a recommendation and principle, each player can exercise his rights individually (if this does not conflict with the rights of the club's sponsors/partners), and the club can exercise the rights to use the player's image as a team member. Therefore, as it can be seen, both FIFA and UEFA minimum conditions for an agreement between a player and a club clearly distinguish between the individual image of a football player and the collective image of a football club. The football player himself decides on the economic exploitation of his individual image, with the fact that in case his individual sponsors are competitors of the football club's sponsors, the football club's sponsorship agreement should have priority. It seems to us that it is possible to comply with this recommendation only in the case that the football player transfers to the club as a player without individual sponsors, and only subsequently concludes sponsorship agreements. Only in that case would it be possible for him to take care not to sign sponsorship agreements with companies that compete with the club's sponsors. If the footballer already made individual sponsorship agreement at the moment of signing the contract with the new club, it would be difficult to comply with this recommendation. In the same way, it seems to us that both FIFA and UEFA minimum conditions for the agreement between the player and the club completely lightly and wrongly start from the fact that the sports organization can absolutely independently decide on the economic exploitation of the collective image. As we can see in the introductory part, the collective image is economically exploited in such a way that the sports organization, in return for money and for advertising purposes, allows its sponsors to use the symbols of the visual identity of the sports organization (logo, emblem, etc.) and the group image of the athletes who perform for the sports organization. It seems absolutely correct in this respect when the managers of German football players in a somewhat different, but still very similar context, talk about a 'story that would be tolerated' that the use of photos of football players to promote the sponsors of the sports association is allowed only if the whole team is photographed. Namely, it was about the right of the German Football Association to economically exploit the team photo of the members of the German national football team.⁶

⁵Agreement regarding the minimum requirements for standard player contracts in the professional football sector in the European Union and the rest of the UEFA territory, available at: https://www.google.rs/?gws_rd=cr,ssl&ei=C3CHVOjzIsb7ywO3koCwBA#q=autonomus+agreement+regarding+the+minimum+requirements+for+standard+player+contracts+in+the+professional+football+sector.

⁶See, Die Welt, 2.5.2002., cited according to: Wehner, F. B. (2010/2011). Zum Konflikt zwischen Individual- und Teamsponsoringverträgen am Beispiel des Musterarbeitsvertrages der DFL. Seminar zum Sportrecht, bei Prof. Dr. Peter W. Heerrmann, LL.M., Wintersemester. 26.

Symbols of the visual identity of a sports organization can be registered as a trademark. The trademark holder is a sports organization. But even if the symbols of the visual identity of the sports organization were not registered as a trademark, they would be protected from unauthorized use by the rules on unfair competition. Accordingly, it is indisputable that a sports organization decides completely independently on the economic exploitation of its visual identity symbols. On the other hand, the economic exploitation of the team photo of athletes who perform for a sports organization actually implies the economic exploitation of the individual photo of each individual athlete who performs for a sports organization within the team photo of all athletes who perform for a sports organization. The right to the image is the right of personality. The holder of the rights to the image is an athlete. Consequently, for any type of use of an athlete's photo, and thus of course also for the use of an athlete's photo for the purpose of economic exploitation, the athlete's permission must be obtained. Accordingly, as far as the economic exploitation of the team photo of athletes is concerned, this is only possible if the sports organization has previously received the athlete's permission for the economic exploitation of his individual photo within the team photo of athletes. Unlike FIFA and UEFA, as well as the German Football Association, sports organizations seem to be absolutely aware of the obligation to obtain an athlete's permission for the economic exploitation of his individual photo within the team photo of athletes performing for a sports organization. We will see below that all the considered agreements contain clauses by which the athlete grants the sports organization the right to economically exploit not only his individual photo within the team photo of athletes performing for the sports organization, but also his individual photo beyond the team photo of athletes performing for the sports organization, as well as to leave the right to sponsors to use individual and team photos of its athletes for advertising purposes.

3. PROVISIONS OF THE FRENCH NATIONAL COLLECTIVE AGREEMENT IN SPORTS RELATING TO THE ECONOMIC EXPLOITATION OF THE INDIVIDUAL IMAGE OF ATHLETES

Article 12 of the French National Collective Agreement in Sports⁷ is entitled 'Using the image and name of athletes and coaches within the framework of the execution of the employment contract'. The National Collective Agreement in Sports, absolutely justified, makes a distinction between 3 types of images that relate to athletes and sports organizations. Thus, individual, related and collective image are distinguished. Individual image means the image of an individual athlete or coach. Related image refers to the reproduction in any form, or by any means, of the image, name, voice of an athlete, or coach, in connection with the image, name, emblems, or other distinguishing marks of a sports organization. In order for it to be a collective image, the minimum number of athletes or coaches whose image is reproduced on one means of support in the same or similar way must be 50% of the number present on the field for a given discipline. Below this number, the image is considered individual. The sports organization decides on the use of the collective image on all means of support for its own benefit or for the benefit of its partners. The sports organization informs athletes and coaches about the conditions of use of the collective image. Regarding the use of an individual image, the terms of use by the sports organization or its commercial partner must be stipulated in the employment contract or in the supplementary act. Prior agreement with the athlete or coach whose individual image is used is necessary. An athlete or a coach can use the related image only with prior agreement with the sports organization. An athlete or a coach may, for his own benefit, realize an individual activity of a commercial, advertising, or promotional nature that would bear his image or name, but without reference to the image, name, emblems and, or other signs of recognition of the sports organization.

⁷Convention collective nationale du sport (CCNS), available at: <http://avironfrance.fr/EspaceClub/Emploi/ConventionCollective/ConventionCollective.htm>.

So, it is about using the individual image of the athlete or coach for commercial purposes by themselves. Such activities must be previously communicated to the sports organization before signing with a third party. This freedom may be limited by the legitimate interests of the sports organization. An employment contract concluded between an athlete or a coach and a sports organization may prohibit the use of the athlete's individual image or a coach by a company competing with significant commercial partners of a sports organization. In that case, the list of products or services listed for prohibition must be defined in the employment contract, as well as the conditions under which it can be changed during the execution of the employment contract. As far as sports equipment is concerned, the employment contract requires the athlete and the coach to use the sports equipment provided by the sports organization, with the exception of specialized equipment, where they are free to use the brand of their choice. Specialized equipment is considered to have a material effect on the performance of athletes due to its special technical characteristics. The possible engagement of an athlete to wear specialized equipment provided by a sports organization must be clearly stated in the employment contract or in its supplementary acts.

4. CONVENTION WHICH IS SUBJECT TO THE REGULATION OF AGREEMENTS RELATED TO PROMOTIONAL AND ADVERTISING ACTIVITIES OF FOOTBALL SPORTS ORGANIZATIONS AND THEIR MEMBER ATHLETES

Realizing the existence of this type of problem in practice more than 40 years ago, the Italian Football Association and the Italian Footballers' Association signed the Convention in 1981, the subject of which is the regulation of agreements related to the promotional and advertising activities of football sports organizations and their member athletes (hereinafter referred to as the Convention).⁸ The Convention contains very precise rules that footballers must adhere to if they want to carry out promotional and advertising activities. Football players must include the application of the Convention in their individual sponsorship agreements through an appropriate clause. Thus, football players have the right to use their individual image for commercial purposes, with the fact that they may not conclude agreements lasting longer than one season. As for equipment agreements, footballers can conclude individual sponsorship agreements for sneakers. The Convention further stipulates that sports organizations and athletes should avoid entering into sponsorship agreements with mutually competitive sponsors. The sports organization and the athletes will act in mutual good faith and in the spirit of the best cooperation in order to eliminate any disagreement at the very beginning and thus eliminate and reduce the consequences that could arise due to possible conflicts. Accordingly, the sports organization and the athletes must inform each other about the signing of the sponsorship agreement in order to create a reality of complete transparency thus preventing the emergence of any conflict. However, despite these provisions, conflicts can certainly arise, therefore the Convention foresees that the sponsorship agreements concluded by the sports organization will have priority. If, as a result of this provision, the athlete is forced to terminate his individual sponsorship agreement, the sports organization is obliged to pay him monetary compensation in the amount of lost earnings, due to premature termination of the sponsorship agreement.⁹

⁸La Convenzione, stipulata fra la F.I.G.C., le Leghe e l'A.I.C. il 23 luglio 1981, e successivamente modificata il 18 giugno 1984 ed il 27 luglio 1987, ha come oggetto la regolamentazione degli accordi concernenti le attività promozionali e pubblicitarie che interessano le società calcistiche professionistiche ed i calciatori loro tesserati, available at: <http://www.legapallacanestro.com/>.

⁹See about this Convention, Ferrari, L. (2004). Sports images rights under Italian law, An overview of the main legal issues involved in the commercial exploitation of images rights of top athletes, clubs and sports associations. The international sports law journal. 19.

5. PROVISIONS OF THE AGREEMENT BETWEEN THE PROFESSIONAL FOOTBALLER AND THE FOOTBALL CLUB OF THE GERMAN BUNDESLIGA RELATED TO THE ECONOMIC EXPLOITATION OF THE INDIVIDUAL IMAGE OF THE FOOTBALLER

The agreement between a professional football player and a football club of the German Bundesliga¹⁰ contains extremely detailed clauses on the economic exploitation of the football player's individual image. The player undertakes to use all of his strength and sports performance, without restrictions, for the club, as well as to do everything to preserve and increase them, and furthermore to miss everything that could negatively affect his strength and sports performance. On the basis of these principles, the player undertakes to participate and cooperate in all presentations of the club or the player for the purpose of public relations, especially on television, radio, press, as well as on official occasions, awarding and receiving awards, autograph sessions, etc. In all these events, the player wears only the sports clothing (club clothing, travel clothing, match clothing, training and match shoes, as well as other clothing and equipment items) made available to him by the club, in accordance with the appropriate instructions of the club. The player has the obligation to use consumable goods (such as a car) made available by the sponsor of the club on official occasions without exception, and regularly for private activities. The player may advertise other companies that are not sponsors of the club only with the prior consent of the club, which the club may withhold if the player's advertising measures would harm the legitimate interests of the club. Consent once given can be revoked if there are serious reasons for this. Then, the football player grants the club the exclusive right to apply and exploit without limitation, his image, his name (including nickname and artistic name), words spoken by him, as well as special personality traits related to football, provided that it is in connection with his activity as a licensed football player, and that it is not about his exclusively private sphere. Then it is clarified that the economic exploitation of personality rights approved here, which is related to his activity as a licensed football player, exists for example in the case of exploitation via television, the Internet, mobile phone services, computer games, sticker album, and that the personal rights that are classified in the exclusive private sphere of football players and that remain for economic exploitation are related to e.g. writing activities and advertising for non-football related products, these listings being provided by way of example only and are by no means exhaustive. Furthermore, it is predicted that if a footballer wants to economically exploit the personal rights that he has exclusively granted to the club, he always needs the prior written consent of the club, which the latter can withhold if there is a particularly justified interest of the club that opposes it. Likewise, once given consent, it can be revoked at any time. It is further stipulated that the economic exploitation of personal rights related to his activity as a licensed football player will not be approved by the football player to anyone other than the club. Also, within the scope of the consent, the club is authorized to apply and use without limitation the footballer's picture, name (including nickname and artistic name), spoken words, as well as special personality traits related to football, and in particular to transfer them to the German Football Association, the League Association, or the German Football League in order to fulfill their contractual obligations. The football player expressly agrees that his personal rights may be used by the League Association and the German Football League for measures within the group marketing of the Bundesliga and/or the 2. Bundesliga. Group marketing includes marketing measures that cover Bundesliga and/or the 2. Bundesliga clubs in their entirety, or in essential parts. The consent of the right of use refers to all current and future technical media and institutions, including multimedia (internet, online services, mobile telephony services, etc.), as well as software products, especially interactive computer games.

¹⁰Musterarbeitsvertrag der DFL, available at: <http://www.bundesliga.com/en/>.

This applies in particular to the reproduction of photos of players in the form of team or individual shots in any form of display undertaken or approved by the club, including virtual display in connection with the reproduction of such photos in the form of scenes from matches and/or entire matches, in order to enable their use by public and/or private television stations and/or other audiovisual media and/or other interested parties. In addition, the player makes available to the club at all times his autograph in the original, as a facsimile, or in printed form for public relations purposes, as well as for reproduction on souvenirs and sale items of the club, also in connection with advertising for third parties. The income generated by the economic exploitation of the player's individual image belongs exclusively to the club. The grant of rights is limited to the duration of this contract, which does not apply to post-contractual use in media and multimedia in the form of archival images.

6 PROVISIONS OF THE AGREEMENT BETWEEN A PROFESSIONAL FOOTBALLER AND AN ENGLISH PREMIER LEAGUE FOOTBALL CLUB RELATED TO THE ECONOMIC EXPLOITATION OF THE INDIVIDUAL IMAGE OF THE FOOTBALLER

A standard agreement between a professional football player and a football club of the English Premier League, the so-called the football league contract, regarding the economic exploitation of the individual image of the player, contains several clauses.¹¹ By signing this contract, the player allows the club to photograph him as a member of the club's team of players and staff, provided that these photos can only be used as official photos of the club. Also, the player undertakes to participate in promotional activities required by the club in order to promote the club, club sponsors, commercial partners of the club, league, or league sponsors (including but not limited to appearances, giving interviews and taking photographs). The club will notify the player of their requirements in good time, and the player will be required to be available for up to 6 hours per week, approximately half of which will be dedicated to the club's community and public relations activities. No photo of the player, taken in accordance with this obligation of the player, will be used by the club or any other person for the purpose of advertising any brand or product not approved by the player. While fulfilling contractual obligations (including club business trips) he will wear only clothing provided by club officials. This also means that he will not wear any badges with brands, messages or any clothing item without the written consent of an authorized person of the club. This obligation does not prevent a player from wearing or promoting certain boots, or in the case of a goalkeeper, gloves of his choice. The player also undertakes to transfer to the club the right to take photographs, either independently or as a member of the club and the right to use such photographs in a club and promotional context (of the club, the League, sales of club-related products, licensed products and services of the club and the League).

7. PROVISIONS OF THE AGREEMENT BETWEEN THE PROFESSIONAL BASKETBALL PLAYER AND THE NBA BASKETBALL CLUB RELATED TO THE ECONOMIC EXPLOITATION OF THE INDIVIDUAL IMAGE OF THE BASKETBALL PLAYER

In the NBA, contractual relations between professional basketball players and basketball clubs are regulated in detail by the Collective Bargaining Agreement concluded by the National Players Association and the National Basketball Association. An integral part of the said agreement is the so-called Uniform Employment Player Contract.¹²

¹¹The football league contract, available at: https://www.google.rs/?gws_rd=cr,ssl&ei=C3CHVOjzIsb7ywO3koCwBA#q=premier+league+the+football+league+contract.

¹²National basketball association uniform player contract, available at: https://www.google.rs/?gws_rd=cr,ssl&ei=C3CHVOjzIsb7ywO3koCwBA#q=national+basketball+association+uniform+player+contract.

The Uniform Employment Player Contract also contains clauses on the economic exploitation of the individual image of the player. The player undertakes to participate in promotional and commercial activities determined by the Uniform Employment Player Contract as well as the Collective Agreement. The player also gives permission to the club or the NBA to photograph him alone, or together with other players, whenever requested. Those photos are used for the purpose of promoting the club or the NBA. The right to take photos is the exclusive right of the club and the NBA. The player undertakes not to allow the use of his photos and not to advertise any products without the written consent of the club. The player undertakes to participate in all promotional activities of the club and the NBA, but with compensation from the club in the amount of 2500 dollars for each promotional appearance. In addition to his obligations to the club, the player hereby also transfers to NBA Properties Inc. the exclusive right to use the player's attributes, as well as the player's name or nickname for the purpose of promotion, as an individual player, and not as a group or one of many players. Also, the NBA, or any organization belonging to the NBA, has the right to use player's attributes individually for promotional purposes in any way and through any media.

8. INSTEAD OF CONCLUSION

Analyzing the clauses of the above-mentioned agreements, we have come to the conclusion that sports organizations in principle limit athletes in two ways in terms of the possibility of independently exploiting their individual image economically. First, the athletes are obliged by the employment contract to, while fulfilling the contractual obligations from the employment contract (that is, during their working hours), wear only and exclusively the sports equipment made available to them by the sports organization. Naturally, the sports organization gets the sports equipment from its sponsor, that is, the company with which it has concluded equipment agreement. Certainly, it unequivocally follows that athletes cannot promote their sponsors during working hours, i.e. companies with whom they have concluded individual equipment agreements, by wearing their equipment. Now, is this type of limitation of the athlete's ability to independently exploit his individual image legally permissible? The sports equipment that the sports organization makes available to the athlete and that he must wear while fulfilling his contractual obligations from the employment contract, is work (official) clothing (uniform). Every employer (in our case, a sports organization) based on its right to issue instructions to an employee (in our case, an athlete), can require the wearing of uniform work clothing.¹³ Therefore, this type of limitation of the athlete's ability to independently exploit his individual image is legally permissible. Nevertheless, the said type of limitation of the athlete's ability to independently exploit his individual image is relativized to some extent, by allowing athletes to wear the sports equipment of their individual sponsors even during the fulfillment of their obligations under the employment contract, which actually shows the readiness of sports organizations for such compromise and taking into account the absolutely justified economic interests of its athletes. The French National Collective Agreement in Sports stipulates that the athlete must wear the equipment provided by the sports organization during the performance of his obligations under the employment contract, but as far as the so-called specialized equipment, he can use his sponsor's equipment. The convention also stipulates that the athlete must wear the equipment provided by the sports organization during the performance of the obligations under the employment contract, but allows the athlete to wear the sneakers of his sponsor during the performance of the obligations under the employment contract, and the contract that the sports organizations conclude with the athletes in the English Premier League, which also stipulates that the athlete must wear the equipment provided by the sports

¹³Rybak, F. (1999). Das Rechts verhältnis zwischen dem Lizenzfußballspieler und seinem Verein. Frankfurt am Main. 110, cited according to: Wehner, F. B. (2010/2011). Zum Konflikt zwischen Individual- und Teamsponsoringverträgen am Beispiel des Musterarbeitsvertrages der DFL. Seminar zum Sportrecht, bei Prof. Dr. Peter W. Heerrmann, LL.M., Wintersemester. 17.

organization during the performance of the obligations under the employment contract, allowing footballers to wear football boots while performing the contractual obligations under the employment contract, and goalkeepers also the gloves of their sponsors. The agreement that sports organizations conclude with athletes in the German Bundesliga does not provide for such a possibility. However, athletes know that they have the ability to negotiate in this regard, so there are well-known cases of Franck Ribery and Mario Gomez, who were allowed by the Bayern football club to perform in the matches in the sneakers of their sponsors.¹⁴ Another way in which sports organizations limit athletes in the possibility of independent exploitation of their individual image is that athletes must obtain the prior consent of the sports organization in order to conclude individual equipment agreements and individual endorsement agreements. It is clear, of course, that in the event that the athlete receives the consent of the sports organization for the conclusion of these agreements, he will be able to fulfill the contractual obligations assumed by these agreements only outside of working hours. For example, the Uniform Employment Player Contract stipulates that a basketball player will not allow the use of his photos and will not advertise any products without the written consent of the club. The agreement that sports organizations conclude with athletes in the German Bundesliga stipulates that the player can conclude individual endorsement agreements and individual equipment agreements only with the prior written consent of the club, which can be withheld if there is a particularly justified interest of the club against it, and once the given consent can be revoked at any time. Now, is this type of limitation of the athlete's ability to independently exploit his individual image legally permissible? The legal permissibility of such contractual clauses is extremely debatable. As we can see, in the NBA league, the conclusion of individual sponsorship agreements is generally allowed for players, but with the written consent of the club. Since there are no reasons for which the club can deny consent to the conclusion of individual player sponsorship agreement, this issue was the subject of the dispute *Portland Trail Blazers v. Darnell Valentine and Jim Paxson*, as far back as 1986. According to the ruling, the club cannot withhold consent, except in the case of justified and reasonable interests of the club, or the NBA.¹⁵ Clauses of agreements concluded by sports organizations with athletes in the German Bundesliga, according to which the player can conclude individual endorsement agreements and individual equipment agreements only with the prior written consent of the club, which can be withheld if there is a particularly justified interest of the club against it, and whereby consent once given can be revoked at any time, is considered invalid by German lawyers. This is actually about the so-called absolute ban on individual advertising activities of athletes outside of working hours, subject to approval. We may state, (considering that a professional athlete, as we have explained in the introduction, does not have free time for other types of additional work, beyond the economic exploitation of his individual image through the conclusion of a sponsorship agreement) that the actual effect of these contractual clauses is such that may cause an absolute ban on performing additional work subject to approval. The employment contract that sports organizations conclude with athletes in the German Bundesliga is a standard contract drawn up by the German Football League. Given that the contracting parties cannot change the established provisions of the contract, but that they must use the prescribed form of the contract, and that they can only enter certain clarifications and additions, it can be concluded that these are general business conditions. As such, this contract is subject to content control and transparency control based on Article 307, paragraph 1 of the German Civil Code, which stipulates that those provisions of the general terms and conditions of business that unduly damage the co-contractor of their user, contrary to the principle of

¹⁴Wehner, F. B. (2010/2011). Zum Konflikt zwischen Individual- und Teamsponsoringverträgen am Beispiel des Musterarbeitsvertrages der DFL. Seminar zum Sportrecht, bei Prof. Dr. Peter W. Heerrmann, LL.M., Wintersemester. 19.

¹⁵See, *Portland Trail Blazers v. Darnell Valentine and Jim Paxson*, Decision 86-2, August, 13, 1986., available at: [https://www.google.rs/?gws_rd=cr,ssl&ei=C3CHVOjzIsb7ywO3koCwBA#q=Portland+Trail+Blazers+v.+Darnell+Valentine+and+Jim+Paxson%2C+Decision+86-2+\(August+13%2C+1986\)](https://www.google.rs/?gws_rd=cr,ssl&ei=C3CHVOjzIsb7ywO3koCwBA#q=Portland+Trail+Blazers+v.+Darnell+Valentine+and+Jim+Paxson%2C+Decision+86-2+(August+13%2C+1986)).

conscientiousness and honesty, are invalid (content control). Undue damage may also arise on the basis of some insufficiently clearly and comprehensibly formulated (non-transparent) clause (transparency control).¹⁶ The clauses of the general terms of business (of the employment contract that sports organizations conclude with athletes in the German Bundesliga) which provide for an absolute ban on athletes from performing additional work subject to consent, would only be allowed if it is recognizable that the granting of consent is not left to the arbitrariness of the employer. Accordingly, it must be clear what standards the employer sets in order to decide on the granting of consent. A mere reference to a particularly justified interest is not sufficient. The employer could, for example, refer to competitive situations with its contractual partners that should be avoided, so that there is room for maneuver for the employer, which could have been avoided, and which could lead to non-transparency and thus the invalidity of this clause based on Article 307, paragraph 1 of the German Civil Code. For exactly the same reasons, the same applies to the possibility of subsequent revocation of once granted consent.¹⁷ So, in this respect, the solution provided by the French National Collective Agreement in Sports is absolutely correct. The employment contract concluded between an athlete and a sports organization may prohibit the use of the athlete's individual image by a company competing with significant commercial partners of the sports organization. In that case, the list of products or services listed for prohibition must be defined in the employment contract, as well as the conditions under which it can be changed during the execution of the employment contract.

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¹⁶See Article 307, paragraph 1 of the German Civil Code, available at: http://www.gesetze-im-internet.de/englisch_bgb/.

¹⁷Gelinski, C. (2016). Das ausserbetriebliche Verhalten von Sportlern im Mannschaftssport, Eine Untersuchung am Beispiel Musterarbeitsverträge im lizenzierten Basketball-, Eihockey-, Fussball- und Handballsport. Munster. 185. For a more detailed presentation of the situation in German law in the Serbian language (with references to relevant German literature), see, Ječmenić, M. (2022). Sadržinska kontrola i kontrola transparentnosti ugovornih klauzula o ekonomskom eksploatiranju prava ličnosti fudbalera Bundes lige. Akcionarstvo. 139-155.

