The background of the cover is a dramatic photograph of a volcanic eruption. A bright, glowing plume of orange and yellow lava or ash rises from a dark, jagged volcanic landscape. The scene is illuminated by the intense light of the eruption, creating a stark contrast between the dark rocks and the bright, fiery sky.

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FOREWORD

Dear readers,

The new issue of Journal of Accounting and Management marks the end of the second pandemic year.

Due to the fact that the coronavirus pandemic has influenced all parts of our lives, it is only understandable, that it has become the topic of our researches - not only the research of the virus itself but its influence on business processes.

How was sustainable reporting implemented during the pandemic and what are the predictions for the future, what are the responsibilities of controllers in post- pandemic business environment are all the topics you can find in this issue along with other interesting and useful articles.

You are welcome to use this Journal and share it with your students and colleagues and we also thank all the authors, co-authors and reviewers for their willingness to share their knowledge.

With the wish for a healthier, happier and more successful new year we invite you to join us in the development of our profession in the fields of accounting and management.

Editor-in-Chief

Đurđica Jurić, PhD, College Professor

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SUSTAINABILITY REPORTING DURING THE PANDEMIC: CURRENT STATE AND EXPECTATIONS FOR THE FUTURE

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ABSTRACT

Although COVID-19 pandemic has caused significant disruptions and limitations in the operations of business entities, it is debated that it could be a unique opportunity to intensify the development of long-term sustainable business practices. According to previous research on the response of business entities to the pandemic, it has been determined that they have given priority to social responsibility over achieving short-term profitability. Also, the focus was not shifted from the environmental dimension of sustainability, moreover, the continuity of their response to environmental issues proved to be an interesting indicator of the ability to adopt to different challenges. The need to further standardize non-financial reporting is also discussed. The proposal of the new EU Directive on corporate sustainability reporting expands the number of non-financial reporting entities, requires more detailed reporting, introduces the obligation of independent verification of published information, as well as digital access to information through a European Single Access Point. Accordingly, the aim of this paper is to provide an overview of the current knowledge on the impact of the pandemic on sustainability reporting and to highlight the challenges that business entities face in the current environment. Also, the aim is to explore sustainability re-

ports of business entities in Croatia and to determine which indicators of environmental and social responsibility are mostly published, with reference to disclosures during the pandemic.

Key words: *sustainability reporting, pandemic, indicators*

1. INTRODUCTION

Sustainability reporting, also known as non-financial reporting, exists so that stakeholders can make informed judgements about how business entities affect the world around them and understand how changing world affects the sustainability of business entities. Today, sustainability reporting is a widespread business practice worldwide. In the early 1990s, a paltry 12% of companies in the world published sustainability reports, while today the figure stands for 80% (KPMG, 2020 (b)). However, the current practise of sustainability reporting is characterized by complex and expensive processes of creating non-financial information (cf. *Dancey, 2020*). Reporting methodologies and approaches are complex and dynamic, requiring deep professional knowledge and expertise and must be backed up with robust sustainability strategies and risk management process (KPMG, 2020 (b)). Consequently, differences are noticeable in the quality of the published reports. The quality of information is important for enabling stakeholders “to make sound and reasonable assessments of an organization, and to take appropriate actions” (GRI, 2016). Reports should reflect both positive and negative aspects of the efficiency of business entities, their content must be understandable and verified and in accordance with generally accepted reporting principles. The Global Reporting Initiative remains the dominant standard for sustainability reporting (KPMG, 2020 (b)), and the standardization of report content has been discussed in several international initiatives and projects such as: Driving Alignment in Climate-related Reporting (CRD, 2019), Joint Statement on the Revision of the Non-Financial Reporting Directive in the Context of COVID-19 (2020), Measuring stakeholder capitalism: Toward Common Metrics and Consistent Reporting of Sustainable Value Creation (WEF, 2020) and International Financial Reporting Standards Foundation Consultation Paper on Sustainability Reporting (IFRS Foundation, 2020). As a crucial step towards standardization of reporting, invoked by a range of users of the reports, the World Business Council for Sustainable Development (WBCSD) emphasizes the construction of solid principles of management accounting, while *Dancey (2020)* as a basis for the development of standards proposes the International Integrated Reporting Framework. However, the framework alone is not sufficient to make reporting relevant, reliable and comparable. Reporting practices, performance indicators and report structure

need to be harmonized. This has proved particularly important in combating the consequences of COVID-19 pandemic (cf. Dancey, 2020., IFRC Foundation, 2020., Fishman, Hatch and Allison-Hope, 2020., Kirkman, 2020., KPMG, 2020. (a)). The importance of sustainability reporting in the age of the pandemic has not diminished but on the contrary, reporting has proven to be an effective communication tool for reporting on new business sustainability strategies during the pandemic (Joo, 2020). Current environment has “accelerated demand for a comprehensive, globally accepted corporate reporting system” (WEF, 2020 (a)). More than ever, investors need quality information, not only financial but also non-financial. Reporting on a set of universal environmental, social and governance (ESG) disclosures is important and would be useful for financial markets and the economy (WEF, 2020 (a)). However, in restrictive business conditions, due to restrictions such as complete or partial closure, ensuring physical separation, work from home, etc., the challenge is to provide the appropriate quantity and quality of information, at a planned dynamic.