THE IMPACT OF DIFFERENT LAND USES ON THE AVAILABLE SOIL PHOSPHORUS BUDGET IN CROATIA

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ABSTRACT

Soil degradation in Croatia is a worrisome phenomenon on agricultural land, and in addition to the reduction in SOM content, there is also a significant potential reduction in the content of plant available phosphorus. Therefore, 1,000 composite soil samples on a depth of 0-30 cm in eastern Croatia were collected initially in 2005 or 2006, and then again from the same locations after 15 years. In total, 2,000 samples from 1,000 different production plots were collected and this paper presents an analysis of changes in available phosphorus budget on arable land and permanent plantations. The average of available phosphorus on 4,858.3 ha of arable land and 477.4 ha of orchards and vineyard was 18.55 mg/100 g and 15 years later it was slightly increased to 19.88 mg/100 g. But, these averages hide the existence of negative trends and the degradation of significant areas by reducing the availability of phosphorus, especially on arable land. There are very significant differences among arable lands and permanent plantations considering changes in available phosphorus budget during 15 years. A significant unjustified and unacceptable phosphorus decreasing was on 37.8% of analyzed arable lands which were already poor or just medium supplied with plant available phosphorus. On the

other hand, on 35.7% of arable land phosphorus increasing was determined. The situation is significantly better on permanent plantation, since only on 17.2% of analyzed area unjustified and unacceptable decreasing of phosphorus budget happened, but on 60.3 % phosphorus budget was increased. Considering the changes in the content of phosphorus, potassium and SOM on arable land and permanent plantations of different initial levels of fertility, we can conclude the following: 1) fertilization is not carried out in accordance with soil fertility and nutrient needs, nor on almost 40% of orchards and vineyards, nor on more than half of arable land; 2) very significant degradation of the soil due to phosphorus impoverishment was determined on almost 38% of arable land and 17% of permanent plantations; 3) the degradation of SOM content is the most intense, followed by phosphorus, and the degradation of available potassium is the least; 4) it is certain that organic fertilizers and soil fertility conservation measures are rarely and/or ineffectively used on arable land; 5) the management of available soil nutrients and SOM was much more successful on permanent plantations than on arable land, we assume in large part due to the more efficient use of organic fertilizers.

Keywords: soil degradation, available phosphorus, crop production, permanent plantations, organic fertilization

1. INTRODUCTION

Intensive agriculture throughout a long period is likely to cause soil degradation (Ivezić et al., 2015). Soil fertility is extremely significant for successful and profitable agricultural production (Lončarić et al., 2023). Fertilization and soil management in general are aimed at maintaining fertility considering soil degradation as unacceptable. In soils with insufficient fertility, soil management is aimed at improving or increasing soil fertility (Lončarić et al., 2015). Soil degradation in Croatia is a worrisome phenomenon on agricultural land, and in addition to the reduction in SOM content (Lončarić et al., 2023, Hefer et al., 2023., Halter et al., 201), there is also a significant potential reduction in the content of plant available phosphorus. The phosphorus availability was already determined as insufficient in almost half of yearly analyzed soil samples in Croatia (Hefer et al., 2022). Organic fertilizers are very important for sustainable agricultural production, especially on soils poorly supplied with available nutrients and with low SOM content and (Lončarić et al., 2022). The inorganic fertilizers and manure contribute almost equally as P inputs to agricultural soils, with high regional variations depending on farming practices, livestock density, and cropping systems (Panagos et al., 2022). Problems such as loss of organic carbon from the soil (Nkoa, 2014), soil acidification, the high cost of fertilization, increased risk of low yields (Lončarić et al., 2023) and strategies aim to reduce nutrient losses and fertilizer consumption in agricultural soils (Panagos et al., 2022) are more and more common in agricultural production. Among all other properties, plant available phosphorus is extremely important for soil fertility. Despite phosphorus being crucial for plant nutrition and thus food security, excessive P fertilization harms soil and aquatic ecosystems (Panagos et al., 2022). Knowledge of the soil P stock and budget can tremendously increase the efficiency of scarce mineral fertilizers while preventing environmental harm (Panagos et al., 2022) and therefore, we focused on the potential degradation of available phosphorus in soils under different land uses in the Republic of Croatia.

2. MATERIAL AND METHODS

2.1. Soil samples collection

Two thousand composite soil samples were collected in eastern Croatia, as a geographical concept, according to Bašić et al. (2017). The arable plots and permanent plantations (orchards and vineyards) were selected based on the spatial distribution. The initial 1,000 soil samples were collected in 2005 or 2006 (500 samples each year), and then after 15 years from the same locations (in 2020 or 2021).

The composite samples were collected from a soil depth of 0-30 cm using control circular sampling according to Lončarić et al. (2014). In total, 2,000 samples from 1,000 different production plots were collected for analysis. This paper presents the results of analysis of available phosphorus and potassium content on plots under crops production (a total of 1,544 samples) and permanent plantations (a total of 434 samples).

2.2. Soil analyses

The soil samples were prepared for analyses according to ISO 11464 (ISO, 1994) using drying oven. The determination of soil pH was made according to ISO 10390 (ISO, 1994) in soil suspensions 1:5 (v/v) in deionized water and in a 1M potassium chloride solution. The plant available phosphorus and potassium were determined using AL soil P test (Egner et al., 1960) after soil extraction with ammonium lactate. Sulfochromic oxidation method according to ISO 14235 (ISO, 1998) was used for the soil organic matter (SOM) determination. The soil texture was determined using ISO 11277 method for sieving and sedimentation (ISO, 1998).

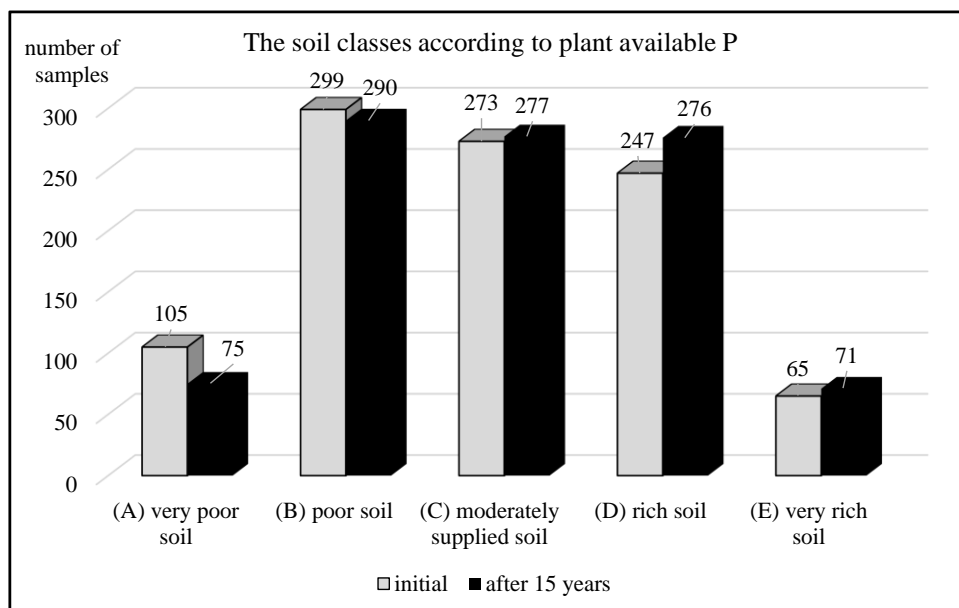
2.3. Calculating amount of plant available P and K in soil

The content of available phosphorus in the top soil layer was calculated basically from the laboratory result of soil P test and results of test were expressed as mg of P₂O₅ per 100 g of dry soil. The other used data were soil depth of 30 cm and soil bulk density, and amount of available phosphorus was expressed in kg P₂O₅/ha. Informing about the prices of mineral fertilizers on the domestic market was carried out by reviewing the available price lists, contacting producers and distributors of mineral fertilizers. The starting point for forming the prices of mineral fertilizers are the real prices in the period from 2011 to 2022. The prices included in the research are average prices for Osijek-Baranja County or the Republic of Croatia (Nikolin, 2022).

3. RESULTS AND DISCUSSION

3.1. The changes in available soil phosphorus budget under different land uses

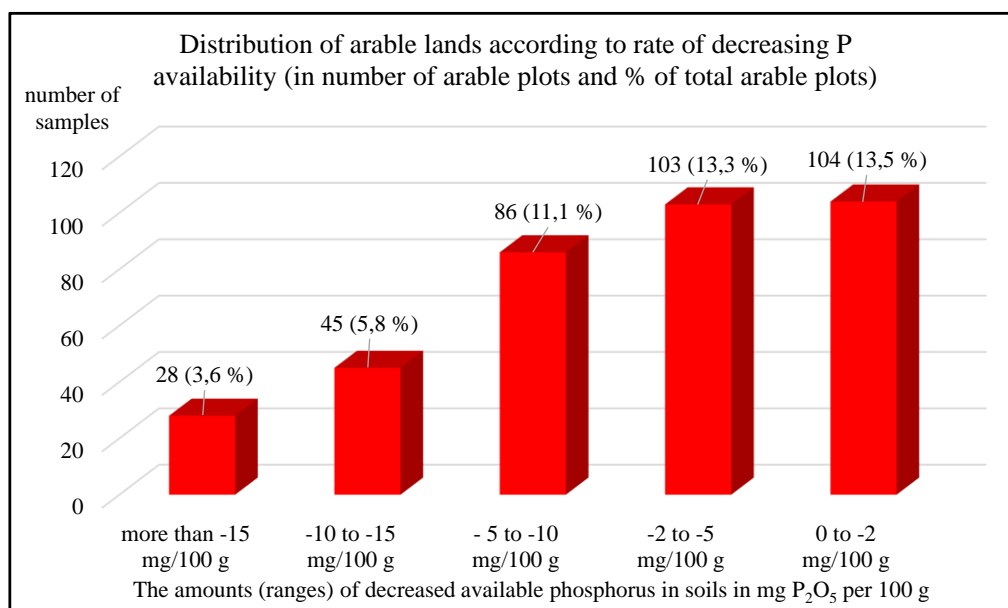
The initial contents of available phosphorus in the analyzed soils were in the range of 0.20-42.90 mg/100 g of soil with an average of 18.55 mg/100 g of soil, and after 15 years on the same plots the range was found to be 1.80-47.10 mg/100 g of soil with a slightly higher average of 19.88 mg/100 g of soil. However, significant differences were found in the changes in concentrations of available phosphorus on arable land (a decrease on 45.3 % of the analyzed arable land) and in permanent plantations (a decrease on 22.1 % of the plots). Given that the analyzed areas are a total of 5,360.9 ha with more than 90% of arable land (4,858.3 ha of arable land, only 477.4 ha of permanent plantations and 25.2 ha of meadows), the determined decrease in phosphorus availability refers to 2,303.7 ha (2,202.6 ha of arable land and 101.1 ha of permanent plantations), i.e. on 42.97% of the analyzed areas. It is important to note that the decrease in phosphorus availability does not necessarily have to be the result of inappropriate management, because the decrease in availability is acceptable on soils with a very high supply of phosphorus, i.e. on soils of class E (Lončarić et al., 2015), but is not acceptable on poor soils of class A or B, because it means the degradation of already poor soils. Therefore, based on the overall results, we could conclude that the phosphorus availability trend is positive because over a period of 15 years, the share of soils of the lowest phosphorus availability classes (A and B) has decreased from 404 to 365 analyzed samples (Graph 1), mostly in favor of soils rich in phosphorus (classes D and E). But, the interpretation of total and average values hides the existence of negative trends and the degradation of significant areas by reducing the availability of phosphorus.



Graph 1: The distribution of initial soil classes according to available P and after 15 years

3.2. The changes in available soil phosphorus budget on arable lands

Fifteen years of growing arable crops resulted in a decrease in the availability of phosphorus on 366 arable plots (47.4 %), i.e. on 2,022.6 ha, while on the remaining 2,655.6 ha, an increase in availability was determined (356 plots) or there were no changes (50 plots).



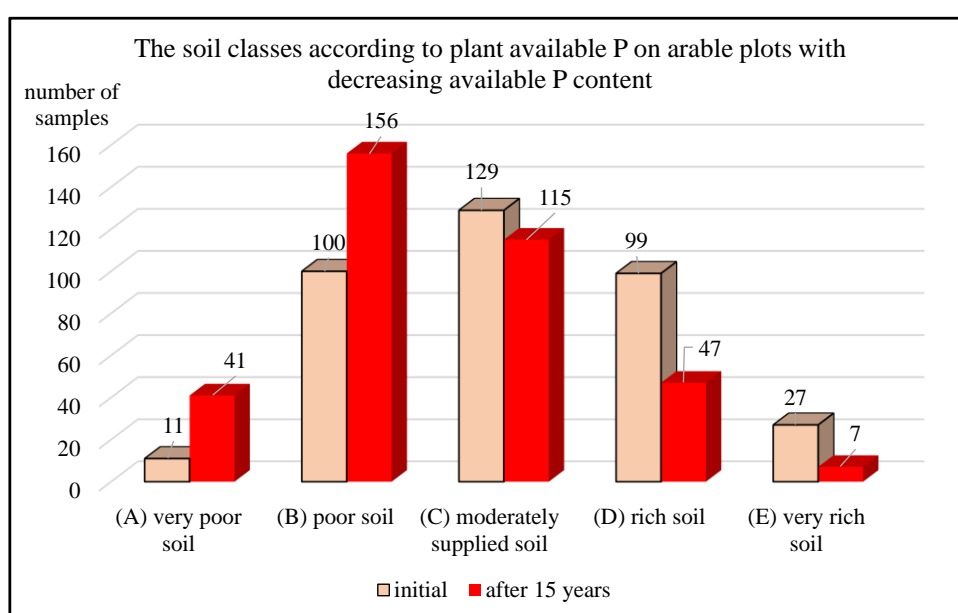
Graph 2: The arable lands distribution according to decreasing available P after 15 years

The average decrease of available P on 366 arable plots was 5.84 mg (mg P₂O₅/100 g of soil) over the 15 years period. The most of the reduction in P availability on arable land was up to 225 kg/ha (99.3 kg/ha in average for 26.8% samples), but more significant amounts up to 450 kg/ha (318.4 kg/ha average) were lost at 11.1%, up to 675 kg/ha (513.8 kg/ha in average) at 5.8% and more than 675 kg/ha (896.3 kg/ha in average) ha on 3.6% of arable land (Graph 2). However, there are much more significant changes in soil classes based on the availability of phosphorus, since this significantly defines soil fertility and the need to invest funds in fertilization and improving fertility (Lončarić, R., 2015).

According to the measured content of P available to plants (Graph 3), it is clear that in 15 years, as many as 86 arable areas (11.1%) were degraded into poor soil classes (classes A and B), and another 14 arable areas (1.8 %) less in the class of moderately supplied soils (class C) and 72 arable land (9.3 %) less in the classes of rich soils (classes D and E). At the same time, soil management with reduced P fertilization is acceptable if it results in a reduction of available P in class E and partially in class D of arable land, but soil degradation in class C, B or A and the consequent increase in the number of phosphorus-poor arable land in class A and B are by no means acceptable.

3.2.1. The decreasing in available soil phosphorus budget on arable lands

Therefore, unacceptable degradation of phosphorus availability was determined on 305 arable plots (39.5% of the total of 729 analyzed samples), which is a total of 1,837.8 ha (37.8% of the 4.858 ha total analyzed arable land). A total of 438,947.4 kg of available phosphorus (kg P₂O₅), i.e. 238.8 kg/ha, was unacceptable lost on that arable land in a period of 15 years.



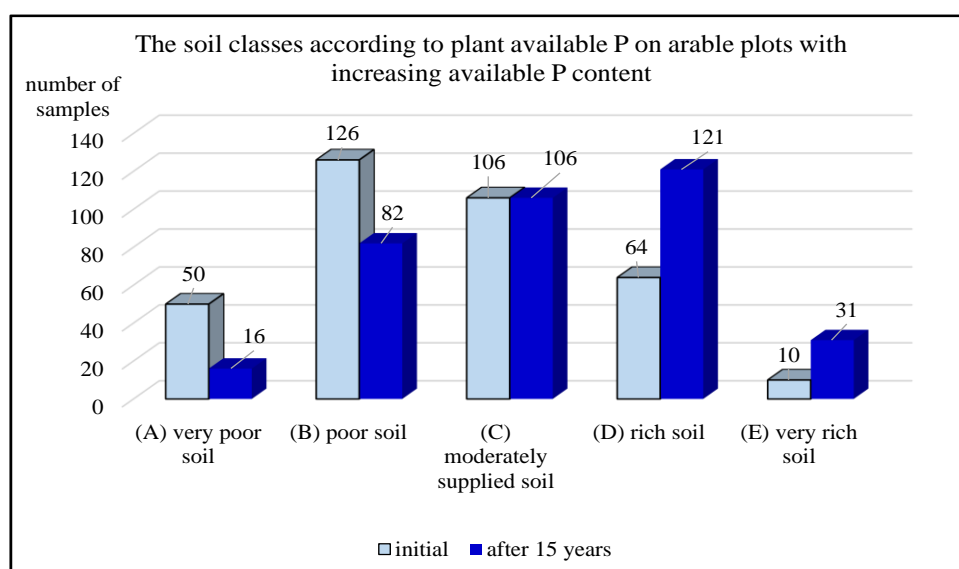
Graph 3: The initial arable soil classes and after 15 years of decreasing available P content

The degradation of soil fertility on 37.8% of the analyzed arable land, determined on the basis of an unnecessary and unjustified decrease in the availability of phosphorus, is confirmed by the fact that on the same arable soils the average humus content decreased by 14% (from the initial 2.21% to 1.90% after 15 years) and the content of available potassium by 17.1% (from the initial 22.5 to 18.63 mg/100 g of soil). So, in addition to the loss of phosphorus, a total of 346,673.2 kg of available potassium (kg K₂O) and 27,535.7 t of SOM (soil organic matter), i.e. 188.6 kg/ha K₂O and 15.0 t/ha SOM, were also lost on that arable land in a period of 15 years.

3.2.2. The increasing in available soil phosphorus budget on arable lands

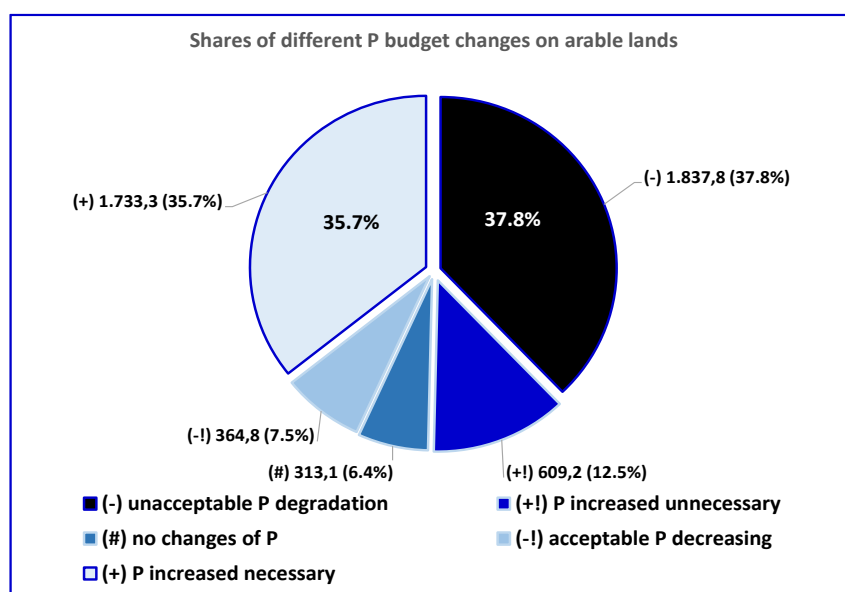
Simultaneously with the determined degradation of almost 40% of arable land and a clear trend of an increased share of the poorest soil classes, on the other hand there is a clear effect of an increase in the soil P budget on the rest of arable land (Graph 4). The average increase of available P on 356 arable plots was 6.68 mg (mg P₂O₅/100 g soil) in 15 years. Similar to the increase in the P availability, an increase in the K availability was also found on the 2,342,5 ha (on average 1.7 mg/100g, from the initial 22.1 to 23.8 after 15 years). These two facts, the beneficial availability of P and the increase in the K availability, testify to the preservation of soil fertility, but the same has not been established in terms of SOM content.

On the contrary, a decrease in SOM content was found from the initial 2.21% to 2.01% after 15 years, although an average increase in the content of available P and K was found on the same plots. This leads to the conclusion that the increase in P availability is to a greater extent a consequence of more intensive mineral fertilization than the use of organic fertilizers. According to the measured content of phosphorus available to plants (Graph 4), it is completely clear that in a period of 15 years, as many as 78 arable areas (10.1%) were enriched in phosphorus and become above the class of poor soils (176 initial to 98 after 15 years in class A and B) in favor of rich soils (classes D and E) from the initial 74 to 152 soils after 15 years.



Graph 4: The initial arable soil classes and after 15 years of increasing available P content

The increase in phosphorus availability was necessary on all poor soils of class A and B (176 analyzed particles, 22.8 %) and was welcome on soils of medium availability (class C, 106 analyzed particles, 13.7 %). In total, the beneficial increase in phosphorus availability was determined on 1,733.3 ha (35.7% of analyzed arable land) with a total increased amount of available phosphorus of 516,796.4 kg P₂O₅ (on average 298.2 kg/ha).



Graph 5: The shares of positive and negative trends in P budget on arable lands

However, an increase in available phosphorus was found on 82 arable fields (609.2 ha, 12.5% of the analyzed areas, Graph 5) that were already rich in phosphorus (classes D and E). This unnecessary increase in available phosphorus was as much as 334.5 kg/ha on average or 7.33 mg/100 g, from initial 27.6 to final 34.9 mg/100 g. On the same areas (609.2 ha), an increase in available potassium by 209.3 kg/ha after 15 years, i.e. by 4.7 mg/100 g (from the initial 27 to 31.7 mg/100 g) was determined (Table 1). Nevertheless, a decrease in SOM from the initial 2.33% to 2.09% was determined on these arable plots as well. These results again lead to the conclusion that even this unnecessary increase in phosphorus availability isn't a consequence of more intensive use of organic fertilizers. Also, we can conclude that the degradation of SOM content is a constant on arable land, regardless of whether a necessary or unnecessary increase, or an acceptable or unjustified (unacceptable) decrease in the availability of phosphorus has been determined (Table 1).

Evaluation of P budget changes	% arable land	phosphorus budget	potassium budget	SOM budget
unjustified P degradation	37.8%	(↓) -5.4 mg	(↓) -3.8 mg	(↓) -0.31%
P increased unnecessary	12.5%	(↑) +7.3 mg	(↑) +4.7 mg	(↓) -0.24%
no changes of P	6.4%	0 mg	(↑) +0.7 mg	(↓) -0.07%
acceptable P decreasing	7.5%	(↓) -7.8 mg	(↓) -2.2 mg	(↓) -0.29%
P increased necessary	35.7%	(↑) +6.5 mg	(↑) +0.8 mg	(↓) -0.18%

Table 1: The changes of K and SOM budget compared to P budget changes on arable lands

3.3. The changes in available soil phosphorus budget on permanent plantations

Fifteen years of growing orchards or vineyards resulted in a decrease in the P availability on 48 permanent plantations (22.1 %), i.e. on 101.1 ha, while on the remaining 376.3 ha, an increase in availability was determined (144 plots) or there were no changes (25 plots).