2. THE IMPACT OF THE PANDEMIC ON BUSINESS SUSTAINABILITY ISSUES

The initial economic closure, caused by the spread of COVID-19 pandemic, has contributed to the sharpest drop in carbon output since records began, but only temporary, as the initial average decline of 26% by the end of 2020 fell to only 7% and less (The Guardian, 2020). The circumstances of the pandemic led to new problems. Business entities have reduced their environmental priorities, whereby those large ones gave priority to the social dimension of business, while the small ones have focused on the economic dimension of business (Barreiro-Gen, Lozano and Zafar, 2020). While some believe that the pandemic put their general sustainability efforts on temporary hold, especially among smaller companies, others believe that it increased the overall emphasis on sustainability at their companies, as well as that it could result in a shift of focus in program priorities, with more emphasis, for example, on supply chains or employees (Posner, 2020 (a)). In the short term, due to the impact of the pandemic, business entities have focused on maintaining business continuity, particularly on cash flow and solvency. In a long run, experts are of the opinion that many steps can be taken with existing human resources and processes to strengthen the response to the pandemic crisis, which are in line with responsible business standards (Barry, 2020.). Although at the beginning of the pandemic, CEOs focused on safety, managed health, economic and societal crises, and adapted their business models to rapidly shifting circumstances, they ultimately accepted that they’ll need to find a way to exist alongside, and thrive in spite of, the ongoing threat of COVID-19 in the months and possibly

years to come (PWC, 2020). Even before the pandemic, the importance of environmental, social and governance issues in the future was discussed. J. Conway, vice president for investment partnership at Calvert Impact Capital, said that investment in ESG is becoming mainstream because it's a smarter way of investing that lets you evaluate a company's overall performance through additional lenses, by looking not just at whether the company does well, but whether it does good, too (Kirkman, 2020). Corporate sustainability agenda is evolving and shifting in attention to social responsibility, particularly over how companies treat their employees and suppliers, which, according to sustainability experts, will be in focus after the pandemic too (The Economist, 2020). The way organizations understand and communicate their impacts is more important than ever (Koblun, 2020). "New normal" is characterized by increasingly complex pressures and demands of various stakeholder groups, increased expectations for social engagement and the contribution of business entities to the community, as well as great uncertainty for the future. The shareholder-centric model, which is based on what academics call "agency theory", appears to be giving way to a richer model of governance that puts the health and resilience of the company at its center (Paine, 2020). Investors are looking at companies' sustainability credentials as a measure of resilience and adaptability amid the crisis, and for longer-term growth prospects (The Economist, 2020). Firms that have paid close attention to their supply chains for sustainability reasons can respond more quickly in a crisis, they can lean into their existing governance systems and push through change with relative speed and agility (The Economist, 2020). Companies that integrated sustainability and transparency strategically into their business operations prior to COVID-19 crisis have put an even stronger focus on it now during the crisis and they were much more agile in responding to unexpected events (Viliani, 2020). Those focused on the environment and social community (so-called purpose-led-companies) proved to be more stable, and "their share prices have outperformed others since the onset of the pandemic, dropping less far and recovering more quickly than the rest of the market" (The Economist, 2020). As the stock market reels from the economic effects of the coronavirus, a type of ethical investing called ESG is emerging as a financial bright spot (Kirkman, 2020). Investors focus on how business entities treat their employees during the pandemic and how they reshape their visions to create a more sustainable future. It is therefore to be expected that the pandemic in the coming period will stimulate a wave of investment in responsible and sustainable business projects, as confirmed by estimates of the American investment company Merrill, which predicts that additional billions of dollars is set to flow into ESG funds over the next two decades, calling it a "tsunami of assets" (Kirkman, 2020). Although it caused a number of problems, COVID-19 pandemic could be a unique opportunity to reset