3.3.1. The decreasing in available soil phosphorus budget on permanent plantations

The average decrease of available phosphorus on 48 plots was 6.8 mg (mg of P_2O_5 per 100 g of soil) over the 15 years period. Additionally, in a period of 15 years, 12 permanent plantations (5.5%) were degraded into poor soil classes (classes A and B). There were 2 permanent plantations (0.9 %) more in the class of moderately supplied soils (class C) and 14 (6.5 %) less in the classes of rich soils (classes D and E). Unacceptable degradation of phosphorus availability was determined on 39 plots (17.9% of the total of 217 analyzed samples), which is a total of 82.3 ha (17.2% of the 477.4 ha total analyzed permanent plantations). A total of 24,081.2 kg of available phosphorus (kg P_2O_5), i.e. 292.5 kg/ha, was unacceptable lost on that orchards or vineyards in a period of 15 years. On the same permanent plantations with unnecessary and unjustified decrease in the P availability, there was practically no changes of available potassium (decreased just 0.8% from the initial 23.0 to 22.8 mg/100 g of soil) and SOM content (increased just 0.7% from the initial 2.19 to 2.21%). Therefore, it can be concluded, that in contrast to arable land, on permanent plantations there was significantly less unjustified degradation of the level of available phosphorus, but without degradation of the content of available potassium and SOM, which points to the conclusion that agrotechnical measures to preserve SOM and plant nutrients availability were much more appropriately used, probably including organic fertilization.

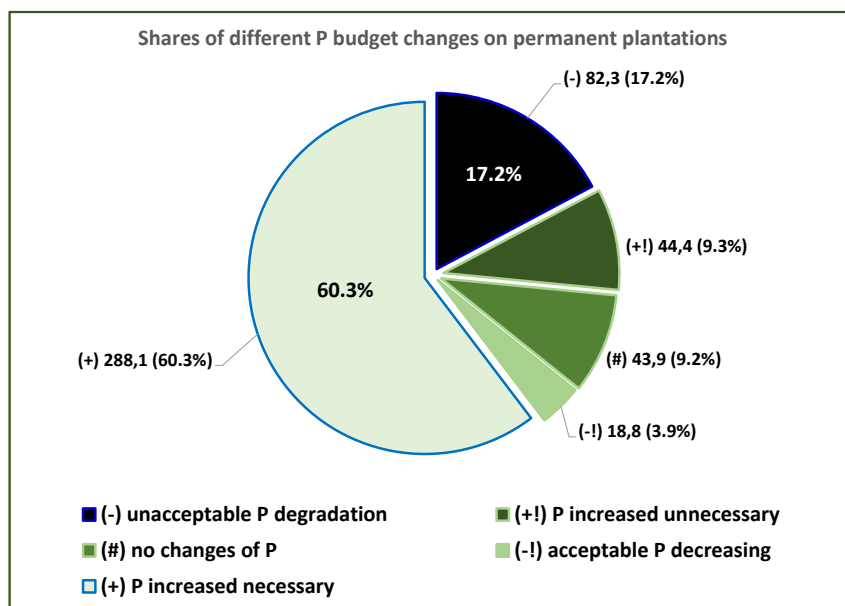
3.3.2. Permanent plantations without changes in available soil phosphorus budget

In the analyzed soil samples in the cultivation of orchards and vineyards, in 25 samples (11.5 % samples representing just 9.2% permanent plantations area) which were initially rich in phosphorus (class D or E), no significant change in the content of available P was found.

At the same time, a significant increase in SOM was found in these samples (increase by 13.5%, from 2.2 to 2.5% SOM) and an unnecessary increase in available potassium (increase by 18.8%, from 30.8 to 37.9 mg/100 g). The above data point to the conclusion that measures to preserve the SOM content and the availability of plant nutrients, probably including organic fertilization, were properly used on these areas, especially considering SOM and potassium content.

3.3.3. The increasing in available soil phosphorus budget on permanent plantations

Finally, an average increase in the content of available phosphorus (by 9.9 mg/100 g, from 12.3 to 22.2 mg P₂O₅) was determined in the largest part of the analyzed orchards and vineyards (144 out of 217 samples, i.e. 66.4% of the samples with 69.6% of the analyzed areas). The level of available P in most of these soils (123 samples, 56.7% permanent plantations) should have been increased because the soils were initially poorly (classes A and B) or medium (class C) supplied with P. In these samples, the content of available P was more than duplicated (from 9.5 to 20.0 mg/100 g), increased by 461.6 kg/ha (132,980 kg P₂O₅ in total on 228.1 ha). On the same plots, there were also significant increasing 35.7% of available potassium (from 19.5 to 26.4 mg/100 g) and 15.7% increasing of SOM content (from 2.02 to 2.34%). This means that on 123 plots of permanent plantations (60.3% of the analyzed orchards or vineyards area) with initially low or medium availability of phosphorus, the most effective agrotechnics were implemented over 15 years because it resulted in a significant increase in the availability of phosphorus (increased 109.6%), potassium (35.7%) and SOM (15.7%). However, there were also some permanent plantations where P availability was unnecessarily increased even though the soil was initially rich in available P (class D or E). This refers to a total of 24 plots or only 44.4 ha (9.3% of analyzed orchards and vineyards) with a 23.5% increase in P (from 28.5 to 35.2 mg/100 g). On this plots the available K (from 25.8 to 33.0 mg) and SOM (from 2.19 to 2.49%) contents were also increased (28.1% and 13.5%, respectively).



Graph 6: The shares of positive and negative trends in P budget on permanent plantations

Evidently, over 15 years, the management of available soil nutrients and SOM was much more successful on permanent plantations (Graph 6) than on arable land (Graph 5). Namely, only on 17.2% of the permanent plantations was determined an unjustified degradation of available P with a simultaneous increase in the content of SOM on almost all permanent plantations (96.1%) and available K (Table 2) on 78.9% of analysed permanent plantations.

Evaluation of P budget changes	% permanent plantations	phosphorus budget	potassium budget	SOM budget
<i>unjustified P degradation</i>	17.2%	(↓) -6.9 mg	(↓) -0.2 mg	(↑) +0.02%
<i>P increased unnecessary</i>	9.3%	(↑) +6.7 mg	(↑) +7.2 mg	(↑) +0.30%
<i>no changes of P</i>	9.2%	0 mg	(↑) +7.1 mg	(↑) +0.30%
<i>acceptable P decreasing</i>	3.9%	(↓) -6.3 mg	(↓) -2.6 mg	(↓) -0.14%
<i>P increased necessary</i>	60.3%	(↑) +10.5 mg	(↑) +6.9 mg	(↑) +0.32%

Table 2: The changes of K and SOM budget compared to P budget changes on permanent plantations

3.4. Interpretation of the value of unjustified P lost by reducing available P in the soil

The total amount of available phosphorus contained in the top soil layer of arable land, orchards or vineyards can be converted into euros using different mineral phosphorus prices. Table 1 shows the amounts in EUR per ha (and also for the total area of 1,838 ha of arable land or 82.3 ha of permanent plantations with unjustified available P lost) using the mineral P_2O_5 in fertilizer price range of 0.75 – 1.9 EUR/kg to convert P into EUR. This price range is comparable to mineral P prices in Croatia, which in the period from 2011 to 2022 fluctuated from 1.03 (2011) to 0.78 (2018) and 1.88 (2022) EUR/kg P_2O_5 (as average in different mineral fertilizers).

Price of mineral P_2O_5 (comparable for year in Croatia)	0.75 EUR/kg P_2O_5 (for 2018)	1.0 EUR/kg P_2O_5 (for 2011)	1.5 EUR/kg P_2O_5	1.9 EUR/kg P_2O_5 (for 2022)
Available P_2O_5 loss per ha of arable land				
Loss in 15 years in EUR/ha	179.13	238.84	358.26	453.79
Loss per year in EUR/ha	11.94	15.92	23.88	30.25
Available P_2O_5 loss on 1,838 ha of arable land				
Loss in 15 years (in EUR)	329,210.51	438,947.35	658,421.02	833,999.96
Loss per year (in EUR)	21,947.37	29,263.16	43,894.73	55,600.00
Available P_2O_5 loss per ha of permanent plantations				
Loss in 15 years in EUR/ha	219.39	292.52	438.78	555.79
Loss per year in EUR/ha	14.63	19.50	29.25	37.05
Available P_2O_5 loss on 82.3 ha of permanent plantations				
Loss in 15 years (in EUR)	18,060.90	24,081.20	36,121.80	45,754.28
Loss per year (in EUR)	1,204.06	1,605.41	2,408.12	3,050.29

Table 3: The value of unjustified P lost by decreasing available P content on arable land and plantations

Unjustified losses of phosphorus refer to the soils of arable land, orchards and vineyards which were initially poorly or moderately supplied with available phosphorus (class A, B or C soils), but still the 15 year of management resulted in a decrease in the amount of available phosphorus. By recalculating the amount of phosphorus "lost" in this way (238.8 kg/ha), we determined that annually on arable land phosphorus was lost in the amount of 11.94 – 30.25 EUR/ha (in average 20.50), depending on the price of phosphorus in mineral fertilizers (Table 3), which is 179.13 – 453.79 EUR/ha (in average 307.50 EUR/ha) in the analyzed period of 15 years, considering only phosphorus. For the analysed arable land area of 1,838 ha, the total lost value of P was 0.33 to 0.83 million euros in 15 years (according to lowest price 2018 and highest in 2022, respectively). The yearly loss of available P on analysed orchards or vineyards was 14.63-37.05 EUR/ha (in average 25.11 EUR/ha), meaning 219.39 – 555.79 EUR/ha decreased value of P in soil in 15 years.

The above values prove how important it is to stop the degradation of the phosphorus content in soils, even if we only calculate the value of the direct loss of available phosphorus, without taking into account other soil properties that accompany the soil degradation decreasing phosphorus availability.

4. CONCLUSION

There are very significant differences among arable lands and permanent plantations considering changes in available phosphorus budget during 15 years. A significant unjustified and unacceptable phosphorus decreasing was on 37.8% of analyzed arable lands which were already poor or just medium supplied with plant available phosphorus. On the other hand, on 35.7% of arable land phosphorus increasing was determined. The situation is significantly better on permanent plantation, since only on 17.2% of analyzed area unjustified and unacceptable decreasing of phosphorus budget happened, but on 60.3 % phosphorus budget was increased. At the same time, on arable land, the change in the potassium budget was in line with the trend of the phosphorus budget over 15 years, but the degradation of the SOM content was determined independent of the changes in the phosphorus budget. On the permanent plantations, on the other hand, a more positive trend of potassium budget than phosphorus was determined, with an increase in SOM content on almost all plots of permanent plantations. If we add to this the fact that the unnecessary increase in the availability of phosphorus on soils that were already rich in phosphorus was determined at 12.5% of arable land and 9.3% of orchards and vineyards, we can conclude the following: 1) fertilization is not carried out in accordance with soil fertility and nutrient needs, nor on almost 40% of orchards and vineyards, nor on more than half of arable land; 2) very significant degradation of the soil due to phosphorus impoverishment was determined on almost 38% of arable land and 17% of permanent plantations; 3) the degradation of SOM content is the most intense, followed by phosphorus, and the degradation of available potassium is the least; 4) it is certain that organic fertilizers and soil fertility conservation measures are rarely and/or ineffectively used on arable land; 5) the management of available soil nutrients and SOM content was much more successful on permanent plantations than on arable land, we assume in large part due to the more frequent and better use of organic fertilizers.

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EVALUATION OF THE INTERNATIONAL FINANCIAL AND ECONOMIC PERFORMANCE OF SMALL AND MEDIUM ENTERPRISES IN LIBYA

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ABSTRACT

This article aims to explore in Libya about the most prominent obstacles that stand in the way of applying international standards for the preparation of financial reports for small and medium enterprises in the Libyan environment. Guided by a theoretical framework formed by reading the content of previous studies. The areas of these obstacles were classified in a questionnaire sheet distributed to a soft random sample of legal auditors and faculty members in the accounting departments of a number of Libyan universities, and then they were collected and analyzed using appropriate statistical technique, and the results were drawn. which showed the existence of a number of obstacles in front of The application of these standards emerged in: obstacles related to organizing the accounting and auditing profession locally, obstacles related to the nature of the external environment and the internal environment of small and medium enterprises in Libya, and obstacles related to local accounting education.

Keywords: *Small and medium enterprises / Libya, international standards for financial reporting, obstacles to the application of international standards*

1. INTRODUCTION

Many studies indicate the importance of the role of small and medium enterprises in addressing some of the economic and social problems of countries through their role in reducing unemployment rates and employing small capital savings in a way that contributes to increasing the domestic product, and the consequent expansion of the economic base and increasing the productive skills of individuals. In this context, the work of the Libyan National Planning Council came in preparing the draft national strategy for small and medium enterprises (2017-2024)¹. Among the contents of the report of the Preparation and Development Committee is the reference to the importance of the role of professional organizations and the role of monitoring and evaluation mechanisms for small and medium enterprises as one of the basic elements influencing the business environment. As a factor in the success of the strategy - there is no doubt that the success of any project depends on the mechanisms of controlling the management of its financing, investment and operational operations, using a number of means, including the accounting and control functions - which refers us to the International Accounting Standards Board when it began, starting in 2001, to develop international standards for establishments Small and medium-sized businesses are suitable and compatible with the needs of the relevant parties, until it ended up issuing its version in 2009 and the updated version in 2017². The application of these standards, in part or in whole, or in other words, has encountered obstacles that might stand if there was a will to apply them. In the Arab environment, which is close in its conditions to the Libyan environment, some studies indicated that there are obstacles that stand in the way of applying international standards for preparing

¹ Rashid, Buxani and Al-Orabi, (2017) Obstacles to the application of international accounting standards in Algeria and ways to overcome them. An exploratory study of the opinions of practitioners of the accounting profession, Journal of Economic Studies, Issue (18).

² Albu, C., Albu, N. and Maria, A. (2017), "Implementation of IFRS for SMEs in Emerging Economies: Stakeholder Perceptions in the Czech Republic, Hungary, Romania and Turkey", Journal of International Financial Management & Accounting, 24(2): 140-175.

financial reports for small and medium enterprises. Accordingly, the importance of the article aims to show the obstacles that may limit the application of international financial reporting standards for small and medium enterprises in the Libyan environment, by exploring the point of view of a sample of legal auditors and faculty members in accounting departments in Libya. they formulated the problem in the following question: Are there obstacles that limit the application of international standards for preparing financial reports for small and medium enterprises in the Libyan environment - from they are point ?

2. THE IMPORTANCE OF THE ARTICLE

The importance of this article follows from the importance of this topic, so this article is considered a first step that will help in the future in conducting extensive studies on the obstacles to application that include the category of managers of small and medium enterprises and other related parties, and then pave the way for conducting more accurate studies that specialize in the method of dealing and dealing with each obstacle. Which is assumed to be of benefit to those who decide to adopt a program to apply these standards or when adopting a program to prepare local standards.

2.1. Scientific and professional goals of the article

This article aims to explore the trends of the most prominent obstacles that limit the application of international financial reporting standards in small and medium enterprises in the local environment in general.

3. THE GENERAL HYPOTHESES OF THE ARTICLE

In order to answer the main question of the article, a number of factors were identified that could limit the application of international financial reporting standards in small and medium enterprises - based on the results of previous studies,³ which were crystallized in four areas on which hypotheses were formulated as follows:

- 1) There are obstacles related to accounting education in the Libyan environment that limit the application of international financial reporting standards for small and medium enterprises.
- 2) There are obstacles related to the reality of regulating the accounting profession in the Libyan environment that limit the application of international standards for preparing financial reports for small enterprises.
- 3) There are obstacles related to the external business environment that limit the application of international financial reporting standards for small and medium enterprises.
- 4) There are obstacles in the internal environment of local small and medium enterprises that limit the application of international standards for the preparation of financial reports for small and medium enterprises.

3.1. Data analysis and hypothesis testing

A five-point Likert scale was used to estimate the degree of respondents' response to the questionnaire, with scores ranging from 1 to 5, ranging from "strongly disagree" to "strongly agree" and a weight was given to each answer.

Strongly Disagree	Not Agree	Neutral	I Agree	Strongly Agree
1	2	3	4	5

Table 1: A five-point Likert

³ Swaidan, Michel Qaqish, (2018) The suitability of international financial reporting standards for small and medium enterprises for application in Jordan, The Jordanian Journal of Business Administration, Volume 14, Issue 2, pp. 260-239

If the average answer is (3), then it indicates the answer about the phrase expresses neutrality, and if it is greater than (3), then it indicates that the answer was in agreement, but if the average answer is less than (3), then this indicates that the answer was with objection. Accordingly, it will be tested whether the average score of the answer differs from (3) or not. After coding the answers and entering the data into the ready-made software package SPSS Statistical (Package for Social Science), then using appropriate statistical methods to analyze the data and test the hypotheses. The collected data was divided into two parts when analyzed as follows:

The first section: in which the characteristics of the study sample are identified by collecting data related to the factors (experience, academic qualification, academic degree, participation in scientific conferences on standards, the extent of familiarity with international standards), and the results were as shown in the following table:

Experience (years)	Less than 5	From 5 - less than 10	From 10 to less than 15	Over 15
Number of members(62)	8	16	13	25
The ratio is out of 100	12.9	25.8	21.0	40.3
Academic qualification	Bachelor's degree	Master's	Ph.D.	
Number of members (62)	10	32	20	
The ratio is out of 100	16.1	51.6	32.3	

Table 2: Study sample characteristics

Scientific Degree	Assistant Lecturer	Lecturer	Assistant Professor	Associate Professor	Professor	Professional s
Number of members(62)	11	18	8	1	2	22
The ratio is out of 100	17.7	29.0	12.9	1.6	3.2	35.5
Participation in scientific conferences on standards			Familiarity with international standards			
Answer / level	No	Yes	Weak	Good	Very Good	Full Familiarity
Number of members (62)	48	14	11	40	8	3
The ratio is out of 100	77.4	22.6	17.7	64.5	12.9	4.8

Table 3: The study sample characteristics

(Obstacles to applying international financial reporting standards for small and medium enterprises in Libya (a prospective study))

It is clear from Table No. (2) that (87.1%) of the participants have five years or more of experience in their field of work, and (83.9%) of the participants hold a master's degree or more. As for the level of knowledge of international standards, it constituted (82.2%). of the respondents who estimated their level of knowledge from good to complete knowledge. These aforementioned percentages enhance the level of confidence in the answers⁴. Holders of an academic degree constituted (64.5%), while professionals "accountant and certified auditor" constituted (35.5%) of the respondents, so that the answers reflect the academic and practical point of view. Despite this, the level of participation in international conferences on international standards was a modest rate of (22.6%). From the foregoing, it is seen that it is possible to rely on the answers of the respondents and generalize them to the study community and take the results thereof.

⁴ Ishmela, Milad. R (2020), Users' Perceptions of Annual Financial Reports in the Libyan Environment, Unpublished PhD thesis, The University of Liverpool John Moores.

4. HYPOTHESIS TESTING

In this section, the questions included in the questionnaire were analyzed and the hypotheses of the article were tested, which were formulated into four hypotheses as follows:

- *The first hypothesis:* There are obstacles related to accounting education in the Libyan environment that limit the application of international financial reporting standards for small and medium enterprises.

The respondents were asked about a set of factors related to accounting education related to the accounting standard in order to ask their opinions as to whether these factors constitute obstacles to the application of international financial reporting standards for small and medium enterprises or not. And by using the Wilcoxon test about the hypothetical average of the axis of the first hypothesis test, the results were as in Table No. (4) Following / Wilcoxon test results about the existence of obstacles related to accounting education in the Libyan environment that limit the application of international financial reporting standards for small and medium enterprises.

OBSTACLES		Average	Test Statistic	P- Value	Arrange ment	Resolution Around
1	International standards do not receive enough attention in the curricular plans of accounting departments in Libyan universities.	4.31	6.313	0.000	2	Consent
2	The academic staff is not sufficiently interested in directing student research towards international standards.	4.03	5.660	0.000	5	Consent
3	Faculty members do not conduct discussions with students regarding international standards.	4.32	6.542	0.000	1	Consent
4	There is a shortage of international books of international standards in university libraries.	3.98	5.528	0.000	7	Consent
5	There is not enough interest among Libyan researchers in the issue of adopting international standards.	3.79	4.978	0.000	8	Consent
6	International standards do not have a sufficient share in the content of publications of scientific booklets and publications – locally.	4.18	6.388	0.000	3	Consent
7	Domestically, the issue of seeking to apply international standards is not attended by scientific symposiums and conferences necessary to raise awareness of their importance and to approach their implementation.	4.13	6.327	0.000	4	Consent
8	There is a weakness in the level of participation of Libyan researchers in international seminars and conferences on international standards.	4.02	5.680	0.000	6	Consent
Total marks		4.09	6.743	0.000	consent	

*Table 4: the results of the Wilcoxon test on the obstacles related to accounting education in the Libyan environment that limit the application of international standards in small and medium enterprises⁵.
(Journal of Economic and Political Sciences (2021))*

⁵ Financial Accounting Standard Board (2021), Journal of Economic and Political Sciences Statement of Financial Accounting Concepts No. 1: Objectives of Financial Reporting by Business Enterprises, available at: www.fasb.org/pdf/aop_CON1.pdf

It is noted from the results presented in Table (4) that all the expressions of the axis obtained an arithmetic mean higher than 3 with fluctuating degrees between (4.32 - 3.79) and a total average score of (4.09) with a significant level of observations less than (0.05), Which indicates that the participants agree There are a number of obstacles related to accounting education in the Libyan environment that limit the application of international financial reporting standards for small and medium enterprises. It is topped by the first and third paragraphs, i.e. the standards aren't given attention in seminars, as well as in methodological plans, student research, and local scientific publications, with an average approval rating of (4.31 - 4.32), Followed by the sixth and seventh paragraphs related to the fact that international standards don't have a sufficient share in the content of publications of manuals and scientific publications - Locally - and the fact that the issue of striving towards the application of international standards doesn't receive the seminars and scientific conferences necessary to raise awareness of its importance and approach its application, with an average approval rating of (4.13 - 4.18). In view of the value of the observed level of significance (P - Value = 0.000) corresponding to the arithmetic mean of the entire first axis (4.09), it can be said that the participants in the study don't respond impartially to the statements of the second axis, meaning that the average is significantly different from (3). Looking at the arithmetic average of the total editor, we find that it is (4.09), which means that the participants agree with the first hypothesis, which states that "there are obstacles related to accounting education in the Libyan environment that limit the application of international financial reporting standards for small and medium enterprises. It can be said that In general, the agreement of the results of this axis with the findings of the study of Boksani. In 2017 in Algeria is that the discrepancy between what is taught in universities and what is applied in the reality of the accounting profession is considered one of the obstacles that limit the application of international accounting standards.

- *The second hypothesis:* "There are obstacles related to the reality of regulating the accounting profession in the Libyan environment that limit the application of international standards for preparing financial reports for small and medium enterprises.

A questionnaire was developed for the respondents about a set of factors affecting the application of accounting standards and related to the organization of the accounting profession in the Libyan environment to find out their opinions about whether these factors constitute obstacles to the application of international financial reporting standards for small and medium enterprises or not. And using the Wilcoxon test around the hypothetical mean of the axis of the second hypothesis test, the results were as shown in Table (5).