and move to more sustainable business practices (Bell, 2020; Bhattacharya, 2020). The crisis it caused is an unexpected opportunity for business entities to make a greater contribution to sustainability, that is to rethink what they do and how they do it, and those companies that realign themselves to the stakeholder capitalism agenda and prioritize long-term value creation through the ESG frameworks may well have a competitive advantage in the coming years (Bell, 2020; Barreiro-Gen, Lozano and Zafar, 2020). The current pandemic situation has caused a review of existing business models and a redefinition of growth and development strategies. The economic development needs to set a platform that can become sustainable over the next years, which involve improvements in strategic thinking, enhancement in service quality models as well as careful product design that respects the principles of sustainability (Diamantis, 2020). *The driving factor during the recovery period, in addition to innovation, will be new pricing strategies, offer of different payment terms and alternative distribution strategies, such as change from in-person to virtual sales or delivery* (PWC, 2020). In order to maintain what has been achieved, company leaders will need to consider the tools, behaviours and incentives that will enable employees to be productive, collaborative and creative and they will need to invest in areas that will have the most impact (PWC, 2020). Equally important, because remote work brings an elevated risk of burnout, leaders need to focus on employee well-being, including encouraging time away, offering mental health support and meeting people's individual needs (PWC, 2020). Those who have a well-tested business continuity plan or can prepare such a plan promptly, have strong leadership to ensure decisive action in response to immediate uncertainties, communicate swiftly and frankly with stakeholders and the media, demonstrate practical compassion for those impacted, who are prepared for mundane and predictable problems of business continuity, and have access to financial and other resources to absorb the effects of the crisis or conducted an early and aggressive review of cash flow and develop a cash management plan, are the ones who will survive (cf. CPA, 2020).

3. THE FUTURE OF SUSTAINABILITY REPORTING – EXPECTATIONS AND REQUIREMENTS

Due to the COVID-19 pandemic, business entities were forced to reallocate their resources to address current priorities. The pandemic has highlighted the very issues that have been driving ESG concerns – managing resources, sustainability, community impact and employee well-being (Posner, 2020 (a)). The issue of transparency of business entities' responses to pandemic challenges was raised, especially transparency in resolving sustainability issues and their reporting. CEOs are expected to speak publicly about the impact of

the pandemic, a business automation and social issues, and to focus on social engagement with the same rigor, thoughtfulness, and energy used to deliver on profits (Edelman Trust Barometer, 2021). In their reports business entities include necessary information to investors on business sustainability, related to risks and opportunities in environmental management, corporate strategy and capital allocation, human capital management, etc., with emphasis on social criteria, given that new circumstances are focusing interest on companies' treatment of employees, suppliers and the communities in which they operate (Fishman, Hatch and Allison-Hop, 2020 (b)). The reports are expected to provide comprehensive information about the current and future business values, i.e. goal-oriented solid and comparable evidence of business operations. Increasing transparency is a business value that encourages greater stakeholder involvement, and effective reporting shows how business activities affect aspects of the ESG (WBCSD, 2020). According to Fishman, Hatch and Allison-Hop (2020 (b)) future expectations regarding sustainability reporting include: consistency and completeness of published information, in particular information on the resilience of business entities to new circumstances and business conditions; responsibility of including in the reports information on the response to the crisis caused by the pandemic, but also on the response to its consequences in the future; progress in reducing environmental impact, as well as respecting diversity and employee involvement in management; and timely meeting the requirements of stakeholders for information. Expectations include improving the dynamics and quality of reporting, so "the flexibility, creativity and use of modern digital tools are a new basis for quality and timely reporting" (Joo, 2020). In addition, Posner (2020 (b)) considers it important to: use graphics, such as materiality map, to highlight key issues, and data tables that allow users to download the information into their financial models and tools; disclose future targets, goals and any commitments aligned with the strategy; craft the report by reference to one or more recognized ESG frameworks; make the connection between ESG and improving financial performance; describe the board's role in oversight of ESG activities; discuss how ESG integrates into the company's enterprise risk management activities; validate ESG information using assurance procedures; and ensure the quality of the report by publishing relevant information on the values achieved for stakeholders. The proposal of Fishman, *Hatch and Allison-Hop* (2020 (a)) is to: re-examine the materiality assessment and its integration into enterprise risk management; determine what information stakeholders need to judge the effectiveness of company response to pandemic; increase connectivity between sustainability and financial reports, take inspiration from climate reporting for disclosing on company's resilience; develop a compelling framework for reporting of company's risks and mitigation strategies; and collaborate with industry peers to ensure comparable pandemic disclosure (reporting taxono-