Table following on the next page

OBSTACLES		Average	Test Statistic	P-Value	Arrangement	Resolution Around
1	There aren't enough "professional" qualifications for the Libyan accountant in a way that allows the process of applying international standards.	3.22	1.656	0.140	7	Neutrality
2	There isn't enough professional experience for Libyan accountants to apply international standards in an appropriate manner.	3.37	2.740	0.010	6	Consent
3	The reality of regulating the accounting profession in Libya doesn't help to adopt international standards.	3.83	5.191	0.000	3	Consent
4	The Libyan Association of Accountants isn't interested in developing a program aimed at adopting international standards.	4.08	5.886	0.000	1	Consent
5	The Libyan Accountants Association lacks the necessary ingredients to prepare and implement a program to adopt and implement international standards.	3.94	5.349	0.000	2	Consent
6	There is a lack of qualified accounting cadres to give professional courses according to international standards, which leads to obstruction of their application.	3.71	4.467	0.000	4	Consent
7	It is difficult for accountants and auditors to determine the cost and benefit of each particular application to the organization.	3.46	3.514	0.000	5	Consent
Total marks		3.67	5.586	0.000	consent	

*Table 5: Results of the Wilcoxon test on the obstacles related to the organization of professionalism in the Libyan environment that limit the application of international standards in small and medium enterprises⁶.
(Journal of Economic and Political Sciences (2021))*

It is noted from the results presented in Table (5) above. Six out of seven expressions of the axis attained a significant level of less than (0.05), with an arithmetic mean higher than 3, with degrees falling between (4.08 - 3.37), which indicates that the participants agree that there are a number of obstacles related to the organization of the profession in the Libyan environment. It limits the international standards for preparing financial reports for small and medium enterprises, the most prominent of which was represented in the role of the Accountants Syndicate and its lack of interest in developing a program aimed at adopting the international standards for preparing financial reports for small and medium enterprises in the Libyan environment with an approval rating of (4.08), and the respondents expressed that the union lacks the elements necessary to approve the program with an approval rating of (3.94), with the fact that the profession is regulated locally doesn't help to adopt these standards with an approval rating of (3.83). The respondents also expressed, with degrees of agreement between (3.71 - 3.37), their opinion about the lack of elements of available experience and qualified cadres in giving professional courses that are necessary for them to be available in the process of applying the standards, but it is noted that they have reservations about the phrase "lack of professional qualifications" for the Libyan accountant in the form Which allows the process of applying international standards through an average of (3.22) responses, but with a viewer's morale level (0.140) greater than (0.050), which made the final result of the decision recorded as impartiality for this phrase, and as a trend that needs more research to define it accurately and justify it. In view of the value of the observed level of significance (P -Value =0.000) corresponding to the arithmetic mean of the entire second axis, it can be said that the participants in the study don't respond impartially to the statements of the axis, that is, the mean differs significantly from (3).

⁶ Financial Accounting Standard Board (2021), Journal of Economic and Political Sciences Statement of Financial Accounting Concepts No. 1: Objectives of Financial Reporting by Business Enterprises, available at: www.fasb.org/pdf/aop_CON1.pdf

Looking at the arithmetic mean of the total axis, we find that it is (3.67), which means that the participants in the study agree with the second hypothesis, which states that there are obstacles related to the reality of organizing the profession in the Libyan environment that limit the application of international standards for preparing financial reports for small and medium enterprises.

- *The third hypothesis:* "There are obstacles related to the external business environment that limit the application of international financial reporting standards for small and medium enterprises locally."

A questionnaire was developed for the respondents about a group of factors related to the external environment of business in the Libyan reality that affect the application of accounting standards in order to question their opinions as to whether these factors limit the application of international financial reporting standards for small and medium enterprises locally or not. And using the Wilcoxon test around the hypothetical mean of the axis of the third hypothesis test, the results were as shown in Table (6).

OBSTACLES		Average	Test Statistic	P-Value	Arrangement	Resolution Around
1	Standards commensurate with the work environment of small and medium enterprises in developed countries more than in developing countries.	3.68	4.994	0.000	3	Consent
2	Computer accounting programs in Libya aren't compatible with the commitment to apply international standards.	3.18	1.415	0.157	6	Neutrality
3	The application of international standards contradicts the legal legislation in Libya in a way that cannot be addressed with limited amendments.	3.05	1.495	0.621	9	Neutrality
4	Tax laws contradict what is adopted by international standards for small and medium enterprises.	3.08	1.705	0.481	8	Neutrality
5	The lack of a stock market limits interest in international standards.	3.79	4.736	0.000	2	Consent
6	The diversity of the nature of work of small and medium enterprises in Libya makes it difficult to commit them to international standards.	3.13	1.091	0.275	7	Neutrality
7	The cost of applying and adhering to international standards results in a cost to local facilities that is greater than its benefit.	3.18	1.394	0.163	5	Neutrality
8	The cost of applying and adhering to international standards (for the first time) results in a cost to the facilities that is greater than they can bear.	3.35	2.792	0.005	4	Consent
9	There isn't enough interest from Libyan SME business incubators to push for the adoption of international standards.	3.84	5.279	0.000	1	Consent
Total marks		3.36	4.000	0.000	consent	

*Table 6: The results of the Wilcoxon test on the existence of obstacles related to the internal environment of these facilities that limit the application of international standards⁷.
(Journal of Economic and Political Sciences (2021))*

⁷ Financial Accounting Standard Board (2021), Journal of Economic and Political Sciences Statement of Financial Accounting Concepts No. 2: Qualitative Characteristics of Accounting Information, available at: www.fasb.org/pdf/aop_CON1.pdf

It is noted from the results presented in Table (6) that four out of nine expressions of the axis had a significant level of less than (0.05) with an average higher than (3) with scores ranging between (3.84 - 3.35), which indicates that the participants agree that there are a number of obstacles related to The local business environment limits the application of international financial reporting standards for small and medium enterprises. In general, it was represented in the lack of interest in regulating the small and medium business environment, and the cost of applying standards for the first time. While the answers for the remaining five phrases varied out of nine average answers located between (3.18 - 3.05) and with a significant level greater than (0.05) for each of them, which led to a final result recorded as neutral, which was related to the type of business establishment, the types of accounting practices in it and the relevant legal legislation, i.e. The total number of respondents were not certain that they are factors that constitute obstacles that limit the application of international financial reporting standards for small and medium enterprises locally, which calls for further scrutiny and research in this aspect to clarify it and show its reasons. When looking at the value of the arithmetic mean for the entire axis (3.36) and the level of significance observed for it (P - Value =0.000), it can be said that the third hypothesis is accepted, which states that there are a number of obstacles related to the reality of the Libyan business environment that limit the application of international standards for preparing financial reports for small and medium enterprises.

- *The fourth hypothesis:* “There are obstacles related to the internal environment of local small and medium enterprises that limit the application of international standards for the preparation of financial reports for small and medium enterprises.

A questionnaire was developed for the respondents about a group of factors related to the internal environment of small and medium enterprises in the Libyan reality that affect the application of accounting standards in order to determine their opinions as to whether these factors limit the application of international financial reporting standards for small and medium enterprises locally or not. And using the Wilcoxon test around the hypothetical mean of the axis of the fourth hypothesis test, the results are in Table (7):

Table following on the next page

OBSTACLES		Average	Test Statistic	P-Value	Arrangement	Resolution Around
1	The form and quality of using financial analysis in decision-making in Libyan small and medium enterprises hinders the application of international standards.	3.34	2.565	0.010	7	Consent
2	The nature and size of financial work in Libyan small and medium-sized companies hinders the application of international standards.	3.26	2.194	0.028	8	Consent
3	The cost of training financial department staff to be able to deal with the standards hinders their application.	3.03	0.278	0.781	9	Neutrality
4	There is a lack of understanding among the managements of Libyan small and medium-sized companies of the importance of applying standards in a way that contributes to hindering their application.	4.03	6.177	0.000	4	Consent
5	The form and characteristics of internal control systems in Libyan small and medium-sized companies hinder the process of compliance with standards.	3.55	4.3	0.000	6	Consent
6	The form and quality of disclosure in Libyan small and medium-sized companies hinders compliance with standards.	3.66	4.899	0.000	5	Consent
7	One of the obstacles is the lack of conviction among the managements of Libyan small and medium-sized companies of the importance of applying standards.	4.15	6.569	0.000	1	Consent
8	The absence of governmental models for family enterprises locally hinders the process of adopting standards.	4.13	6.242	0.000	2	Consent
9	The lack of separation between ownership and management in Libyan small and medium enterprises impedes the application of international standards.	4.05	5.725	0.000	3	Consent
Total marks		3.69	6.311	0.000	consent	

Table 7: Wilcoxon test results on the existence of obstacles related to the internal environment of those facilities that limit the application of international standards⁸ (Journal of Economic and Political Sciences (2021))

It is noted from the results presented in Table (7) above that eight out of nine expressions of the axis had a significant level of less than (0.05) with an arithmetic mean higher than (3) with scores ranging between (4.15 - 3.25), which indicates that the participants agree that there is A number of obstacles related to the internal environment of these establishments that limit the application of international financial reporting standards for small and medium enterprises locally. Foremost among them were the convictions of the managers of these establishments about the standards and the absence of governmental models for family enterprises with degrees of approval (4.13 - 4.15), followed by factors related to the lack of separation between ownership and management. In the Libyan small and medium enterprises, and the nature and size of the financial work within those facilities and the nature of accounting practices within

⁸ Financial Accounting Standard Board (2021), Journal of Economic and Political Sciences Statement of Financial Accounting Concepts No. 2: Qualitative Characteristics of Accounting Information, available at: www.fasb.org/pdf/aop_CON1.pdf

them with degrees of agreement between (3.26 - 4.05). While the respondents in the current study were not certain that "the cost of training the employees of the financial department to be able to deal with the international standards for preparing financial reports for small and medium enterprises" is an obstacle to its application by noting that the expression obtained an average of (3.03) and a significant level greater than (0.05). In view of the value of the arithmetic mean for the entire fourth axis (3.69) and the level of significance observed for it (P-Value=0.000), it is possible to accept the verification of the wonderful hypothesis that there are obstacles related to the internal environment of those enterprises that limit the application of international financial reporting standards for small and medium enterprises.

5. RESULTS

Through the previous analysis of the data, it can be said that there are obstacles that limit the application of international financial reporting standards in small and medium enterprises in the Libyan environment. The following is a summary of the most important results:

- 1) The factors related to the axis of accounting education in the Libyan environment came in the first order of obstacles that limit the application of international standards for the preparation of financial reports for small and medium enterprises, topped by the factors of poor attendance or perhaps the absence of standards in discussion circles between faculty members with students, as well as their lack of sufficient interest in the methodological plans of accounting departments in Libyan universities.
- 2) Factors related to the reality of regulating the accounting profession in the Libyan environment were solved secondly as obstacles that limit the application of international standards for preparing financial reports for small and medium enterprises. After the respondents expressed the absence of elements and the lack of interest of the Libyan Accountants Syndicate in developing a program aimed at adopting these standards and training on them.
- 3) There are obstacles related to the internal environment of local small and medium enterprises that limit the application of international standards for the preparation of financial reports for small and medium enterprises in them.. The most important of which is the lack of conviction of the managers of Libyan small and medium enterprises of the importance of applying these standards, and the nature of small and medium enterprises in Libya in terms of organizing ownership and management and its internal administrative organization.
- 4) Finally resolved the axis of obstacles related to the external business environment that limits the application of international financial reporting standards for small and medium-sized enterprises locally, and the factor of lack of sufficient interest from Libyan small and medium-sized enterprises incubators in pushing for the adoption of international standards emerged.
- 5) There are reservations about the fact that the phrases related to the type of business establishments, the types of accounting practices in them, the relevant legal legislation and the professional qualifications of the Libyan accountant are obstacles that limit the application of international standards for small and medium enterprises.

6. RECOMMENDATIONS

Enhancing the presence of standards locally as part of the methodological plans and student research and raising the level of local and international scientific participation may help push the new generation of practitioners towards preparing a program for applying standards.

- Bulletins and specialized courses on international financial reporting standards for small and medium enterprises for those with professional qualifications should be part of the continuing education process for professionals.

- Working on governmental models for small and medium enterprises, and influencing the convictions of the owners of these institutions about the importance of accounting standards and their role in enhancing the qualitative characteristics of accounting information, which is positively reflected in the internal work environment and in their institutions' dealings with external parties.
- There is a need for more research on the types of accounting practices and legal legislation related to the profession in order to classify what helps the application of standards and what prevents it.
- Listing and classifying Libyan business establishments in terms of size and type of activity, and studying what may constitute obstacles that limit the application of international standards for small and medium enterprises.

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HISTORICAL ASPECT AND IMPACT OF FAKE NEWS ON BUSINESS IN VARIOUS INDUSTRIES

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ABSTRACT

In our research, we examine the effect of the type of financial information and the types of non-financial information, with the characteristics of overconfidence on investment decision-making. We used a model of social media networks that offer two types of news content: mass market (mainstream) and niche market (biased or "extreme" news), and two different types of people who prefer to recommend one or the other type of content. The most common occurrence of fake news is the combination of social networks and mainstream media to damage the image, which leads to a decrease in sales. We summarize the histological aspect of fake news in business, it helps to avoid higher investment risks and improve the accuracy of stock market predictions. The main s the need to become familiar with the future creation of preventive security policies related to fake news and their impacts, which need to be further investigated in the future.

Keywords: *Historical aspect, the impact of fake news, business, Various industries*

1. INTRODUCTION

In the modern world, it is necessary for the company to present itself in the online world. Presentations of companies from small companies providing basic services such as a barber shop to large multinational companies that bring together companies with thousands of employees from various industries. The starting history point's perspective and today's time are based on a combined model of social media networks that offer two types of news content: mass market (mainstream) and niche market (biased or "extreme" news) and two different types of people who prefer to recommend one or the other type of content. In our research, we examine the effect of the type of financial information and the types of non-financial information, with the characteristics of overconfidence on investment decision-making. The first part is the individual websites of companies, which are often not subject to fake news, as they are managed by the companies themselves. The second part is the company profiles on social media, where various forms of antisocial behavior occur more often. In the form of comments on individual statuses or different statuses marked with the company in question. The worst messages come from other users, where the company is only marked with text.

Examples of groups on social networks can be seen in the work [33, 35], where various forms of anti-social behavior are directed against companies, nationalities, and in general, against the economies of entire states, up to personal attacks on individual political representatives. The creation of a hostile atmosphere of citizens toward political representatives creates a growing resistance to the implementation of individual regulations. If the nation's leadership supports individual groups of companies through measures, such steps appear as hostile acts in the eyes of the manipulated population and may lead to the weakening of the position of individual companies and their representatives. Regardless of the intended target. In our work, we will divide the industry according to the definition of the Encyclopedia Britannica [29], which divides the industry into primary, secondary, and tertiary.

2. PAPER ORGANIZATION

The work is organized into the following research units:

- Section III Historical aspect of antisocial behavior with a summary of and understanding aspects of antisocial behavior through the perspective of individual periods.
- Section IV Primary industry explores various industries that have their starting point in the primary sector.
- Section V Secondary industry deals with a part of the industry sector that includes all industries and the consumption of companies from the primary industry.
- Section VI Tertiary industry deals with research related to service industries and manufacturing industries such as food production.
- Section VII Other industries within this section, other types of industries and news industries are explored.
- Section VIII Results and discussion initiate future discussion and the results we encountered during the research.
- Section IX Conclusion contains information about the company's image and social networks' influence on specific related to fake news.

2.1. Materials and Methods

Research methods and materials were collected using research questions. The research is focused on non-numerical data and collecting different ideas and opinions across different industries considering the historical aspect.

2.2. Research Questions

- 1) How did fake news affect different types of businesses?
- 2) Why is the share of fake news constantly increasing?
- 3) How is it possible to minimize the impact of fake news on the company's good reputation?

3. HISTORICAL ASPECT OF ANTISOCIAL BEHAVIOR

It is necessary to look at the concept of antisocial behavior historically from the perspective of individual periods. While in the past some forms of antisocial behavior were basically acceptable by most of society, nowadays that particular behavior may no longer be acceptable. To do this, it is necessary to define individual forms of antisocial behavior, their interconnectedness, and distances on a simple mental map, as they did in the work [17]. If we look closely at fake news, we will see that it is close to manipulations and other forms of wholly or partially fabricated news. From that point of view, different authors can include largely different behavior under the term fake news, and, generally, this issue does not have clearly defined boundaries. New forms of such behavior are emerging even now, e.g., sadfishing. Which, on the other hand, belongs more to a kind of description of behavior.

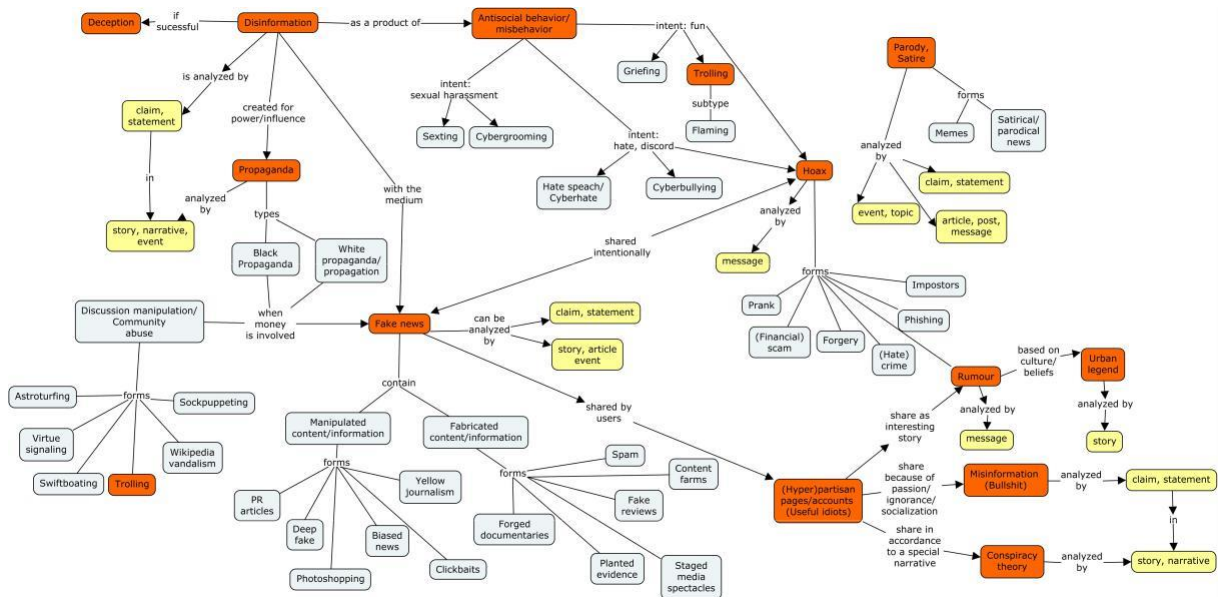


Figure 1: Antisocial behavior diagram
(Source: [17])

The label "fake news" according to [13] can be divided into the following subgroups:

Satire	Parody	Fabrication
Manipulation	Advertising	Propaganda

Table 1: Distribution of fake news
(Source: [13])

The work [11] divides fake news into 8 subgroups and complements their characteristics of authenticity, intention, and reporting.

	Authenticity	Intention	Reported as News
Satires and Parodies	False	Not Bad	No
Rumors	Unknown	Unknown	Unknown
Conspiracy Theories	Unknown	Unknown	No
Spam	Possibly True	Bad/Advertising	No
Scams and Hoaxes	False	Not Bad	No
Clickbait	Possibly True	Advertising	No
Disinformation	False	Unknown	Unknown
Misinformation	False	Bad	Unknown

Table 2: Fake news-related terms and concepts
(Source: [11])

An example of the spread of fake news is the news that originated and spread through social networks [21] such as Twitter about an explosion and fire at the Columbian Birla Carbon chemical plant near Centerville, Louisiana. At first, it was spread by SMS message to selected users. Later, the news started spreading on social networks. The damage could no longer be saved even if it was found to be fake news and the report was refuted. The result was a drop in the price of the company's shares and the hostile mood of the population living in the vicinity.

The "Society for Indecency to Naked Animals" [2] initiative, founded in 1959 for fun by this movement, is very well known. [18] investigates the influence of fake news on the movements of stocks on the stock exchange and thus tries to reduce investment risk and improve the accuracy of stock market forecasts. [24] The aim was to find out if there is a different judgment (and if so, as far as these differences can be quantified) between an investor who received good news followed by bad news and an investor who received bad news and had different judgments. Next, they tested how the order of good news information in sequential and late sequential disclosure using the type of financial information and the type of non-financial information and overconfidence characteristics affects investor behavior in making investment decisions. [8] analyzes the issue of information in the business press and the influence of financial information on the motivation of traders to execute trades of different volumes. Every message, true or false, is reflected in the motivation. The social network models used included two types of news content: mass market (mainstream) and niche market (biased or "extreme" news) and the types of people who prefer to recommend one type of content or the other. A problem has been identified that needs to be solved by subsequent development [6]. The [16] researchers set out to thoroughly analyze the synergistic effects between governments, universities, and industry. In combination with their impact on innovations in the corporate sphere of individual entities. The results could also be influenced by local specifics, as they were carried out in a limited area [27]. Another possible element is the truth of the messages entering into these synergistic effects. The impact of various data such as geographic complexity, corporate structure, and business lines in a Spanish banking group was addressed in [4] combined with confidential data. During the research, the participants did not have to know whether the information was reliable. Using different lexical projections to test different indicators of stock response [38] aims to answer the following research question: (i) Are lexicons consistent in their analytical capabilities? [31] offers a basis for misinformation and cyber risks aimed at business managers and leaders from all industries, organizations, and countries. Other influential works include [20].

4. PRIMARY INDUSTRY

Primary industry, as its name suggests, is of essential importance for the daily functioning and progress of a country. These industry sector itself can be explained in more detail through the combination of economic units that include agriculture, mining, forestry, digging/mining of minerals and stone, and fish farming. The structure of the primary industry is shown in Figure 2. All of these industries are marked with the corresponding numbers shown in the figure below.

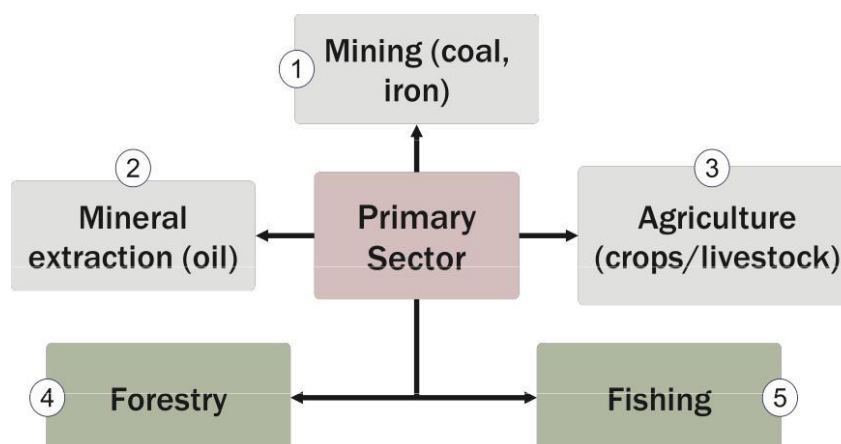


Figure 2: Organization of the Primary Industry
(Source: adjusted based on source [32])

Little attention is paid here to the sources of investment funds and the determinants of investment decisions [9, 10]. An attempt is also made to describe long-term trends in the rate and structure of capital accumulation and to outline the broad economic, institutional and historical factors that affect the rate and growth pattern of capital formation in agriculture and industry [14]. For example, in the USA in Alabama, the state used property tax abatements extensively to recruit the pulp and paper industry that became the foundation of the state's economy. Their aim was to evaluate the tax abatement policy and its impact on local public education from the perspectives of key local leaders [22]. Although tax incentives influenced individual companies' decisions to locate in particular communities, abundant wood, water, labor, and transportation resources were the main factors attracting the industry to the south. The development of the cultural industry is an important symbol of the development of a province and a city, but also an important embodiment of its cohesion and creativity. In view of the present situation of Hebei Province, (Hebei is a northern Chinese province near Beijing) [37] analyze the strengths (S) of the county in the characteristic cultural weaknesses (W) of Hebei Province and the opportunities (O) and threats (T), deepening people's understanding of the development of cultural resources. The objective of [12] is to provide a more advanced understanding of the underlying processes that contribute to the spread of rumors related to health and beauty and of the mechanisms that can mitigate the risks associated with the diffusion of fake news. The mining industry is the main source of revenue for the state. The legal instrument that governs the mining industry in Indonesia is Law No. 4 of 2009 on Minerals and Coal. Unfortunately, the existence of the mining industry in various regions in Indonesia, especially open-pit coal mining industries, raises multiple problems, one of which is related to the aspect of environmental law [26]. Research through the legislative approach, the conceptual and analytical approaches can change environmental law, which is expected to be a tool to protect the environment from various negative impacts of business activities and from citizens who lack awareness of the environment, to guarantee the sustainability of environmental functions.