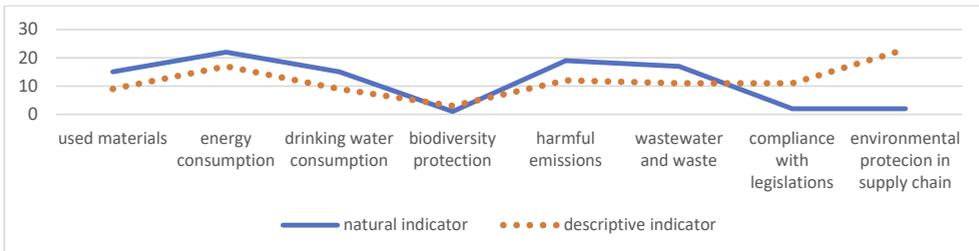
mies, disclosures and metrics). The World Economic Forum (WEF) emphasizes the importance of uniform criteria for reporting on environmental, social and governance issues. It published a set of key indicators of creating long-term value for stakeholders, i.e. the functioning of the system in which business entities are oriented towards the requirements of a wider range of stakeholders, which is known as stakeholder capitalism¹. The measurements are published in a document called *Measuring stakeholder capitalism: Toward common metrics and consistent reporting of sustainable value creation* (WEF, 2020 (a)). The purpose of the World Economic Forum (WEF) initiative is to enable business entities to report in a consistent and comparable way on key dimensions of sustainable value, hoping to catalyse faster progress towards the creation of a more formal, systemic solution, such as generally accepted set of international accounting standards (WEF, 2020 (b)). Accordingly, business entities are encouraged to start reporting core indicators in a way that is relevant and possible (e. g. in annual reports). In addition, the WEF together with the Impact Management Project forum, which brings together the efforts of leading organizations involved in publishing reporting principles and standards (Carbon Disclosure Project – CDP, Climate Disclosure Standards Board – CDSB, Global Reporting Initiative – GRI, International Integrated Reporting Council – IIRC, Sustainability Accounting Standards Board – SASB), participates in the development of a comprehensive corporate reporting system, specifically a global agreement on how to measure, manage and report on sustainability impacts (i.e. ESG risks). It is important to know that relevance of business continuity communication and ESG data as well as risk management information is growing, the way business entities engage stakeholders is changing and become virtual, necessary is the support for small and medium-sized companies as well as digitalization of supply chain, important is innovation of reports with information on business continuity and risk management, strength and disruptions in the supply chain, employees, etc., creation of the report in-house is more important than using consultations, important is further digitalization of the reporting process, and adapting information to different users (Koblun, 2020). Given the changes in stakeholder interests caused by the pandemic, they should “be provided with transparent, balanced and complete information which is void of window dressing” (KPMG, 2020(a)). The pandemic will continue to test the ability of reporting entities, auditors and regulators to remain nimble in face of the evolving challenges to ensure external reporting obligations are discharged, and that shareholders and investors’ interests continue to be safeguarded (Wong and Jui, 2020).

¹ Stakeholder Capitalism is a system in which corporations are oriented to serve the interests of all their stakeholders because serving the interests of all stakeholders, in addition to being an ethical choice, is a sensible business decision, and is essential to the long-term success (Investopedia, 2021).

4. SUSTAINABILITY REPORTING IN CROATIA

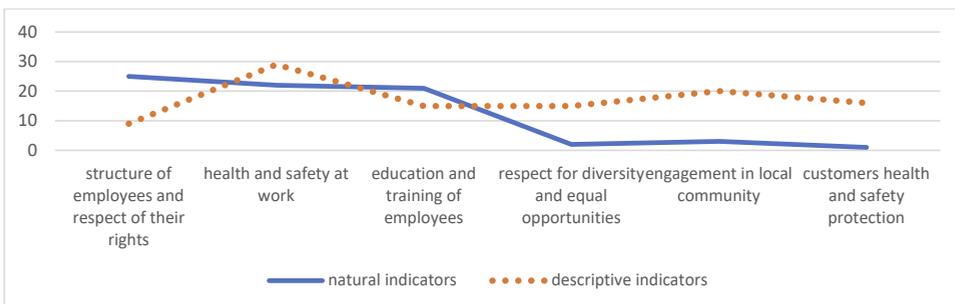
The research included reports of business entities members of the Croatian Business Council for Sustainable Development (CBCSD), available on their corporate websites. By the research, conducted during June 2021, 32 reports were collected (71% of the total number of CBCSD members). Of the collected reports, most of them referred to the year 2019 (34%) and 2020 (28%), followed by 2018 (25%) and 2017 (13%). In order to determine which sustainability information business entities predominantly publish, the data were interpreted using descriptive statistics. To determine the type of published information, a content analysis method was applied in the research. Application of the method has established indicators of environmental responsibility and social responsibility expressed in the appropriate unit of measurement (natural indicators) as well as information expressed descriptively (descriptive indicators). As a tool in conducting the content analysis, a checklist, compiled based on the requirements of the GRI Standard, was used. The analysis identified key categories of sustainability information for each business entity. The categories of information and the number of entities reporting information from these categories are presented on graphs 1 and 2.

Graph 1. Information on environmental responsibility



Source: Author's research

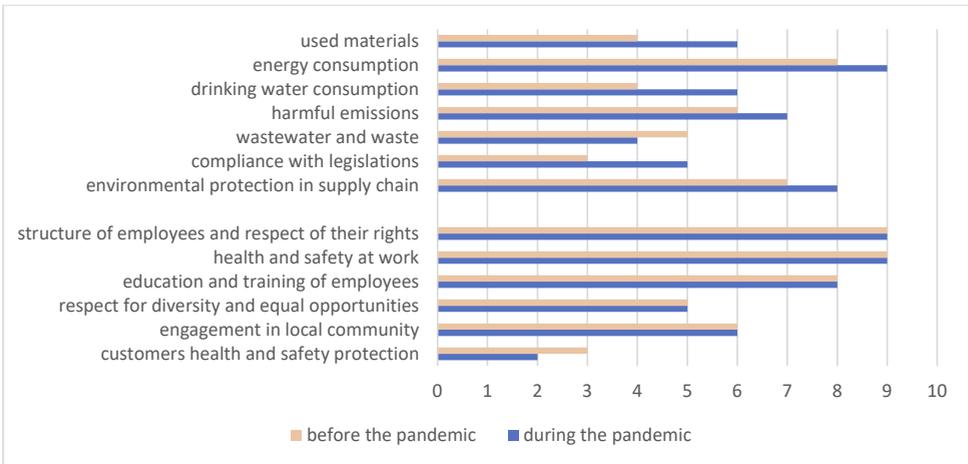
Graph 2. Information on social responsibility



Source: Author's research

According to the amount of total published information, natural indicators of environmental responsibility are dominated by information on energy consumption and reduction of energy consumption (24%), various harmful emissions and their reduction (21%), types of generated waste and waste disposal methods (18%). Information on the materials used by weight or volume is represented by 16%, as well as information of drinking water consumption (16%). Information on environmental protection in the supply chain (2%), compliance of operations with regulations in the field of environmental protection (2%) and the impact of business entities on biodiversity (1%) is the least represented. Of the descriptive indicators, most information was published on environmental protection in the supply chain (24%), which is significantly more than in natural indicators. This is followed by information on energy consumption and reduction of energy consumption (18%) and various harmful emissions and their reduction (13%). Of the total published descriptive environmental information, information on the types of waste generated and methods of its disposal account for 12%, as well as information on compliance with legislations (12%). The following is information on drinking water consumption (9%), materials used (9%) and the impact on biodiversity (3%). Among the natural indicators of social responsibility, the indicators of the structure of employees and respect of their rights stand out (34%) and the indicators of health and safety at work (30%). The next indicator is the number of new employments and the average number of hours spent on employee training (28%). Natural information on the engagement of business entities in the local community (4%), respect for diversity and equal opportunities of employees (3%) and protection of the health and safety of customers (1%) is the least represented. In the case of social responsibility indicators, the descriptive component of reporting is dominant in relation to the natural one. Of the descriptive information, the most common is health and safety at work information (28%). This category includes information on implemented occupational safety and health management systems, workplace health care, prevention of occupational health and safety problems, promotion of workers' health and their participation in occupational health and safety programs. The following is information on the involvement of business entities in the local community (19%) and information on activities to protect the health and safety of customers (16%). Information on respect for diversity, primarily on the pay ratio of women and men, the percentage of workers whose performance and career development are regularly monitored, as well as the exercise of other rights such as the right to maternity leave, have a share of 14% in the total amount of information, same as information on education and training of workers (14%). There is the least descriptive information on the structure of employees and respect for their rights (9%).

Graph 3. Information on environmental responsibility and social responsibility before and during COVID-19 pandemic



Source: Author's research

A comparison of published sustainability information from reports before and during COVID-19 pandemic was also conducted in the research. By the time this paper was prepared, 9 (20%) of the observed business entities published their new reports (for business year 2020). The reports show an increase in the quantity of almost all types of information on environmental responsibility compared to previous years (Graph 3). Although the amount of information on social responsibility, classified on the basis of GRI standards, has not changed significantly, the total amount of information on social responsibility has increased. Namely, all observed business entities in their reports paid attention to the impact of the pandemic on business and sustainability. The published information is primarily related to maintaining business continuity and crisis management, maintaining a constant number of employees, developing new and strengthening existing capacities for remote work, continuous information and support to employees, maintaining continuity of employee competencies (virtual learning) and donations to help fight the pandemic. Publishing information on the fight against the pandemic of business entities in Croatia is in line with current trends in sustainability reporting globally, and confirms previous research proven knowledge of the importance of sustainability information in decision-making processes during the pandemic and sustainable development strategies after the pandemic.

5. CONCLUSION

Sustainability reporting is the result of the focus of business entities on sustainable development and ensuring business transparency. This proved particularly important during COVID-19 pandemic, during which many business entities gave priority to social responsibility over short-term profitability. The pandemic has not shifted its focus from the environmental dimension of sustainability either. Moreover, the continuous response to environmental issues has become an indicator significant to investors of the resilience and ability of business entities to adapt to different challenges. The pandemic can therefore also be seen as an opportunity to move to more sustainable business practices, increase competitiveness and focus on long-term value creation. It has raised questions about the adequacy of existing management models for crisis management, risk management and the formulation of sustainable business strategies. In this context as well as in the context of tightening legislations, and consequently expanding the number of reporting entities, an increase in the number of published reports is expected. It is therefore recommended for the future research to focus on the quality and usability of sustainability information to their users, as well as on factors relevant to improving the reporting practices of all, not just large business entities.