5. SECONDARY INDUSTRY

In economic theory, the secondary industry sector includes all industries that consume the output of the primary industry firms. Therefore, it uses the products of the primary industry as inputs to create its outputs in the form of individual products. At first glance, it might appear that these types of businesses are not influenced by fake news. However, the opposite is true, and individual companies hire people within their PR departments to create and disseminate such information as, for example, reported [19, 28]. This practice is becoming more common with the massive expansion of the company's image in combination with social networks on which even fake news spreads at great speed. This leads to considerable economic damage, not only direct but also consequential. For example, by reducing trust in the products of such a damaged company. Even about the safety of health and life in connection with their use. This creates additional costs that could be used in other places within the company. A well-known case is when a fake video recording of Tesla's autonomous vehicle collided with a robot [5]. The video went viral after it was shared by a user on Twitter. Although it was found that the video in question was a forgery. An important note is that at that time the company did not yet have such an autonomous car. Citizens thus began to fear autonomous cars, and thus there was a noticeable drop in the value of the company's shares. This decrease was quantified by the researchers in [30] and displayed graphically for better clarity. In Delhi, India [7], as in other parts of the country, consumers protested against traders who allegedly sold salt at high prices. During the protest, property was also destroyed and people were arrested.

6. TERTIARY INDUSTRY

This sector includes service industries. For example, the food industry has experienced its own manifestations of antisocial behavior, fake news, or even conspiracy theories. This was the event that became known as "Pizzagate" [36]. In 2016, for the presidential elections in the USA, the email account of the campaign chairman of candidate Hillary Clinton was hacked, parts of which were made public. The authenticity of all emails was questionable, some could have been altered or completely fake. Representatives of this fake news report claimed that the leaked messages contain coded messages about contacts with members of the Democratic Party, American restaurants, and their cooperation in human trafficking and sexual relations with children. The representatives of this report tried to investigate the case, and so one man even burst into the restaurant with a gun in his hand and demanded non-existent evidence. Therefore, he caused damage to the reputation of the restaurant and economic damage, as customers were afraid to visit it. Another case is fake news written in Chinese about the fact that employees of a restaurant in Richmond are infected with the Covid-19 virus [34]. Even if this information was not based on the truth, people started to avoid the restaurant. Many people canceled their reservations, causing a significant decrease in profits. Fake news does not have to mean only negative advertising for the company. On the contrary, they can also provide an advantage over the competition. We can see such a sample, for example, on the often-mentioned superfoods. Most often, the first experience with such a campaign is cited as a series of advertisements by The United Fruit Company (UFCo), which promoted bananas. The company has created an impression in the country that the bananas it imports are a cure for almost everything. Although it was largely fake news, according to [25], the campaign had favorable economic consequences for Latin American countries, and by 1905 bananas accounted for a larger percentage of Costa Rica's exports than coffee.

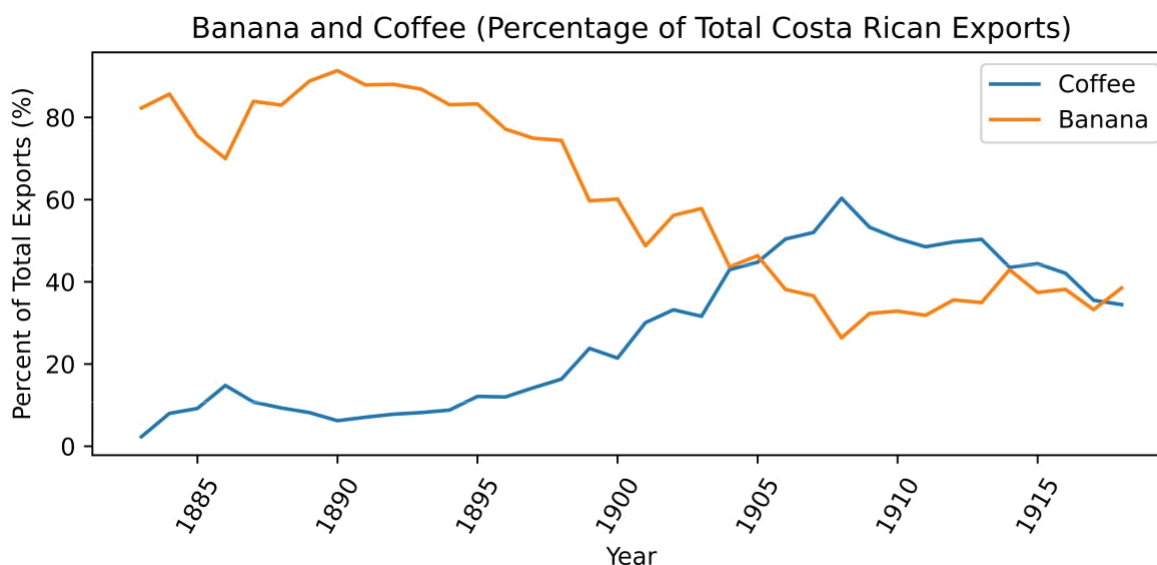


Figure 3: *Banana and Coffee (Percentage of Total Costa Rican Exports)*
(Source: [25])

An important service sector is healthcare care, which narrows down the same problems as manufacturing companies. In this area, a significant amount of information is generated, which constitutes critical information. Residents are very sensitive to the leakage or misuse of this sensitive information, which is why this issue is closely monitored in the health sector.

A less harmful case was the case of Pet Rock [1], where a clever marketer created a literal frenzy and, from a simple conversation with friends, was able to create a product that earned him millions. Instead of a pet, such as a dog or a cat, that needed to be taken care of, he sent stones to people. They did not need to be taken care of, and when Gary Dahl added a booklet on how to take care of your pets with funny information, he had a sales hit.

7. OTHER INDUSTRIES

This type includes all other types not included in the previous section. Traditionally, this is intelligence information used by secret services. In general, this type is referred to as the "news industry". Already in 1922, the journalist Walter Lippmann [23], who worked for the ministry, was amazed at how quickly people could change their minds. Under the influence of various reports, which were largely fabricated, it was easy to direct the opinion of the population by means of emotional manipulation. As a lesson from the past, we could take the case of the attack on the radio station in the German town of Gleiwitz (now part of Poland). German soldiers in Polish uniform raided the station [3, 15] and broadcast information about hostility against the German-speaking population. As evidence, several Polish prisoners from concentration camps were executed and left at the scene of the ambush.

8. RESULTS AND DISCUSSION

Based on the research conducted, we can draw one question for further discussion within this area: How many companies are aware of this problem and have formed teams to defend their public reputation?

Based on our defined questions, we managed to obtain the following:

- RQ1: We learned the impacts of different types of fake news on the sectors of the economy. We have seen that no industry or field is sufficiently protected and has sufficient knowledge and experience in defending against this type of attack.
- RQ2: The share of fake news increases with the increasing percentage of penetration of the Internet and social networks into our daily lives. The scope also increases due to the uncritical taking of information from social media and their use as the only source of information.
- RQ3: Based on research, we have come to the knowledge that the best method is to collect information and respond in a timely manner. What we can do to minimize the impact of fake news is to establish different internal strategies that deal with this area of prevention of damage to public reputation.

9. CONCLUSION

The development of the industry is a symbol of the successful development of the province and the city, establishing certain symbols and recognition marks based on the products produced. During the research, we saw that the main purpose of providing an advanced understanding of the creativity of the manufacturing industry is to create cohesion between other manufacturers and users as end customers. The main purpose of all production processes is to achieve basic interests that ensure certain contributions to the protection of health and quality of human life. Another very important aspect nowadays, which we manage to see is mitigating rumors and fake news, applying certain mechanisms that can mitigate the risks associated with the spread of disinformation and targeted attacks on companies or individuals. We managed to see that the most frequent occurrences of fake news are manifested in a combination of social networks and regular media with the aim of damaging the image of companies, which ultimately leads to a decrease in sales and injuries on the part of end customers.

All this together requires additional efforts from companies to establish clear preventive measures, with the help of which they could partially or fully protect the reputation of their product and company. The main conclusion is the need to become familiar with the future creation of preventive security policies related to fake news and its effects, which must be further investigated in the future.

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IMPACT OF ARTIFICIAL INTELLIGENCE ON EMPLOYEE MENTAL HEALTH, PRODUCTIVITY, AND OVERALL ECONOMIC GROWTH

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ABSTRACT

More and more companies are implementing programs based on artificial intelligence for daily tasks and operations. With the introduction of the ChatGPT chatbot, digital tools powered by artificial intelligence became free and easy-to-use to millions of people, and thus an everyday buzzword. The purpose of the study was to detect what kind of effect the use of these programs will have primarily on the employee's mental health, their productivity, and then on the world economic growth. The paper will answer the following questions: What is the correlation between employees' mental health and productivity? How does the productivity of an employee affect economic growth? Can Artificial Intelligence boost the mental health and productivity of an employee and therefore affect economic growth? The main focus of the paper is to determine if there is a positive correlation between artificial intelligence, employee mental health, productivity, and economic growth. The method used was the literature review as a systematic way of collecting and synthesizing previous research. The goal was to create an effective review in order to advance knowledge and facilitate the development of theoretical perspectives of artificial intelligence by collecting relevant, previously published research data and thus giving an overview of current thinking on the topic. Integration of findings and different perspectives to findings leads to more conclusions than usage of the one case study or research. Paper findings are that the good mental health of an employee increases their productivity, and increased productivity leads to increased economic growth, and tools powered by artificial intelligence can boost employees' mental health and productivity, which then has a beneficial impact on economic growth. From these correlations, we can see the benefits of the implementation of artificial intelligence solutions and why they will be one of the pillars of the modern workplace. In order to develop this paper further, we suggest analyzing the impact of artificial intelligence in different industries such as healthcare, data science, marketing, web development, and education in terms of productivity and economic growth when there will be more data on the long-term benefits of artificial intelligence.

Keywords: artificial intelligence, economic growth, impact, mental health, productivity

1. INTRODUCTION

With the introduction of ChatGPT (chatbot powered by artificial intelligence) last year, artificial intelligence has not just become an everyday buzzword, but it become accessible to millions of people worldwide. "Artificial intelligence is a field of computer science and engineering that is concerned with the creation of intelligent agents, which are systems that can perceive their environment, reason about it, and take actions to achieve specific goals." (Russell & Norvig, 2010) In the 21st century, AI-powered tools have become widespread in multiple industries, ranging from marketing and sales to engineering and medicine. Numerous studies are showing that there might be a link between artificial intelligence and productivity. A study published in the Journal of Marketing showed that AI-powered marketing tools could improve the efficiency and effectiveness of marketing campaigns.

The study found that AI could help marketers to better target their advertising to the right audience, generate more personalized messaging, and optimize their ad spend (Bawa & Ghoshal, 2018). However, in this paper, we will focus on a broader topic that is showing the correlation between artificial intelligence, productivity at the workplace, mental health of employees, and economic growth. "Productivity at the workplace is the efficiency with which a worker, machine, or system converts inputs (such as labor, capital, or materials) into outputs (such as goods or services)." (Ogundana & Ogunseye, 2015, p. 240) By using AI-powered tools, employees can be more productive at their workplace. However, the productivity of workers is highly affected by their mental health state. "Mental health is a state of well-being in which an individual can realize his or her abilities, cope with the normal stresses of life, work productively, and contribute to the community." (World Health Organization, 2014, p. 1) We assume that the better the mental health of an employee, the more productive they will be. But why productivity in the workplace matters so much? If employees are being more productive, that should have a positive impact on economic growth. "Economic growth is the increase in the inflation-adjusted market value of the goods and services produced by an economy over time. It is conventionally measured as the percent rate of increase in the real gross domestic product (GDP)" (Mankiw et al., 2014, p. 487). This paper focuses on determining the correlation between the mental health of an employee, their productivity in the workplace, and how that affects economic growth. Furthermore, it will explore whether using AI-powered tools can boost both employees' mental health state and productivity on a higher level, which can then leave a greater positive impact on economic growth.

2. DATA AND METHODOLOGY

2.1. Data Collection

Secondary data was used for this research. For the collection of data in the field of artificial intelligence and productivity, the following search string was used:

("artificial intelligence") AND ("artificial intelligence and mental health") AND ("artificial intelligence and productivity") AND ("artificial intelligence and economic growth") AND ("employee mental health and productivity") AND ("employee productivity and economic growth")

Articles were filtered based on these criteria: Scholarly & Peer-Reviewed, related to the discipline of economics and business, and from 1986 onwards.

Table following on the next page

Source	Name of the Article	Conclusion
Nazareno and Schiff	The Impact of Automation and Artificial Intelligence on Worker Well-Being	Employees tend to experience lower levels of stress at the workplace due to AI implementations.
Damioli et al.	The Impact of Artificial Intelligence on Labor Productivity	AI implementations cause an extra-positive effect on companies' labor productivity.
Sichel and Oliner	Information Technology and Productivity: Where Are We Now and Where Are We Going?	Improvements in information technology boost employees' productivity. This boost in productivity could have been seen in the US because of the increase in economic growth.
Burton et al.	The Association of Worker Productivity and Mental Health: a Review of the Literature	There is a clear association between mental health conditions and absenteeism and presenteeism, which both cause productivity loss.
Lu	The Impact of Artificial Intelligence on Economic Growth and Welfare	Advancement in the AI field leads to an increase in economic growth.

*Table 1: Overview of the most relevant articles that were used and conclusions
(Source: Authors, based on the most relevant articles used)*

Data Base	Keywords
ResearchGate	"artificial intelligence and mental health"
Springer	"artificial intelligence and productivity"
Science Direct	"artificial intelligence and economic growth"
Emerald	"employee mental health and Productivity"
SSRN	"employee productivity and economic growth"

*Table 2: Overview of the most relevant databases and keywords that were used
(Source: Authors, based on the most relevant databases and keywords used)*

3. RESULTS AND DISCUSSION

3.1. Data Collection

39 articles were used to write this paper. Each article discusses one of the correlations between mental health, productivity, economic growth, and artificial intelligence. The attached table shows the most relevant papers related to the topic of impact of the artificial intelligence on employee mental health, productivity, and overall economic growth.

3.2. Discussion

3.2.1. Impact of mental health on Productivity at the Workplace

Mental health disorders, such as anxiety, depression, and similar, are one of the growing major health issues affecting the productivity of millions of people. There is no doubt that the mental health of an employee affects his or her performance at the workplace.

Employees who struggle with anxiety and depression put in fewer hours, are more likely to become disabled and are less effective than their colleagues. Aside from the negative effects on the patient's family, relationships, and quality of life, anxiety, and depressive disorders appear to have an ongoing impact on work environments, resulting in low morale among coworkers and a higher turnover rate, increasing the risk for serious incidents in specific job situations (Langlieb and Kahn, 2005). According to the Mental Health & Prevention scientific journal, higher levels of mental well-being are linked with considerably less productivity loss, which means that greater reductions in productivity loss could perhaps be acquired by promoting higher levels of mental well-being in the population workforce. Also, according to the same study conducted in 2020, each point increase in mental well-being was significantly associated with fewer sick days and thus, lower productivity loss (Santini et al., 2022). This means that employees with good mental well-being tend to take fewer sick days and by taking less time off work, they manage to get more work done sooner, which in other words means they are being more productive. According to the International Journal of Workplace Health Management, most studies show associations between mental health conditions and absenteeism, which is a phenomenon of staying home instead of going to work without commonly accepted *good reasons* like a physical sickness. Low mental health state is one of the most common reasons that cause these particularly short-term disability absences. Also, when measured by a validated questionnaire, results show that mental health conditions significantly impact job productivity, which is known as presenteeism (Burton et al., 2008). We can conclude from all of this that having excellent mental health is one of the most important variables for employees' productivity at work. And to comprehend the trade-offs between presenteeism and absenteeism, we need to know more about the connection between mental illness and worker productivity (Oliveira et al., 2023).

3.2.2. *Impact of Productivity in the Workplace on economic growth*

Although it has been demonstrated that happier, healthier workers are more productive at work, why does this matter? "Productivity isn't everything, but in the long run, it is almost everything. A country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker." (Krugman, 1994) Economists and decision-makers are very interested in how productivity at work affects economic growth. The quantity of goods or services produced per hour of labor is a common way to quantify productivity in the workplace. Several studies have demonstrated a favorable relationship between rising productivity and economic expansion. In a study by Hulten and Wolfram (2001), they found that productivity growth accounted for nearly half of the economic growth in the United States between 1950 and 1999. Similarly, in a study by Oliner and Sichel (2002), they found that productivity growth accounted for nearly 60% of the increase in real GDP per capita in the United States between 1973 and 1996. The advancement of technology is one of the main variables that affect workplace productivity increase. New tools, procedures, and methods that boost productivity can be created as a result of technological advancement. For instance, the expansion of computers in the workplace and the development of the Internet have considerably raised productivity across a wide range of businesses. In a study by Brynjolfsson and Hitt (2003), they found that the use of computers in the workplace accounted for nearly one-third of the productivity growth in the United States between 1995 and 2000. The impact of productivity on economic growth is not limited to the United States. Similar findings have been reported in other countries as well. In a study by Basu, Fernald, and Oulton (2004), they found that productivity growth accounted for a significant portion of the economic growth in the United Kingdom, France, Germany, and Japan between 1979 and 2000.

In summary, there is a proven connection between worker productivity and economic growth. Productivity improvement should remain a priority for policymakers and business executives as a way to promote economic growth and raise living standards.

3.2.3. Impact of artificial intelligence on mental health in the Workplace

According to Kranzberg (1986), "Technology is neither good nor bad; nor is it neutral." We can look at technology as a tool to get work done. These technological tools that are powered by AI make getting that work done even simpler and faster. If an employee manages to accomplish all of his/her tasks during the day by using AI tools, it is logical to conclude that the employee will have lower levels of stress (Nazareno and Schiff, 2021) and lower levels of stress contribute to better mental health, which then contributes to higher productivity and economic growth. However, according to the same research, it is important to note which type of job is being considered. Employees who work in positions that are likely to be replaced completely by artificial intelligence tend to feel insecure and a bit less satisfied with their jobs. But looking back, new technological advances are constantly changing the market requirements and old jobs are diminishing, while new ones are coming. AI might replace some jobs, but it will also open up new job positions (Brynjolfsson et al., 2018). The study from 2018 surveyed senior executives from over 1,500 companies in North America and Europe and found that the majority (over 80%) believed that AI would create new job positions in their companies. The authors also note that history suggests that technological advancements have led to net job creation over the long term, despite short-term disruptions. Research from 2019 reviewed 28 studies on the relationship between artificial intelligence (AI) and mental health that used social media platforms, brain imaging data, electronic health records (EHRs), mood rating scales, and brain imaging data to predict, classify, or subgroup mental health conditions like depression, schizophrenia, and other psychiatric conditions, as well as suicidal ideation and attempts. The majority of these studies should be viewed as early proof-of-concept works illustrating the potential of using machine learning algorithms to address mental health questions and which types of algorithms produce the best performance. Taken together, these studies revealed high accuracies and provided excellent examples of AI's potential in mental healthcare (Graham et al., 2019). The content and structure of many people's jobs, how they interact with one another and with machines, and how work effort and efficiency are tracked are all likely to change as a result of AI. AI has the potential to be a key enabler of human-machine collaboration by assisting workers in the completion of laborious or physically taxing jobs while allowing them to utilize their own distinctively human qualities (Lane and Saint-Martin, 2021).

3.2.4. Impact of artificial intelligence on Productivity

Throughout the last decade, more and more companies have been implementing artificial intelligence-powered solutions that are used every day in the workplace. The analysis demonstrates that, after adjusting for other patenting activity, applications for AI patents have a particularly positive impact on the labor productivity of businesses (Damioli et al., 2021). It is important to note that technology that uses artificial intelligence is still quite new on the market, so we can only observe short-term effects. We are yet to see in the years ahead what will the long-term effects of AI-powered technology be. Also, the impact of AI depends on the type of company and the industry. Mentioned analysis was conducted on 5257 AI patenting firms and it concluded that the size of the company also affects the correlation between AI and employee productivity. It's possible that smaller, more adaptable AI-patenting companies are able to adjust more quickly and integrate AI-based applications into their manufacturing processes at a scale that would have had a major influence on productivity. Contrarily, the larger, more diverse patent portfolio of non-AI technologies continues to dominate the productivity-generating process of larger, more complex companies.

As a result, it may take longer for these firms to take full advantage of their value chains and upskill their current workforce in order to fully benefit from their AI inventions. The favorable and significant relationship between AI technology and corporate productivity is supported by a second study from Taiwan (Yang, 2022). It was discovered that if an electronics company raises the number of AI patents awarded by 10%, business productivity rises by roughly 5%. We can already see the impacts of artificial intelligence in our everyday lives, and experts say that those impacts will be just as, or even more significant than, those of the Industrial Revolution. However, they are much harder to predict (Makridakis, 2017). From an optimistic standpoint, AI technology, although it may substitute for some types of labor, should bring more efficiency gains than transition costs (Frank et al., 2019). Taiwan is not the only example; AI productivity gains have been noticed in numerous countries. By observing 983 manufacturing companies in China from 2011 to 2020, experts found that AI technology can significantly improve the total factor productivity of manufacturing enterprises (Wang et al., 2023). Three crucial routes for AI to influence the TFP of China's manufacturing businesses are technological innovation, human resource optimization, and market matching improvement. The effect of AI on TFP differs significantly among China's manufacturing firms depending on their ownership, ownership types, industry features, and phases of the life cycle. Research from Portugal presents two opposing forces when it comes to productivity and AI. Less labor is needed to generate the same amount of output as productivity increases, and more output is required due to lower production costs, which leads to more jobs being created (Bacao et al., 2022). By moving to the history of innovation and technology, we can observe that every industrial revolution or the mechanization of agriculture (which both brought new technology into the market) indicates that task automation can lead to stratospheric productivity increases (Acemoglu and Restrepo, 2019). This can be especially true in certain industries like e-commerce and fintech. E-commerce and fintech companies, in comparison to their competitors in other industries, were effective in accomplishing innovation and, through awarded AI patents, bringing their TFP closer to the levels displayed by companies on the leading edge of technology. If we take into account other companies in the banking and communications sectors in addition to e-commerce and fintech enterprises, the increased productivity shown in these industries - associated with a higher share of issued AI patents - remains consistent (Bassetti et al., 2020). When it comes to industries in general, whether artificial intelligence can be utilized or not, depends on the type of job. To be more accurate, it depends on whether the tasks involve predicting rather than deciding. Since prediction is commonly used to help to decide, we could say artificial intelligence plays a smaller role in decision-making, too. The degree to which a worker's fundamental talent involves prediction is a critical indicator of whether artificial intelligence may eventually replace them in their position (Agrawal et al., 2019). This structure also explains how AI directly replaces capital with labor in prediction tasks and how AI may indirectly influence decision tasks by changing the relative rewards to labor vs capital for decision tasks. Additionally, it can cause an increase in labor demands upstream or downstream. By making this change in the labor force, we are modeling a reduction in the cost of prediction. However, it is important to point out that predictions improve decisions, but are not perfect. (Agrawal et al., 2019) There will always be a role for human judgment in finalizing decisions, but artificial intelligence has the potential to speed up the decision-making process, and thus increase productivity.