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IZVJEŠTAVANJE O ODRŽIVOSTI ZA VRIJEME PANDEMIJE: SADAŠNJE STANJE I OČEKIVANJA ZA BUDUĆNOST

SAŽETAK RADA

Iako je pandemija COVID-19 uzrokovala znatne poremećaje i ograničenja u djelovanju poslovnih subjekata, raspravlja se da bi mogla biti jedinstvena prilika za intenziviranje razvoja dugoročno održivih poslovnih praksi. Prema dosadašnjim istraživanjima reagiranja poslovnih subjekata na pandemiju, utvrđeno je da su prioritet dali društvenoj odgovornosti naspram ostvarivanja kratkoročne profitabilnosti. Također, fokus nisu preusmjerili s okolišne dimenzije održivosti, štoviše, kontinuitet njihovog odgovora na pitanja okoliša pokazao se zanimljivim pokazateljem sposobnosti prilagođavanja različitim izazovima. Raspravlja se i o nužnosti daljnjeg standardiziranja nefinancijskog izvještavanja. Prijedlogom nove EU Direktive o korporativnom izvještavanju o održivosti proširuje se broj obveznika nefinancijskog izvještavanja, zahtijeva detaljnije izvještavanje, uvodi obveza neovisne provjere objavljenih informacija, kao i digitalni pristup informacijama putem jedinstvene europske pristupne točke (engl. European Single Access Point). Sukladno tome, kroz ovaj rad cilj je dati pregled dosadašnjih spoznaja o utjecaju pandemije na izvještavanje o održivosti te istaknuti izazove s kojima se poslovni subjekti u aktualnom okruženju susreću. Također, cilj je istražiti izvještaje o održivosti poslovnih subjekata u Hrvatskoj te utvrditi koje pokazatelje odgovornosti za okoliš i društvene odgovornosti pretežno objavljuju, s osvrtom na objave tijekom pandemije.

***Ključne riječi:** izvještavanje o održivosti, pandemija, pokazatelji*

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MODELLING OF THE EFFECTS OF ANNUAL WRITTEN GROSS PREMIUM ON COSTS OF ACQUISITION AND SETTLED CLAIMS IN THE REPUBLIC OF CROATIA'S HEALTH INSURANCE MARKET¹

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ABSTRACT

Information that facilitates the recognition of market trends and adaptation of insurance company business to market movements is obtained using insurance market analysis. For that purpose, the method of modelling is used, by which the interactive effect of variables and correlation of movements of the observed phenomena over a period of time are researched. This method is also used to obtain new prognostic information for market prediction and insurance company management. In the conducted research, the Republic of Croatia's health insurance market is analysed. The research was directed towards the annual gross written premium, annual settled claims and acquisition costs as a central focus in insurance company business.

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The aim of the paper is to, by applying accounting information and scientific and research methods, explore the correlation between the annual gross premium and the acquisition costs and damages in the health insurance market of the Republic of Croatia and to shape them using scientific models. By the application of these models, the predicted impact of the gross written premium on the costs of acquisition and the settled claims is illustrated. In this way, the creation of the new prognostic accounting information for the needs of the analysis and planning of business activities in the Republic of Croatia's health insurance market is facilitated.

Key words: *gross written premium, acquisition costs, settled claims, health insurance, accounting information*

1. INTRODUCTION

Successful business performance in the insurance industry consists of a positive financial result, realised from the underwriting operations and investment of the monetary funds obtained from the agreed insurance covers. The success of investment is expressed in the revenue and expenditure created from the investment of monetary funds. There are three components in the underwriting business which considerably affect the business result, namely agreed insurance cover, damages occurring from the insured risk and operational costs.

Costs in the insurance industry are divided into acquisition costs and administration costs. Administration costs are fixed costs and are independent from insurance underwriting, while the acquisition costs are variable costs and are subject to the influence of the scope of sale transactions in the insurance underwriting process. In the competitive insurance market, profitable and financially sound insurance companies are built on cost-effective business operations (Sriram, Shi. & Ghosh, 2016, 178).

Accounting information from the insurance market facilitates the analysis and prediction of the insurance market movements, with the aim of recognition of trends and implementation of innovative business methods. (Bikker, 2016, 75). The costs of acquisition and settled claims are associated with insurance underwriting and that is why the movements of acquisition costs and settled claims in the market have been explored in relation to the annual gross written premium. Gross premium represents the price of insurance which a policyholder pays for the agreed type of insurance. (Andrijašević & Petranović, 1999, 214).

The annual gross written premium affects the annual acquisition costs, as well as the amount of settled claims and we researched whether the correlation can be statistically modelled for the entire Republic of Croatia health

insurance market and, consequently, to predict the amount of costs of acquisition and settled claims in the health insurance market, depending on the predicted value of the annual gross written premium. The goal of the paper arises from the above and is to, based on the annual market movements, model the relationship between the annual gross written premium with the costs of acquisition and annual gross written premium with settled claims. New prognostic information is then formed about the movements of acquisition costs and settled claims with the aim to understand the market legality and advancement of business processes in the Croatian insurance industry.

2. LITERATURE REVIEW

The insurance market research facilitates new knowledge which has scientific and applicative value. Moro and Anderloni (2014) also show new empirical proofs of the determinants of economic performances in the main European insurance markets. For this purpose, they tested the effects of several characteristics, such as the size of insurance companies, Structure and policies of investment on economic results for a group of non-life insurance companies operating in the main European markets.

In his paper, Y. Shiu (2004) explored statistically significant determinants of the United Kingdom insurance companies' market success with application of a regression model during the period from 1986 to 1999. Elinga and Luhnen (2010) researched the efficiency of the international insurance market and proved that the information about movements in the international insurance industry markets facilitates consideration and analysis of cost effectiveness and illustration of market possibilities for insurance companies. Wu et al. (2007) examined the effects in the insurance market which can help reduce insurance companies' operational costs. In their paper, they proposed a new data analysis model which simultaneously can assess sales and investment impacts of the Canadian insurance industry.

Pervan, Pavić and Kramarić (2010) illustrated the determinants of profitability of Croatian non-life insurance companies. The study results show that the ownership, cost ratio and inflation have a negative and significant effect on profitability. Ćurak et al. (2011) directed their research towards the financial success of the Croatian composite insurers. Applying a panel data technique, the authors have proven that the company size, takeover risk, inflation and return of capital significantly affect profitability of the insurance companies in Croatia.

Pervan et al. (2012) researched the profitability determinants in the insurance industry in Bosnia and Herzegovina, while the same author, together

with Poposki and Ćurak (2014) analysed the insurance sector in the Republic of North Macedonia, using a SWOT analysis and the analysis of insurance companies' profitability determinants.

Burca and Batrinca (2014) explored the insurance companies' financial impact at micro and macroeconomic levels, as well as the elements of insurance companies' financial success in the Romanian insurance market during the period from 2008 to 2012 and, in his paper, Lee (2016) studied the relationship of specific macroeconomic factors in the Taiwanese insurance industry.

Daare (2016) researched the factors of general profitability in the insurance market in India, and Kozak (2011), applying a regression model, analysed the profitability determinants of the twenty-five most important insurance companies from Poland while, in his paper, Kaya (2015) focused on the exploration of specific factors which affect the profitability of the companies operating in the Turkish non-life insurance market.

3. RESEARCH METHODOLOGY

In the research, the statistical regression method was used, which is applied in order to explore the relationships between the variables, where they are linked together into the regression model. By the regression model, the changes in dependent variables are described, in relation to the independent variables. The general linear regression model reads (Aczel, Sounderpandian, 2009):

$$Y = f(x) + e \quad (1)$$

If the functional part of the model has this shape:

$$f(x) = a + \beta X \quad (2)$$

The model becomes:

$$Y = a + \beta X + e \quad (3)$$

The regression analysis is conducted on the basis of n pairs of X and Y values, i.e. pairs $(x_1, y_1), (x_2, y_2), \dots, (x_i, y_i), \dots, (x_n, y_n)$, so the model is expressed by the n system in the equation,

$$y_i = d(x_i) + e_i \quad (4)$$

that is:

$$y_i = a + \beta x_i + e_i \quad i = 1, 2, \dots, n \quad (5)$$

The linear models are applied in the insurance industry as the phenomena in insurance are observed through specific linear combinations of evaluation variables (Garrido et al., 2019). In this respect, the relationship between gross

premium and settled claims arises from the insurance contract, which obliges the insurance company to compensate the damage for an occurred insured event. From that point of view, in the application of the statistical regression model, the annual gross written premium is an independent variable and annual settled claims a dependent variable.

The movement of the observed phenomena is expressed using statistical models in order to determine the statistical relationships and prediction of movements of the dependent variable of annual claims due to the change in the independent variable of annual gross written premium. The aim of the research is to establish whether there is a value interdependence of the total annual gross premium movements and annual movements of settled claims in the Croatian health insurance market which can be statistically modelled and applied for the prediction of settled claims. The analysed variables are the sum of the total values of all types of health insurance in the market, namely, compulsory health insurance, supplementary health insurance, additional private and other voluntary health insurance. The research results have their application at the national level, which is reflected in the description and modelling of the changes which occurred in the course of the previous annual periods. Furthermore, the research results are applicable in insurance company management, as the research methodology and results represent an additional instrumentation in the prediction of claims in insurance companies.

Acquisition costs are a category which substantially affects the success of business operations in insurance companies and are created during the insurance underwriting. For that reason, the prediction of acquisition costs is important for business performance planning in the insurance industry. Given that those costs are subject to sales activities, the aim of the research is to explore and model the interrelationship between annual movements of the gross premium and acquisition costs and, in this way, to test whether, at the national market level, the annual value interrelationship between the gross written premium and acquisition costs in the national market, can be determined. In the statistical modelling, the annual gross premium from the observed years is an independent variable as, from the planning insurance underwriting process, acquisition costs are created, which are implemented in the dependent variable of the statistical modelling. Due to the importance of the acquisition costs in the insurance industry, the research was conducted within the acquisition cost structure, where the costs of commission and other acquisition costs were also explored.