3.2.5. Impact of artificial intelligence on economic growth

Throughout the last 150 years, we can notice that the automation of the development process was one of the crucial factors that boosted economic growth worldwide. Possibly this trend will continue, with artificial intelligence not being a clear split. Self-driving automobiles and AI radiology reports might be a logical evolution from autopilots, automated car engines, and MRI

scanners (Aghion et al., 2018). If artificial intelligence affects productivity, and productivity affects economic growth, then we can assume that artificial intelligence also affects economic growth. If an increase in the accumulation of AI is caused by increased productivity in the manufacturing or AI sectors, it can boost household short-run utility. However, if an increase in the accumulation of AI is caused by businesses using more AI to replace human labor, it can reduce household short-run utility (Lu, 2021). However, a study from 3000 Japanese companies “found that firms expect favorable impacts of AI and robotics on their businesses and generally think upgrading human capital is important.” (Morikawa, 2017) In a 2016 research published by Accenture, artificial intelligence is described as a new production component that has three potential effects on economic growth. The first is that complicated physical processes can be automated by artificial intelligence. The second is that AI can augment the labor force and resources already in place, enhance worker capability, and increase capital efficiency. The last point is that artificial intelligence can spur innovation and permeate all sectors of society. Based on these three routes, many economists are currently interested in this proposition. Furthermore, according to the same study, AI has the potential to increase profitability rates by an average of 38 percent by 2035 and generate an additional US\$14 trillion in economic growth across 16 industries and 12 economies during that time. However, they point out that it is possible to achieve this data only by organizations adopting a people-first philosophy and implementing AI into their operations bravely and responsibly. Another key player is the government “which should distribute more expenditure in the development of artificial intelligence so that it can fully promote economic growth.” (He, 2019) In spite of this, some economists contend that the development of artificial intelligence and related automation technologies poses a threat to the gains that developing nations and emerging markets have made through integration into the global economy over the past 50 years, thereby escalating poverty and inequality (Korinek and Stiglitz, 2021). Furthermore, “the new technologies have the tendency to be labor-saving, resource-saving, and to give rise to winner-takes-all dynamics that advantage developed countries.” That is why it is important to create a global system that shares AI-powered technology more widely with developing countries, especially because artificial intelligence is becoming a factor in competitiveness growth. Artificial intelligence has immense potential to be incorporated into the national economic system, and this potential cannot be restricted to certain businesses. The first is the potential for planning strategies at the level of the entire economy, which entails looking for the best sectoral balance sheet models, creating target indicators for large businesses, forecasting aggregate demand and supply, and optimizing the monetary and credit systems, among other things (Abdulov, 2020). With good planning and optimization of AI-powered tools, we can boost economic growth on the global level.

4. LIMITATIONS AND FUTURE RESEARCH

This research was limited to general workplace behaviors related to mental health and productivity. It would be interesting to explore specific workplaces within industries like healthcare, education, marketing, and similar to observe the long-term benefits of artificial intelligence implementations. Additionally, it would be intriguing to explore how could artificial intelligence fasten the decision-making of executives, and therefore boost the productivity of the whole team in a workplace.

5. CONCLUSION

With major technology-driven trends in the work environment and overall development processes, “the mental health and well-being of employees is an increasingly important issue”, both as financial costs and human costs to society (Johnson et al., 2020). That is why it is crucial to properly introduce new AI technology to employees. By doing that, we can open a path to good “cooperation” between technology and employees.

This use of AI in the workplace can then boost employees' mental health and productivity, thus benefiting overall economic growth. The digital transformation index and economic growth, labor productivity, and employment can all be seen to be positively correlated (Aly, 2022). However, in order to fully benefit from new technologies, we must have a clear grasp of how they affect equity, growth, productivity, and the labor market. To comprehend the impacts of these technologies on the economy and society at large, systematic data on the adoption and usage of these technologies, particularly at the establishment level, is required (Seamans and Raj, 2018). Overall, artificial intelligence offers exciting new approaches to improving employees' mental health and productivity in the workplace, and thus positively impacts overall economic growth.

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PRIVATE SECURITY INDUSTRY IN SERBIA: IS IT PROFITABLE?

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ABSTRACT

In the paper, the authors explore the private security industry in Serbia from some economic aspects. The main question the authors raise is whether the private security industry in Serbia is profitable. As an initial hypothesis, the authors put forward that it is profitable, but they also ask some special questions in order to examine this area of business more deeply. These are primarily: a question of experience in business in this area, which forms of business organization are most present on the market, the question of ownership of companies, countries of origin of capital, types and areas of private security, number of employees and average gross salary. In addition to the basic hypothesis, the authors also provide some special hypotheses and believe that companies in Serbia have significant previous experience in the field of private security, that the majority of companies are privately owned where capital comes from domestic investors, that most companies operate in the field of technical protection, etc. In order to carry out the research, the authors collected data from open sources of the Ministry of Interior of the Republic of Serbia, the Serbian Business Registers Agency and the website for checking the creditworthiness of companies. The collected data were first systematized in tables and then charts were formed, which were used to analyze the data. The authors conclude that the private security industry in Serbia represents an auxiliary service for other branches of the industry. In any case, this branch of industry is profitable in Serbia.

Keywords: Private Security, Industry, Profit, Physical Security, Technical Protection

1. INTRODUCTION

The disintegration of the former Yugoslavia caused the creation of new states on the Balkan Peninsula. Until that moment, the then republics and now the new states inherited the same legal system. However, from that moment on, all countries independently built their legal, social and security systems. This tectonic disturbance also caused major social and security problems that each country had to solve on its own. After the collapse, the security system developed independently, but on the same basis as the so-called system of social self-protection and general national defense. From this system the private security system developed, in other words the private security industry. The legal system in the Republic of Serbia, both throughout recent and distant history, is characterized by 'grayness'. In the period of the initial development of private security, and therefore legal regulation, there were periods when there were no departmental regulations that would regulate this area. Of course, this did not mean that private security did not exist in that period, but on the contrary, it did exist, but it was not legally regulated and was fertile ground for possible abuses. Serbian legislator needed two decades to restart the 'machinery' (1993–2013). With the adoption of the Private Security Law (further: PSL) in November 2013, the work on improving the private security system and rounding off the legal framework has only just begun. Adoption of secondary legislation was inexplicably delayed where the law entered into force, and the first by-laws were only published almost a year after the law was promulgated. The work on the adoption of by-laws that more closely regulate certain issues in the field of private security was completed only at the end of 2016

(three years after the publication of the law). Without secondary legislation, the law was a 'dead letter' (Leštanin, 2021). When it comes to defining the private security industry, it can be said that there is no consensus among security scholars. The term 'private security industry' is a generic term used to describe an amalgam of distinct industries and professions bound together by a number of functions, including crime prevention, order maintenance, loss reduction and protection; but these functions are neither common nor exclusive to all the activities of the private security industry, though the more that apply to a particular activity the more clearly it can be considered as private security (Button, 2002:97). The private security 'industry' is not some clearly defined homogenous group, but rather a multitude of industries, large and small, all related to the provision of security services, investigation, crime prevention, order maintenance, systems planning, technical consulting and security design (van Steden, Sarre, 2007:223). Private security, aimed at this level of need, is a profitoriented industry that provides personnel, equipment and procedures to prevent losses caused by human error, emergencies, disasters or criminal actions. As the name implies, private security meets the needs of individuals, businesses, institutions and organizations that require more protection than is afforded by public police officers. The consumer of private security services might be any individuals, public or private, large or small (Hess, 2009:3). The security industry is the industry that addresses all the products and services used specifically by the human being to prepare, prevent, protect, respond, reduce, palliate and deal with the threats and the consequences that undesired events have on our society. These consequences may be summarised in terms of damage to people's life, health, property or other assets, including information (Marti Sempere, 2010:4). The Serbian legislator dared to define private security, but also in Slovenia and Croatia did the same¹. Private Security, according to Serbian PSL, includes the provision of services, i.e. the performance of personal, property and business protection with physical and technical protection when these jobs are not under the exclusive competence of state authorities, as well as the work of transporting money, valuables and other shipments, maintaining order at public gatherings, sports events and other places of gathering of citizens (Steward Service), which are carried out by legal entities and entrepreneurs registered for that activity, as well as legal entities and entrepreneurs who have formed an internal form of organizing security for their own needs (Article 2. PSL). For the purposes of this paper, we can say that the *private security industry* includes a set of business entities that, on the one hand, provide personal, property and business security services to others for monetary compensation, and on the other hand, can provide private security for themselves for their own needs. Consequently, there are two basic types for-profit business entities and in-house business entities. Therefore, viewed as a system, private security also has its subsystems. The subsystems in question are: physical, technical, fire and other security and protection (occupational safety, environmental protection), as well as safety management. It is a complex system, constituted by several subsystems that have special strengths, means, methods, organization, etc. Therefore, it is understandable that there is a problem of ambiguity in the functioning of this system, which manifests itself in practice as the impossibility of rigorous demarcation of competences in the performance of security protection of persons and property, and their reduction to physical security (Daničić, Stajić, 2008:20). In this paper, the authors will try to analyze the private security system, i.e. the private security industry in Serbia from some economic aspects. The basic question that the authors ask is whether is private security in Serbia profitable? In order to find an answer to this question, the authors had to study the genesis of the private security sector in Serbia. The authors ask questions about the experience of private companies in the field of private security, what is the form of organization, what is the form of ownership, where does the capital come from, how did they register their activity, which area of private security do they belong to, what profit/loss

¹ See Slovenian Private Security Law Article 2. and Croatian Private Security Law Article 1; further readings Nikač, Leštanin, 2023

did they make in a certain period, what is the number of employees and what is the estimated gross salary² per employee. The authors put forward a basic hypothesis that the private security industry is profitable and several special hypotheses such as that most companies have rich experience long before the PSL was passed, that most are privately owned, that there is a significant share of foreign capital, that most companies operate in the field of technical protection, that the profit is constantly increasing and that it is the highest in the field of technical protection, that the largest number of employees work in the field of physical security and that the highest salaries are paid to employees in the field of technical protection.

2. DATA

The list of licensed business entities has been downloaded from the website of the Ministry of Interior of Serbia (<http://www.mup.gov.rs/wps/portal/sr/>). Then, data for each individual business entity such as the year of establishment, form of ownership, origin of invested capital, and the like were downloaded from open sources (<https://www.companywall.rs/> and <https://www.apr.gov.rs/registri/privredna-drustva/pretraga-podataka.2022.html>). Tables and charts were created on the basis of such collected data.

3. METOD

The data collected through open sources using synthesis methods were first systematized and then the method of data analysis contained in the documents was applied. The analyzed data are presented using graphic models. Based on the models set up in this way, certain conclusions were drawn.

4. RESULTS & DISCUSSION

A total of 1,011 business entities were identified that, as of November 17th 2022, had a license to provide private security in Serbia. Business entities thus identified were observed through the following questions: 1) year of establishment and start of work; 2) types of organization of economic activity; 3) types of capital ownership; 4) origin of capital; 5) types of registering activities; 6) the size of the business entity; and 7) types of private security activity. Each identified business entity was studied in terms of profit or loss per a year, the number of employees during the year and the average gross salary per employee per a year, in the period from 2017 to 2021. 2017 was taken as the starting year because the Private Security Law in Serbia began to be implemented in that year. The authors believe that a period of 5 years is optimal for the representativeness of the sample.

Chart following on the next page

² Gross salary is the earnings that is calculated together with the issued taxes before it is paid to the employee. The actual amount that the employee receives is reduced by the amount of tax.

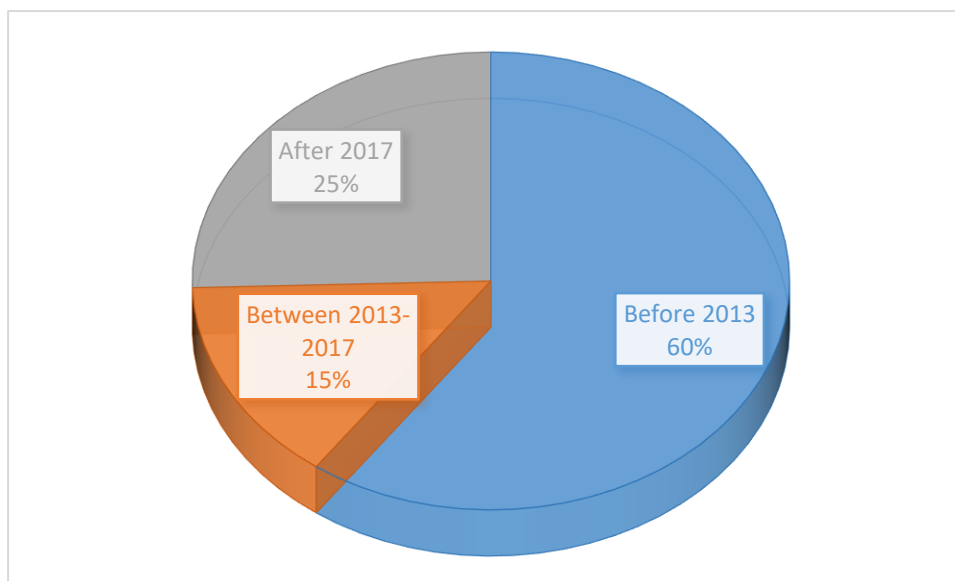


Chart 1: Year of establishment and start of buissines
(Source: Authors)

When the authors explored the business experience of business entities as a starting point, they used the year the PSL was issued (2013) and the year the PSL began to be implemented (2017). As can be seen, the majority of companies (60%) were founded before 2013, a smaller part (15%) were founded between 2013 and 2017, while 25% were founded after the start of the PSL enforcement (Chart 1). The oldest company that is currently licensed for private security was founded way back in 1986, which is over 35 years of experience.

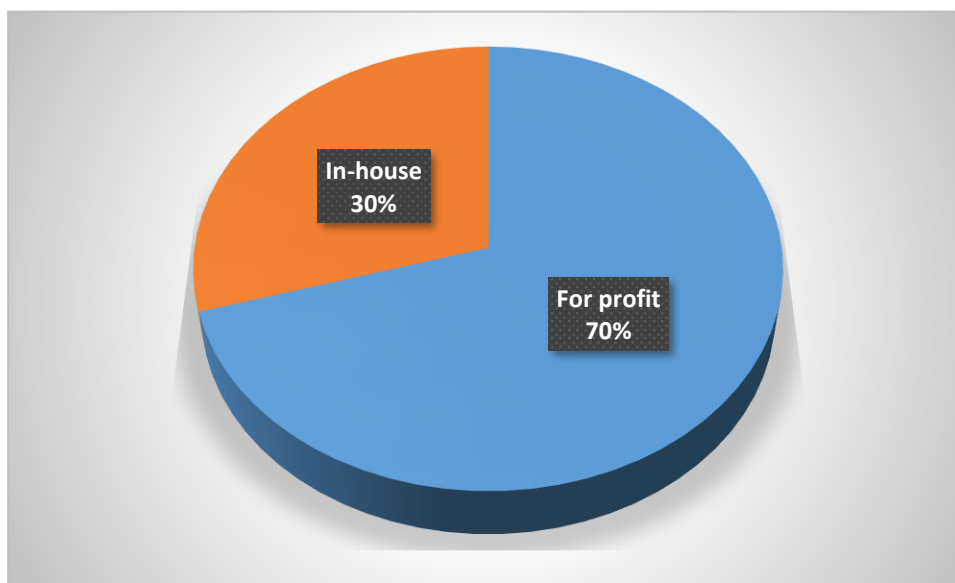
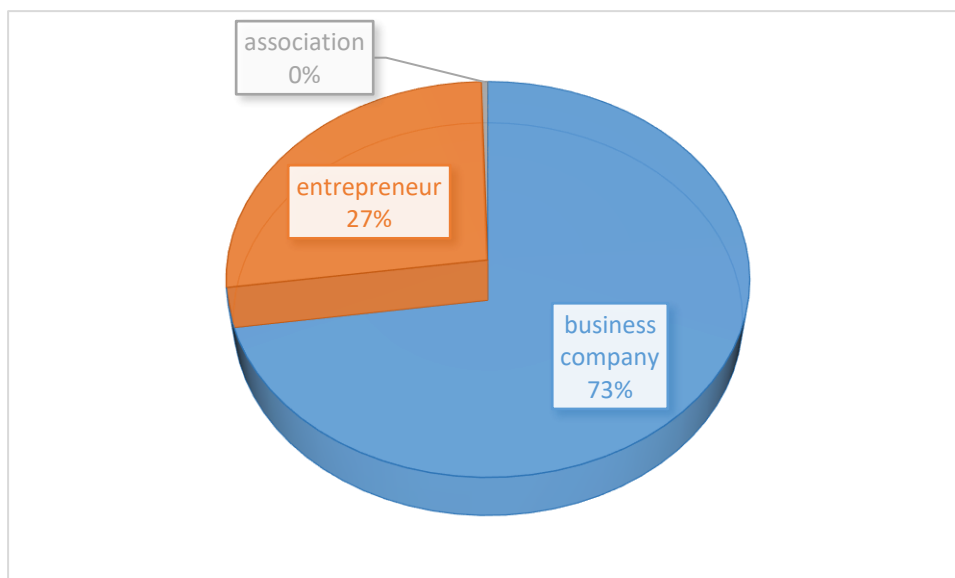


Chart 2: Number of for profit and in-house bussunes entities
(Source: Authors)

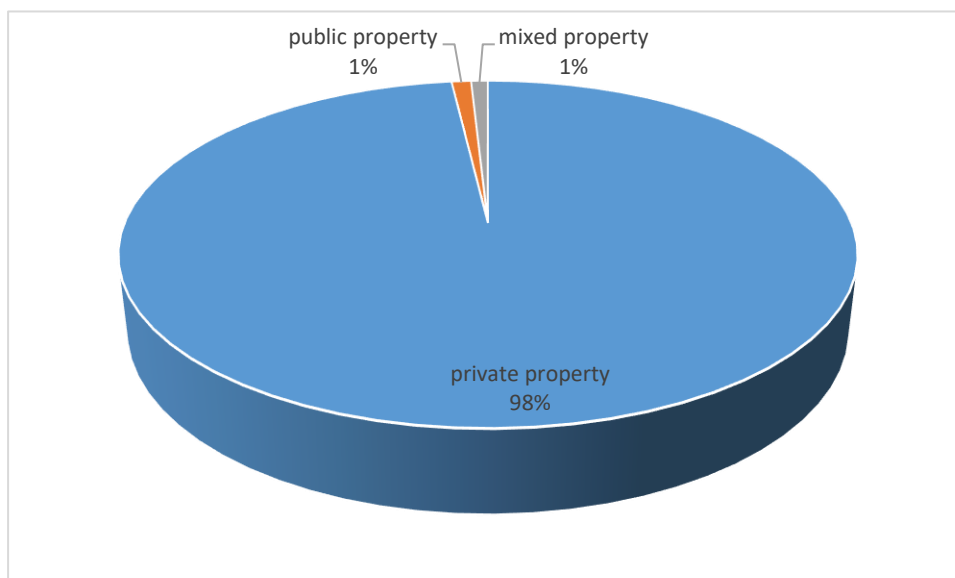
Of the total number of identified companies, the majority (712-70%) provide services with monetary compensation, while as many as 299-30% of companies provide services themselves – in-house (Chart 2). In the course of the research, the authors observed that a certain number of business entities (57-8%) that provide private security services stopped meeting the legally issued requirements for obtaining a license.

Specifically, there was a change in the registered activity, an insufficient number of employees, that they did not start performing activities within the issued period, or that bankruptcy or liquidation proceedings were opened.



*Chart 3: Types of organization of economic activity
(Source: Authors)*

If we look at companies according to the types of organization of business activity, we see that the majority are registered as business companies (73%), while the other market participants are registered as entrepreneurs (27%). It was also observed that there are three associations that have been issued a license, but their participation is a 'statistical error', but it is still debatable from the point of view of the PSL (Chart 3).



*Chart 4: Types of capital ownership
(Source: Authors)*

Looking at business entities from the perspective of capital ownership, the vast majority of 98% are privately owned, while only 1% is publicly owned, with 1% in public-private partnerships, that is. in mixed public-private ownership (Chart 4).

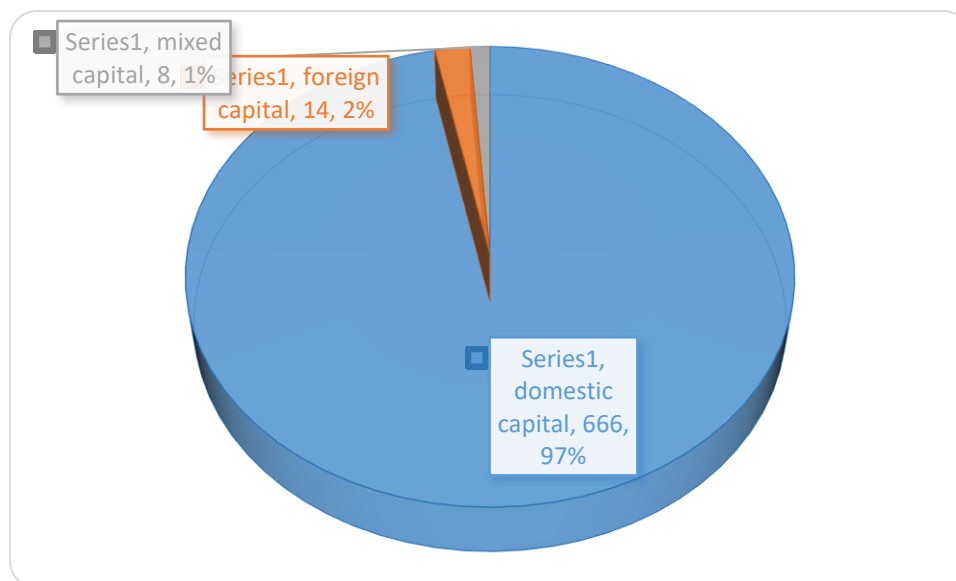


Chart 5: Origin of capital
(Source: Authors)

The private security industry in Serbia is dominated by domestic capital (97%). However, we also observe the presence of foreign capital in only 2% and combined domestic and foreign capital in only 1% (Chart 5). The majority of foreign capital originates from EU member states. The first foreign company in private security was registered in Serbia in 1992.

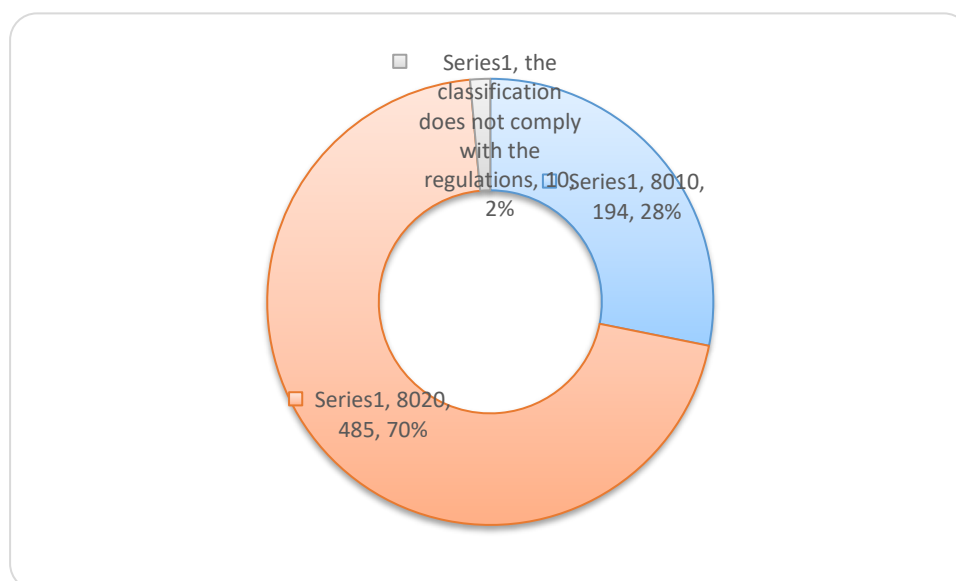
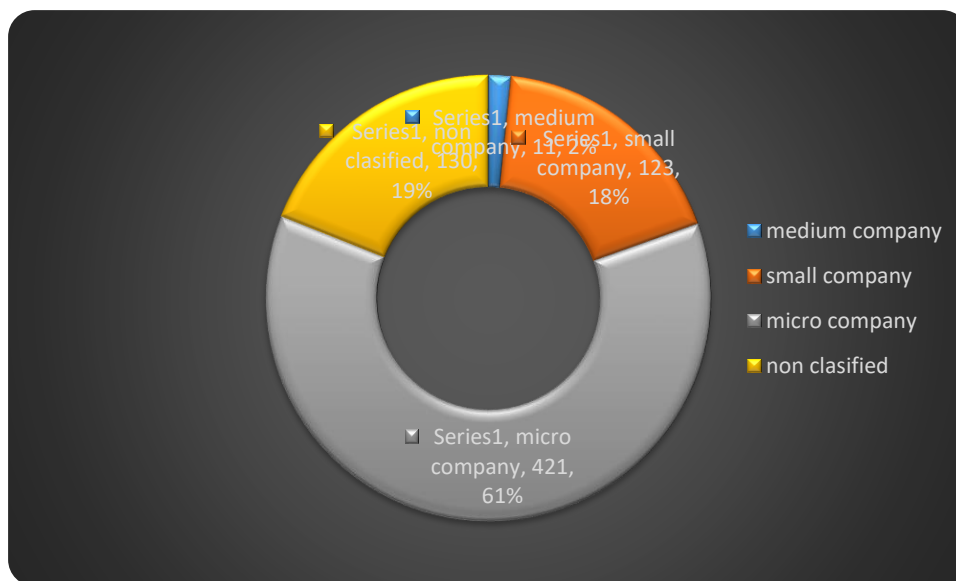


Chart 6: Types of registering activities
(Source: Authors)

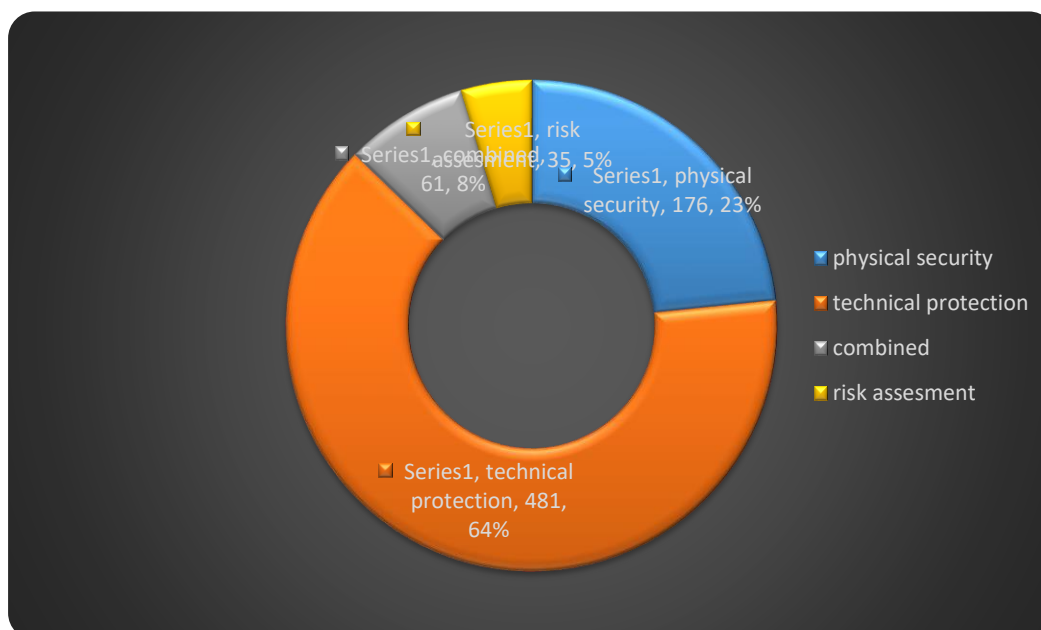
According to the Regulation on the classification of activities (Official Gazzete of RS No 54/10), the field of private security is classified into the sector of Administrative and auxiliary activities, the field of Protective and investigative activities and into three branches: Private security activities (80.1), Security system services (80.2) and Investigative activities (80.3). The activities are classified in the same way and with the same names as the branches. The majority of business entities are registered under code 8020 (485-70%), under code 8010 194-28% are registered, and under code 8030 only 17 business entities.

However, there is also a certain number of business entities (Chart 6) that are not registered in accordance with the law (10-2%).



*Chart 7: The size of the business entity
(Source: Authors)*

According to the Accounting Law (Official Gazzete of RS No 73/19 and 44/21-other law), business entities in Serbia are classified according to the number of employees, income and value of total assets into large, medium, small and micro. In the field of private security, most business entities are classified as micro-sized companies (61%), small companies are 18%, while medium-sized companies are only 2%. Among the business entities, we have noticed only two large ones, one of which is with foreign capital in private ownership, while the other is domestic capital in public ownership. There are also 19% of business entities that are not classified (Chart 7).



*Chart 8: Types of private security activity
(Source: Authors)*

According to the type of private security activity for which they hold a license, business entities can be grouped into four groups: 1) physical security, 2) technical protection, 3) combined protection, and 4) risk assessment³. According to data from open sources of the Ministry of Interior of the Republic of Serbia, most business entities have a license for technical protection (64%), while 23% of business entities have a license for physical security. Combined licenses are owned by 8% of business entities, while a license for risk assessment only is owned by 5%⁴ of business entities (Chart 8).

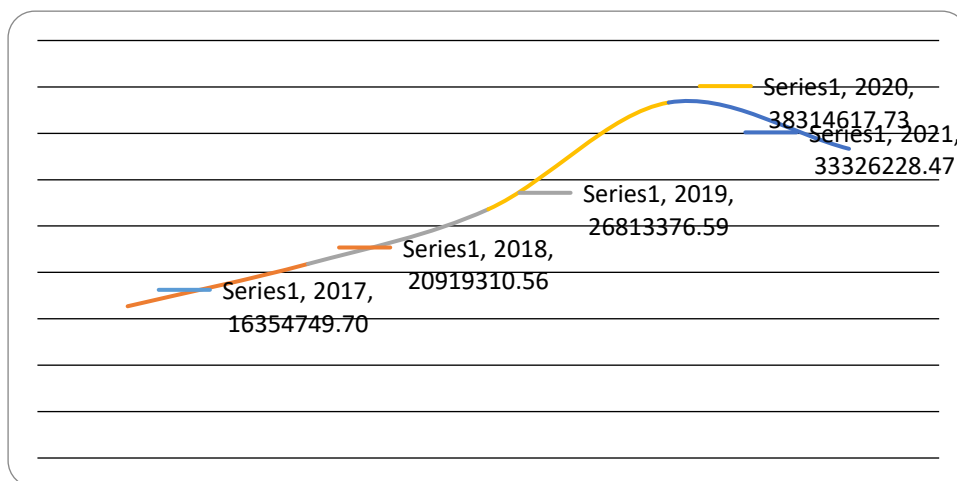


Chart 9: Profit of business companies in Serbia
(Source: Authors)

Researching the business, the authors noticed that in the observed period (2017-2021), as many as 89% of business entities operate with a profit, while 11% operate with a loss. As can be seen from Chart 9, in the initial year of the period, companies in the field of private security earned a little more than 16 million € and that the profit was constantly growing until 2021 when it recorded a decline. The companies earned the most in 2020, slightly more than 38 million €.

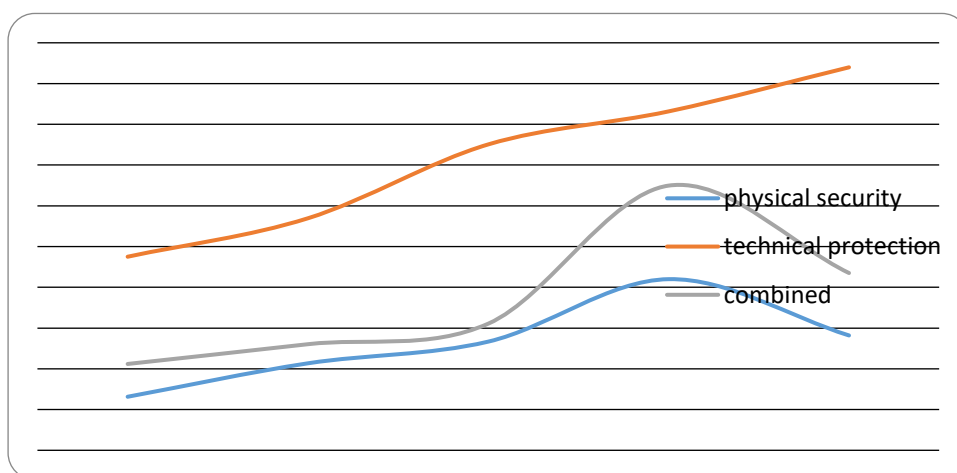
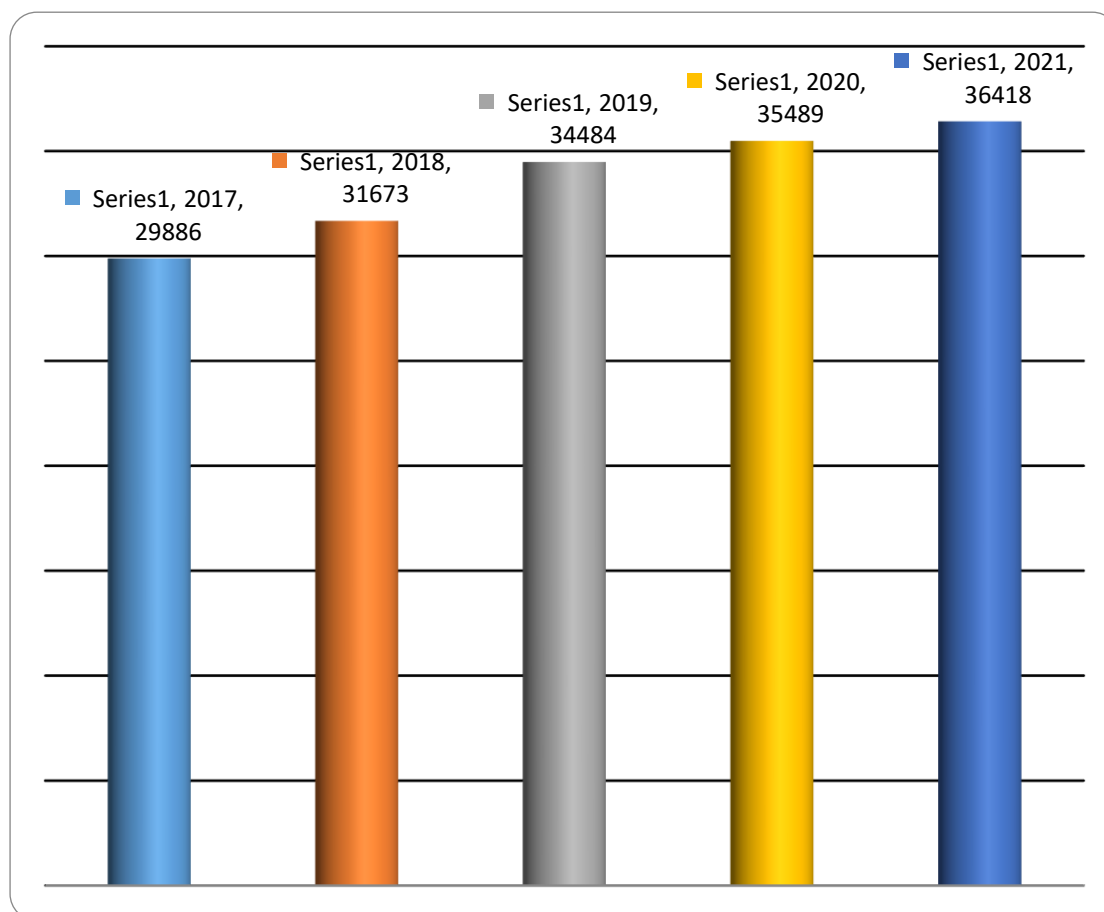


Chart 10: Profit of business companies according to group of license
(Source: Authors)

³ For the sake of easier analysis, we classified business entities that, in addition to physical security, also have a license for risk assessment as physical security. The same is done with technical protection. We classified the group "risk assessment" as business entities that only have a license for risk assessment.

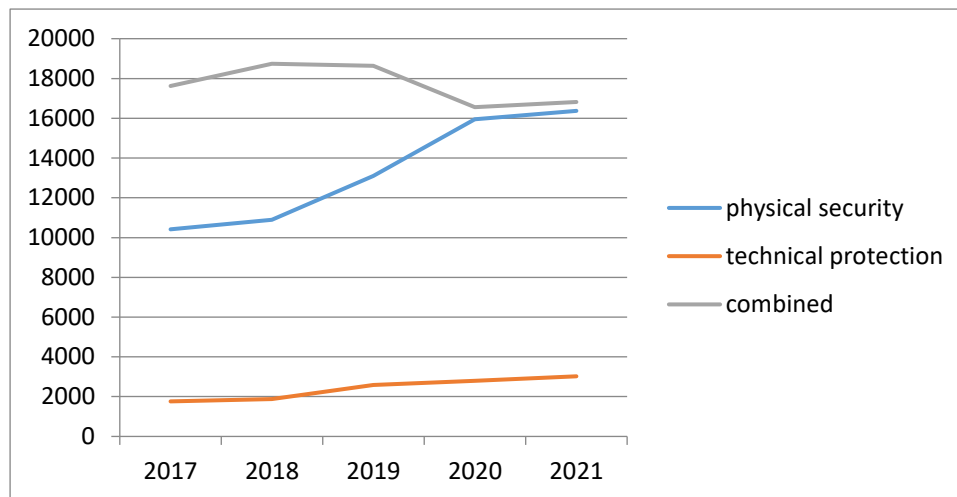
⁴ According to data from open sources of the Ministry of Interior of the Republic of Serbia, as many as 230 business entities have a license to perform risk assessment.

The biggest profit was achieved by companies in the field of technical protection, which has been steadily growing in the observed period. However, companies in the field of physical security and combined protection earned less and in 2021 they are recording a drop in profits (Chart 10). The authors believe that the Covid-19 pandemic, which had no impact on technical protection, contributed to this negative score. We can only imagine the consequences of the current conflict between Russia and Ukraine and the economic sanctions of EU member states against Russia. Among the top ten companies that earned the most in the observed period is one state-owned. Most of the companies are owned by domestic persons, but the presence of only one with foreign capital can be observed. Most of the companies are of medium size and operate in the field of technical protection or combined.



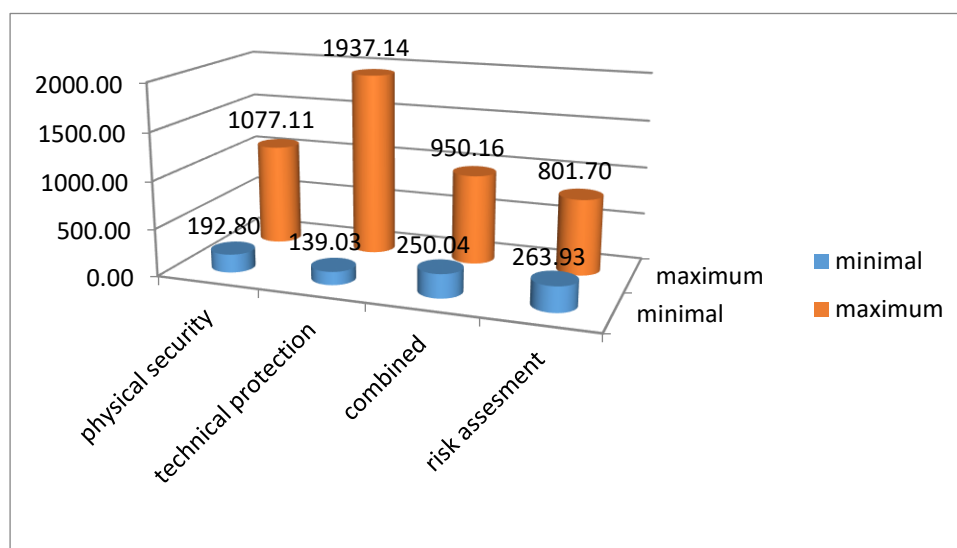
*Chart 11: Number of employees in private security industry in Serbia
(Source: Authors)*

The number of employees in the private security industry in Serbia is constantly increasing. In the first year of implementation of the law, companies reported that they had slightly more than 29,000 employees. In the following years, the number grows from year to year, where in 2021 it records even over 36,000, which is an increase of over 20% (Chart 11). It must be noted that not all employees are private security officers, but there is also management, administrative and support staff who are not required to have a license. As can be seen, the Covid-19 pandemic did not affect the reduction in the number of employees, but on the contrary, there was an increase in the number of employees in the year of the pandemic and later. This was to be expected because security measures in companies were stricter than regular ones, which required an additional number of private security officers.



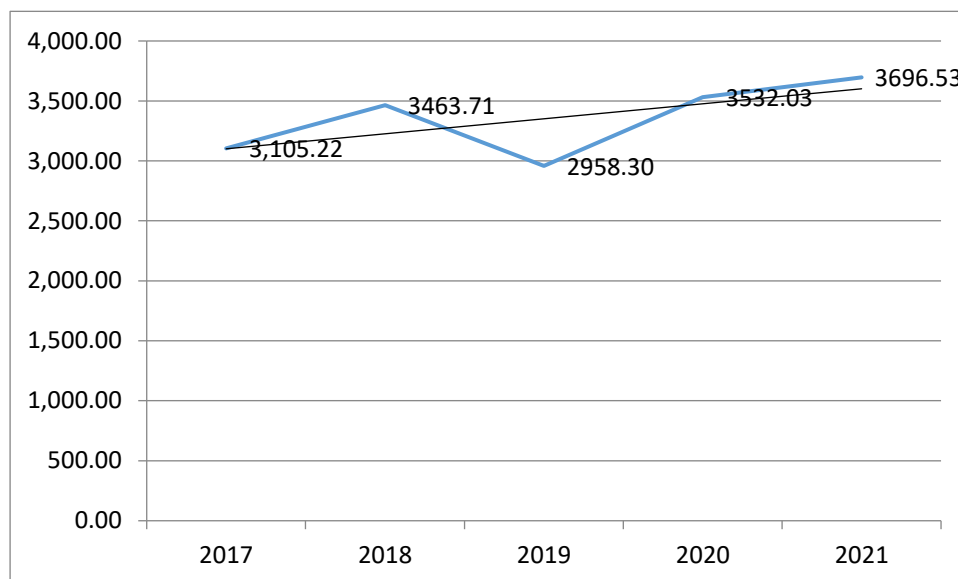
*Chart 12: Number of employees in private security industry by area
(Source: Authors)*

Observing the number of employees by area of private security, we notice that the largest number of employees is recorded in combined protection (physical and technical protection), followed by physical security, while the smallest number is employed in technical protection. As can be seen from Chart 12, in combined protection there was a decrease in the number of employees, while in physical security there was an increase in the number of employees, Technical protection recorded a slight increase in the number of employees. Such trends are expected if it is taken into account that in order to obtain a license, physical security companies must have at least 10 employees with a license, while this obligation does not exist in the field of technical protection. In the literature, we can find studies of the private security sector that rely on the number of employed private security officers and the number of companies participating in the market. What is characteristic of these studies is the finding that the private security industry is constantly growing (Johnston, 2005:73-86; van Steden, Sarre, 2007). The same authors lists the results of research in UK, USA, Western Europe, Australia, New Zealand, etc. They emphasizes that growth and development is particularly visible in the field of technical protection.



*Chart 13: Maximum and minimum average gross salary for the observed period by area of private security per employee
(Source: Authors)*

Before we analyze the average salary of employees, it must be noted that the average also includes the salaries of managers, which are much higher than the salaries of ordinary employees. As we can see from Chart 13, both the minimum and maximum average salaries were paid in the field of technical protection, which indicates a large disparity in this field. A large disparity can be seen in the area of physical security, while it is much smaller in companies with combined licenses and in the area of risk assessment.



*Chart 14: Maximum gross salary for the observed period per year
(Source: Authors)*

The authors believe that another indicator is important in observing the private security industry, and that is the maximum calculated gross salary. In the observed period, the maximum calculated gross salary was around 3,000 €, which is not at all small for the standard in Serbia and the movement of the minimum labor price (Chart 14). What is commendable is that salaries show an upward trend (in general), but in the observed period, they individually record different ups and downs. In 2021, it records its maximum amounting to over 3,500 €.

5. CONCLUSION

As we have already pointed out, 1011 business entities with a license in Serbia have been identified. If we compare that data with the total number of business entities in Serbia in 2020⁵, which is 90,111, we see that it is only slightly more than 1%. The private security industry in Serbia serves precisely to be an auxiliary service to other branches of the economy and to provide them with business security so that they can produce additional value. Likewise, if we compare the number of employees in Serbia in 2020, which is 1,248,987, we see that the private security industry only accounts for almost 3% of the total number of employees. Most of the business entities were founded before the passing of the law and already had experience in the field of private security, regardless of the fact that it was not becoming a normative framework. More precisely, there was a normative framework in the form of general regulations on work and labor relations and other general regulations that applied to all business entities. Looking at the totality of private security companies, it can be seen that most provide private security

⁵ According to Statistical Office of the Republic of Serbia in 2020 there are 90,111 business entities, 1,248,987 employees, where administrative and auxiliary service activities have only 4% business entities and 6.8% employees (Statistical Office of the Republic of Serbia, *Statistical Yearbook of Serbia*, 2022. p. 195, <https://publikacije.stat.gov.rs/G2022/Pdf/G20222055.pdf>)

services for money, which was to be expected. The authors believe that there is a significant number of those who provide for themselves, but if you take into account the heritage and tradition of the social self-protection system, this trend is not surprising. In the private security market, business entities organized as privately owned micro-companies are preferred, which proves a significant degree of free market competition in the provision of these services. However, the participation of foreign capital is insignificant. Technical protection takes precedence over physical security because more companies are oriented towards that form of private protection. Private security companies in Serbia are recording a trend of increasing profits. However, in 2021, security companies earned almost 5 million € less than in 2020, which is a drop of about 13%. The authors believe that the Covid-19 pandemic and other social disturbances in the world contributed to this. A decline in profits was recorded in the area of physical security and combined protection, but technical protection continued to grow. Studying the gross salaries of employees in the private security industry, large disparities were observed both between technical and physical protection and within the field itself. The highest wages were paid in the field of technical protection by domestic companies. Regardless of the research results, the private security industry is key to achieving a very important prerequisite for business in general, which is a safe environment.

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HUMAN CAPITAL MANAGEMENT STRATEGIES THROUGH EMPLOYEE SATISFACTION

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ABSTRACT

In recent years, we have witnessed more intensive development of the human resources sector, which has a significant role in the business and manufacturing sector, therefore they are often characterized as human capital. With this, this sector, we can say, gets its economic value, alongside the business and professional spheres. Directed in this way, it is implemented through several segments, which are strategically placed in front of the management, which is the basic connection in human capital and sustainable business profit. There are several ways in which the work can be monitored and organized with human resources, but the basic essence is monitoring and listening to the needs of employees, which requires new but also simple organizational approaches. Human capital management is a special segment of the management strategy which, with its organizational activities, needs to focus its organizational activities on the people who form a unity in the organization, which are systematically observed and evaluated from the very engagement for the doing business to the subsequent evaluation, reward and other benefit system. In this way, their knowledge, skills and impact can be managed. The system of adequate strategic management of human capital, followed through the process of motivation is especially challenging for each manager, because it is especially challenging and focused on the desired behavior which can lead to a double effect - productivity at work and emotional satisfaction. In this way, human capital and contentment are used to affirm the profit and creative ambition of the industry, which is shown through the ability to do business, the level of responsibility, quality, creativity and performance of enterprise development. The strategy of human capital management built in this way is a special motivational system for management, because by fulfilling this requirement, it increases the competitive and value structure of the company. If job satisfaction is understood as a positive emotional state and the reaction of employees that is achieved through efficiency and effectiveness at work, the obtained research results show the role of management in achieving this satisfaction, especially if accompaniment the manufacturing company where the system of managerial structure is multifaceted.

Keywords: *Management strategy, human resources, human capital, employee satisfaction*

1. INTRODUCTION

By forming a collective work, a solution that could lead to an increase in productivity and business success of all employees, from the intuitive operation of the company have led to clearly defined managerial functions through the development of strategic management. How the ways of conditions work and business have changed, approaches to organization and management have also changed, to make the current trends in the field of strategic management;

the focus of research was defined for the implementation of employee satisfaction as a significant investment segment that can increase productivity and business success. Looking at employee satisfaction, strategic attention is focused on human resources that are viewed as capital, where the critical potential of theoretical-research work is exactly the driving force that can lead to business success. In order to adequately realize the strategic management of human capital management, it is necessary to cooperate with all social sciences that perceive a person in his emotional and motivational segment. This multidisciplinary approach provides solutions and indicates which factors are important for achieving employee satisfaction as well as criteria for their application. Every possible solution and given criteria can be understood as a starting point for the organization of strategic management, which in the given working conditions and specific organization can be adjusted and deepened in order for human capital to achieve its full performance on the one hand, and maximum employee satisfaction on the other. In order to apply certain factors and criteria to medium and large ones according to the small enterprise model, the conducted research aims to determine valid factors and the way of applying the model of employee satisfaction as a pragmatic goal of strategic human capital management.

2. FUNCTIONAL DIMENSION OF MANAGEMENT

If we consider management as a special scientific discipline, one of its components is just found in the consideration of the functionality and practicality of application in the context of organizational functioning, in order to be recognized as a real legality which leads to the success of the integration of the human and productive factors in the organization. In this way, the basic structure is a revelation of basic models, methods and principles as well, which are used to determine its functionality, and which are used in a multidisciplinary approach with other social sciences. One of the more adequate ways of perceiving human capital and strategic management is functional action and permeation, primarily of psychological sciences, which primarily deal with human and then of economics, which in some way deals with society in which human has a crucial role (Wright, 2021). It is therefore important to point out that human beings return to the functionality of the strategic management in the domain of human capital and the development of specific human characteristics which are the carriers of economic development.

2.1. Psychological dimension of functionality

Employee engagement requires immersive integration of multiple segments which must be monitored from the side of management structures in all phases of employee engagement. This means that from the very recruitment of the employee must use special psychological segments of knowledge of character and satisfaction creation through motivation for the business. This can be very demanding, but it is therefore necessary to include clear organizational segments of strategic management. Immediately before the application of any criterion for the assessment of human capital through employee satisfaction, managers themselves should use their positioning to implement the goal of staff development through adequate training and development. As we practice the psychological dimension, we must be aware that the basis is in a special segment of motivation which is deeply connected with emotions which are the main motivators of human's actions. Positing psychological dimensions of human capital management functionality it is one of the forms used within the management which is used within the management even when the selection of employment is performed, where on the basis of the developed psychological and professional profile of the candidates, selection is made and candidates who are assessed to be suitable for some type of job are selected. This initial psychological profile, which can be determined by testing the candidate, was much later implemented through the concrete work of the employee, where his psychological characteristics are shown to be significant in productivity but also job satisfaction (Campion, Campion, Campion, 2019).

Just like that initial determinations, through the later work of the employee, show their functional dimension but also the practical aspect of adequate organization of strategic management, which leads to employee satisfaction with work and performance as well as compensation for work. It is important to note that the psychological incentive that management can provide to the employee, in order to achieve his complete satisfaction, is to invest in him through training, continuous education, an established system of promotion, but also rewards for success in the job. This is an additional psychological and motivational aspect that can affect the general attitude of the employee, both about the specific job he performs and about the organization where he achieves work performance.

2.2. Sociological dimension of functionality

Strategic management through employee satisfaction cannot be considered as an independent concept from the social trends, and therefore it is often spoken about a special segment of economic sociology in the domain of organizational business which is reflected through the sociology of work (Baron, Hannan, 2021). Special focus on the sociological aspect of employee satisfaction gives strategic management a new dimension which, in order to avoid the organizational effect of human capital, places its activities in social trends, where the position of employees is determined by outward factors. If this social practice is placed in the context of psychological functionality, there is an integrated psychological and social aspect of employee motivation but satisfaction as well, which has a strong motivating factor reflected through performance, which leads to the common good through adequate strategic management.

3. MOTIVATIONAL AND EMOTIONAL ASPECT OF EMPLOYEES

Following the work of modern organizations, especially manufacturing, we are witnessing their way of doing business, which is under constant pressure to achieve business success, especially in the competitive segment, when it is necessary to ensure good positioning in the market and on the other hand to provide and retain professional staff who will be satisfied with the job. Here it is necessary for the management to respond to such challenges, trying to encourage their motivation for work in various ways, to develop positive emotions that are conditioned by personal and social personalities and all for the purpose of their satisfaction. This can be achieved by identifying one cyclical and connected relationship, which is interconnected and conditioned by each segment (psychological and sociological), which achieves a positive motivational and emotional relationship between management and employees. In this way employees are recognized by employees as a significant human capital and potential that through its satisfaction creates successful business results, and strategic management as a pragmatic and functional creation.

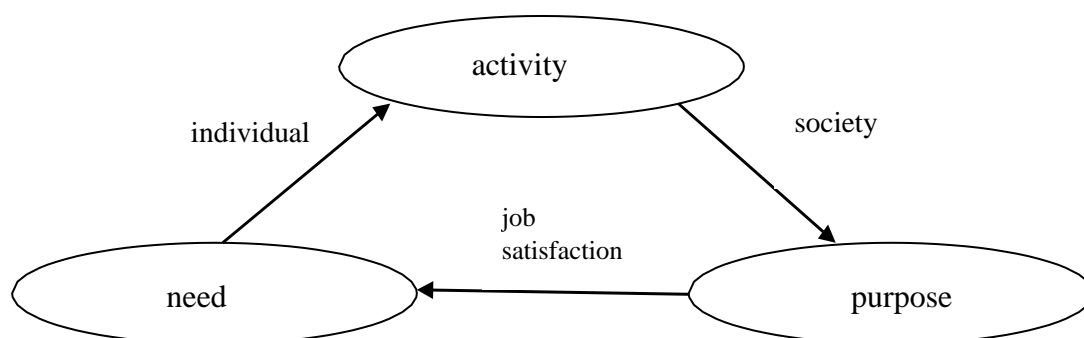


Figure 1: Scheme of employee motivation model
(Source: Šarčević, 2013 : 231)

This scheme is a unique indicator that the combined use of various factors can be guidelines for the development of employee satisfaction, but that it certainly represents a special organizational, managerial and professional approach of management, which should have the necessary criteria and mechanisms for access and monitoring of employees. This should be understood as teamwork, which according to the induction method functions from an individual to teamwork, ie from personal satisfaction to the success of the organization's business.

3.1. Conceptual framework of satisfaction

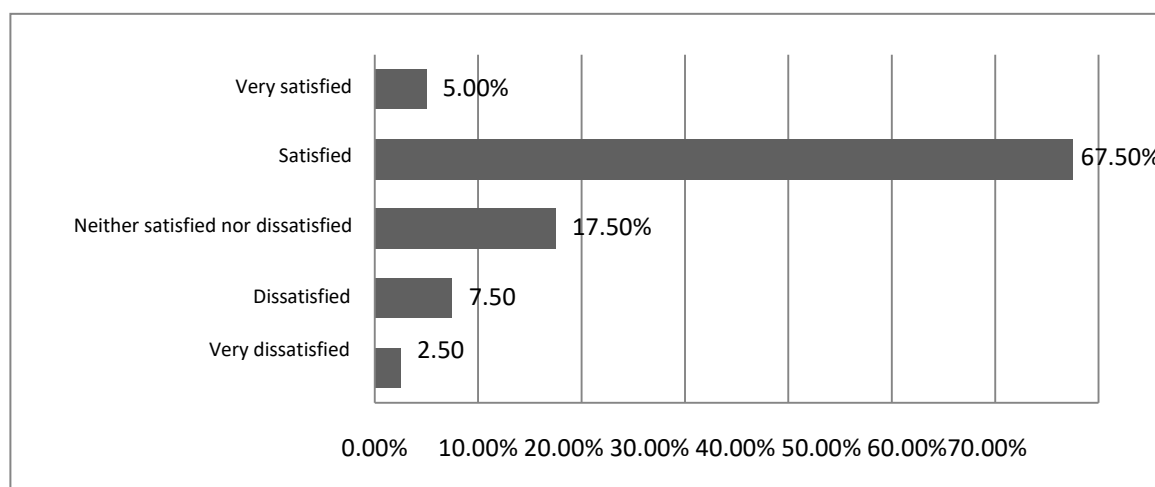
The basis of the concept of business satisfaction through strategic management is the effectiveness and efficiency of achieving company goals, as well as the realization of employees' tasks, which is manifested through special social and stimulating benefits, how to show respect for all their personality and professional attitude towards work. The conceptual framework of satisfaction which goes from the personal needs and interests of the individual, as a psychological effect, moves towards the social framework of employee performance, which through self-actualization and self-respect is reflected in business impact (Eke, 2018: 69). In this way, the accepted conceptual framework of satisfaction indicates that the encouragement, support and benefit to employees are crucial for motivation and business satisfaction.

4. HUMAN CAPITAL AND EMPLOYEE SATISFACTION THROUGH PRACTICE

By applying a short questionnaire, as a data collection and processing technique, within a medium production company, where the focus of research is on employee satisfaction while respecting their psychological and social profile, the results are the initial framework for determining important methods and criteria of strategic human capital management. The research was conducted on 40 respondents, where the gender structure is equable, and age as well as work-experience engagement is evenly distributed, while education is dominated by high school education. This structure of the respondents is goal-oriented in order to adequately manage the direct production process and the satisfaction of employees.

4.1. Sources of psychological and social satisfaction

The method of determining psychological motivation was analyzed within the questions that referred to their assessment of general satisfaction in private life, where the general assessment of respondents is that they are mostly satisfied with their private life 67.50%, and that total dissatisfaction is present in 10% of cases.



*Figure 2: Employee satisfaction with private life
(Source: Author)*

The obtained results may indicate that the general psychological and social profile of the respondents is very stable, but as such it can show a real percentage of the management and managerial structure of the company, as well as their relationship with their employees, which can result in a higher level of business (dissatisfaction) satisfaction. The final segment of the assessment is also included in this rule, which is given by the respondents after the questions on the assessment of the structure of the management team, their organisation, managerial and human resource management competences. The complete segment of the assessment of the management, on various aspects of the operation and the relationship to the management of human resources, leads to the assessment that 47.50% of the respondents are satisfied with the management, but that 15% of the respondents are dissatisfied with it.

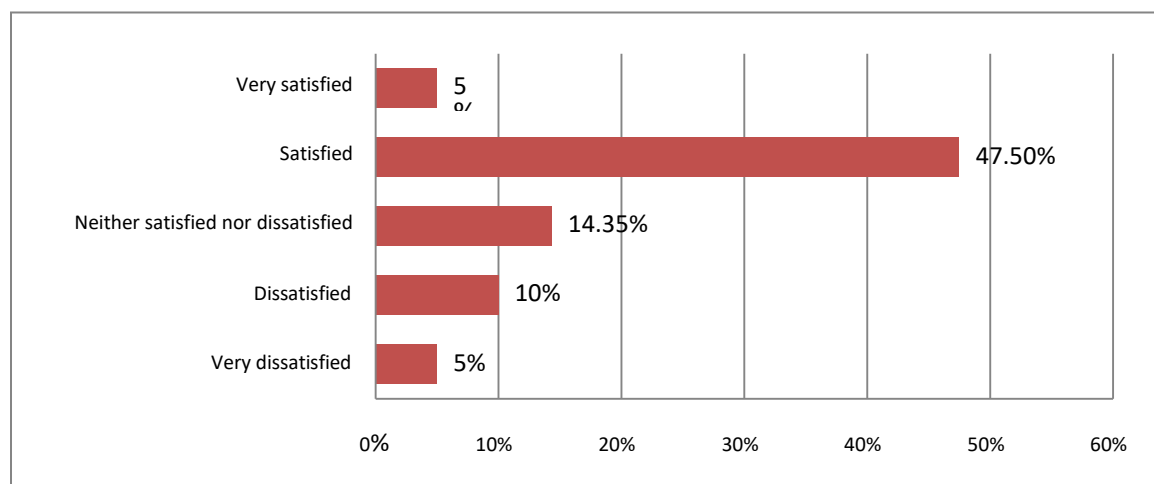


Figure 3: Employee satisfaction with management
(Source: Author)

The evaluation of management from the side of the respondents, where the emphasis is placed on their structure and attitude towards employees, shows that there is a significant increase in satisfaction, where even those who are undefined in their attitudes can be positively oriented towards management under the right circumstances. In order to indicate what are the possible and expected factors that affect their satisfaction with the management, the next segment of the question includes the choice of the respondents to some of the possible factors.

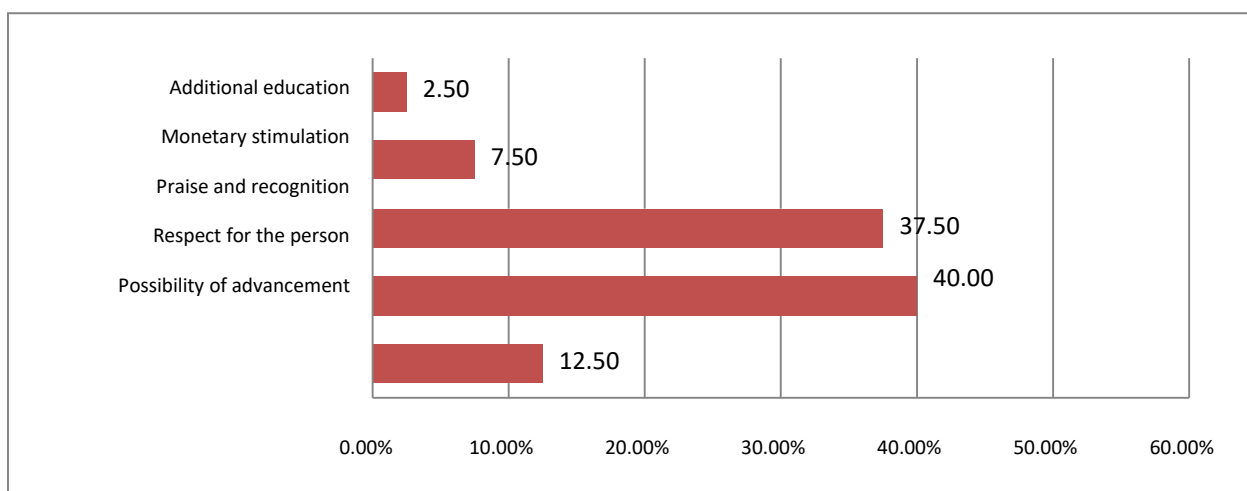
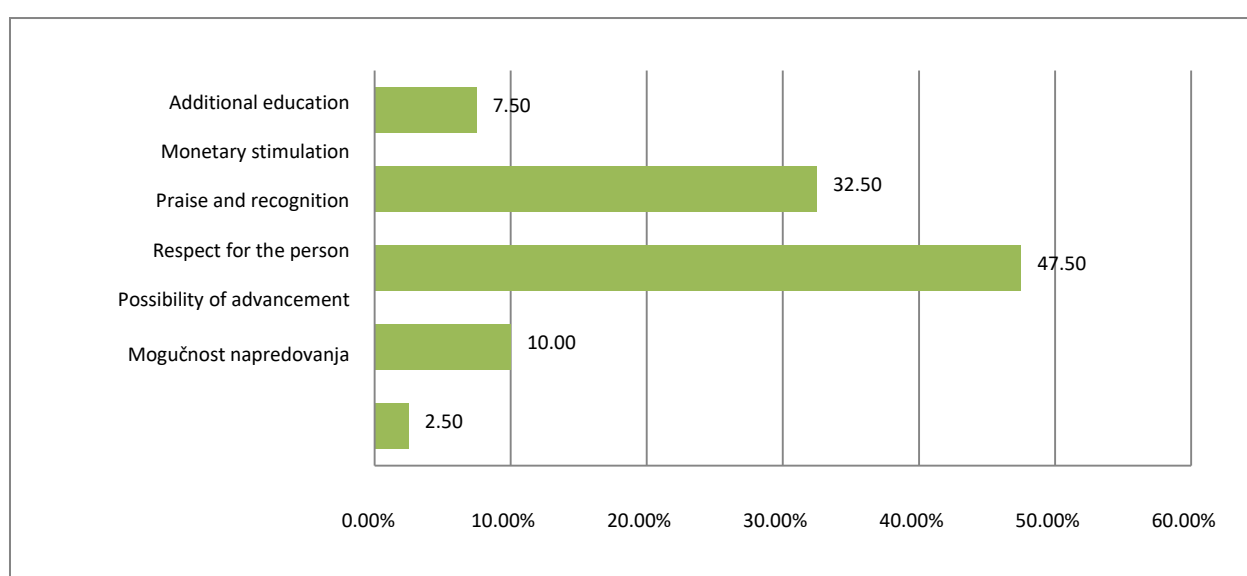


Figure 4: Possible factors of expected employee satisfaction with management
(Source: Author)

The obtained data mostly indicate that the basis of possible satisfaction with management is precisely in psychological factors, because the motivation of satisfaction results in the dominant segment in the domain of praise, recognition, respect for personality and progress, in more than half of respondents (52.50%). This can be considered a significant fact because each of these factors is precisely part of the psychological achievement of the employee, where it has primacy over the material factor such as monetary compensation. The possibility of additional education is not represented in a higher percentage, but it is certainly present as a reflection of the individual's awareness that it is one of the ways to achieve other factors that can lead to the satisfaction. The following segment of the obtained results shows how much the expectations of the respondents in the real business environment are given and realized through the work of the management of the company. As a general cross-section of expected and realistic satisfaction factors, the data is an accurate assessment of employee satisfaction with the business, but as a result of adequate strategic management.



*Figure 5: Realistically realized factors of employee satisfaction with management
(Source: Author)*

The real realization of the expected factors that can affect employee satisfaction, according to the obtained results, indicate a substantial difference according to the priority. Namely, collectively, the psychological segment is still present in more than half of the respondents, but the percentage results are very different individually. In this case, monetary stimulation has taken the second place in relation to praise and recognition, and respect for the person is represented by only 10%. The possibility of promotion and additional education has been increased in benefit of education. Such results show a greater difference in expected and realistic achievements towards employee satisfaction, where the social aspect has an advantage over the psychological one, which in turn was more dominant than expected. These results show a greater difference in expected and realistic achievements towards employee satisfaction, where the social aspect has an advantage over the psychological one, which was more dominant than expected. How does this difference between the expected and the real affect the satisfaction of employees and the criteria according to which the strategic management of human capital is directed? The evaluation of their satisfaction, which is shown in the following chart, shows the general satisfaction of employees.

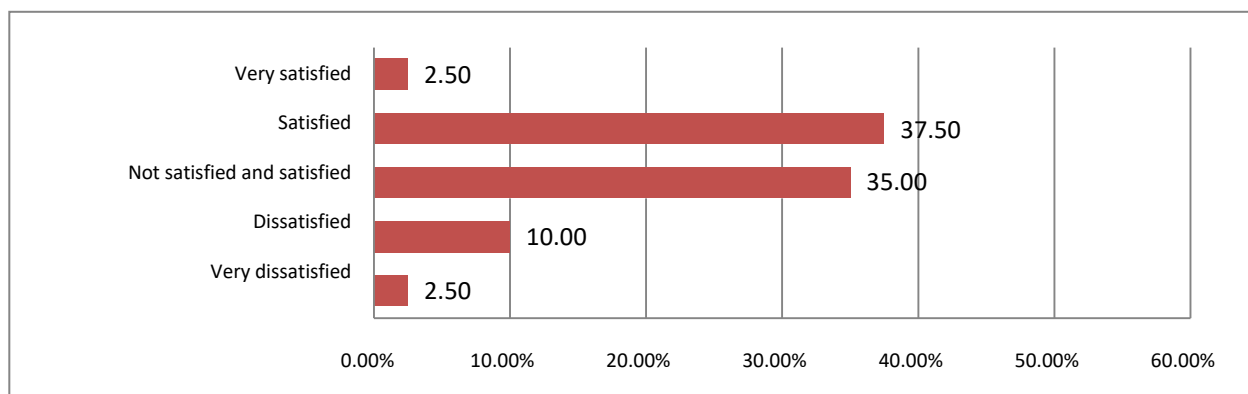


Figure 6: General employee satisfaction
(Source: Author)

Slightly less than half of the respondents showed a higher level of satisfaction with the business, which is the highest percentage without clearly expressed satisfaction or dissatisfaction. This cannot be considered a positive segment because these respondents just showed the presence of unsatisfactory satisfaction factors as well. In addition, the percentage of dissatisfied is a total of 12.50%, which can be considered a negative aspect of the role accomplished by strategic managers, because the coverage of dissatisfied is almost a third of respondents.

4.2. Factors and criteria for assessing satisfaction

Following the previous results of research, based on the assessment of respondents, we can give some general criteria, factors and methods of achieving the full effect of achieving business satisfaction, which can serve as strategic managers as directions for adequate practical implementation in the organization.

Table following on the next page

Factors	Kriteriums	Methods	The effect
Additional education	Checking interest in additional education	Checking the interest of employees in education and additional training	More professional and professional performance of the planned tasks with the application of the realized additional education
Possibility of advancement	Realistic management assessment of the performance of all employees	Continuous performance review of employees, with clearly defined criteria on the efficiency and effectiveness of work	Achieving additional effective work with the application of recognized business successes and recognized organizational skills
Material stimulation	The system of monetary stimulation has been determined on the basis of the realistically achieved work result	Performance testing based on planned and achieved results, as well as innovation and independence in performing work	Increasing productivity at work, as well as greater motivational stimulation in independent and innovative work performance
Praise and recognition	Recognizing the success of performing assigned tasks, as well as proposing innovation and improving work performance	Monitoring the achieved results of the employee as well as consideration of all proposed innovative solutions	Greater motivational effect for doing business, which comes from the recognition of management that the values and professional attitude of the employee towards the organization are recognized
Respect for personality	Respect for the attitudes, opinions and diversity of employees	Periodic check of attitudes, psychological and social sides of employees	Development of self-esteem and self-evaluation which are an additional motivational segment of satisfaction that starts from the general and is reflected through job satisfaction
Working conditions	Care for safety and protection at work, while respecting the legal and professional needs of employees	Violation of legal regulations on safety and protection at work, with verification of requirements for the necessary conditions for performing a job	With the care for the protection of the health and life of employees, continuity in work is achieved without absence, and this overall leads to the successful operation of the company
Management attitude	Management's attitude towards employees based on trust and two-way communication	Direct communication with employees, respecting their attitudes, needs and opinions	Development of a pleasant and professional atmosphere, as an essential condition for achieving employee satisfaction
Perspective of the organization	Awareness of business plans, goals and achieved results of the company	Informing employees about the company, through direct managers or through the work process itself to informants, newsletters and the like	Through information about business results, plans and prospects of the company, through the emotional and psychological segment, the employee feels personal and professional satisfaction and as an equal part of the wider social community in the company.

*Table 1: Possible ways to achieve employee satisfaction factors
(Source: Author)*

Systematically presented satisfaction factors, which through the criteria and methods of achieving employee satisfaction and the effect that can be achieved in this way, are a kind of reference guide for deeper systemic human capital management. The given factors and the manner of their realization are general indicators, which can be applied in any company or organization, with adaptation to the given business environment and the needs of management and employees. Without regard to individual modalities, the evaluation of its factors is a minimal necessity, which can only be extended but not reduced by factors.

5. CONCLUSION

The issue of employee motivation and satisfaction is often associated with the corporate culture, where the search for factors of management success and employee satisfaction is achieved by a new dynamization of management strategy. Every detected factor of employee satisfaction is a initiator factor that increases or decreases the level of attitudes or internal attitudes status of employees. Each of these factors, the manager should identify and recognize and thus isolate it by its specificity and implement it in the management structure. In this way, the available human resources are transferred to human capital, which is realized with multiple values. Theoretical consideration of the psychological and sociological side of identifying employee satisfaction factors, through research, only confirmed the hypothesis that psychological and personal motivation are significant factors of business satisfaction. Therefore, they can be considered as dynamic motivational factors, which can be identified and used specifically for improvements in the context of corporate culture. It can also be seen that the applied methods and instruments of empirical social research - quantitative and qualitative - can be used to examine all elements of management strategy, which, perceived as a corporate culture, extends from the work atmosphere to the communication culture.

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