Following all of the above, the starting point of the set hypothesis is that, with the application of information from the Croatian health insurance market, value interrelations between the total gross written premium and settled claims

can be described and modelled, as well as the gross written premium and acquisition costs and that, on this basis, prognostic information about the impact of the predicted amount of gross premium on the predicted value of the settled claims and the predicted value of the acquisition costs can be formed. The hypothesis testing was carried out for the Republic of Croatia's health insurance market and the tested period was between the years 2005 and 2019.

4. RESEARCH APPLICATION

The initial data, used in the research of the Republic of Croatia market in the period between 2005 and 2019, is shown in the table below

Table 1 Annual gross written premium, settled claims and acquisition costs in the Republic of Croatia's health insurance market in the period from 2005 to 2019.

Year	Gross written premium in 000 kn)	Settled claims (in 000 kn)	Acquisition costs (in 000 kn)	Acquisition costs	
				Commission costs (in 000 kn)	Other acquisition costs (in 000 kn)
2005	187,244	110,783	24,926	15,934	8,992
2006	221,466	126,199	28,205	12,857	15,348
2007	251,855	161,330	28,141	10,166	17,975
2008	281,209	181,430	27,252	7,543	19,709
2009	271,169	206,973	25,121	6,651	18,470
2010	258,703	192,202	25,151	6,901	18,250
2011	255,147	194,947	20,264	5,830	14,434
2012	238,668	184,063	20,184	7,085	13,099
2013	249,438	162,715	36,684	7,573	29,111
2014	278,338	156,484	35,849	12,689	23,160
2015	329,278	200,007	60,607	35,322	25,285
2016	409,206	254,070	72,247	44,103	28,144
2017	487,840	250,078	88,905	50,107	38,798
2018	519,962	294,126	137,536	76,920	60,616
2019	605,981	320,101	119,857	66,886	52,971

Source: HANFA <https://www.hanfa.hr/publikacije/statistika> and HUUO <https://huo.hr/hr/statistika> (visited on 10.06.2021)

In the first step, the relationship was examined between annual movements of the gross written premium and settled claims using the regression analysis. Annual settled claims represent the sum of all occurred and settled claims from different types of health insurance. In statistical modelling, the relationship was tested between the independent variable of gross written

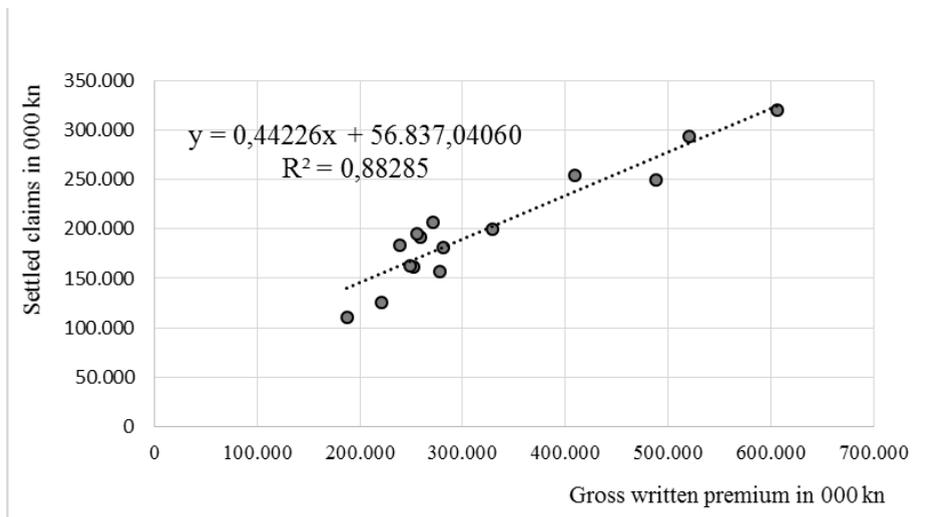
premium and the dependent variable of annual settled claims in the period between 2005 and 2019.

Table 2 Parameters of the regression model of the relationship between gross premium and settled claims in the Republic of Croatia’s health insurance market

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42052845699,928	1	42052845699,928	97,966	,000 ^b
	Residual	5580374487,806	13	429259575,985		
	Total	47633220187,733	14			
a. Dependent Variable: VAR00002						
b. Predictors: (Constant), VAR00001						
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	56837,04060	15393,331		3,692	,003
	VAR00001	,44226	,045	,940	9,898	,000
a. Dependent Variable: VAR00002						

Source: Authors’ calculation according to the data from table 1.

Graph 1 Scatter diagram and regression model of the relationship between the annual gross premium and settled claims in the Republic of Croatia’s health insurance market in the period between 2005 and 2019



Source: Authors’ calculation according to the data from table 1.

The obtained test results prove that, although there is a diversity in the types of health insurance which make up the entire health insurance market, the value of the total gross premium can be statistically linked to the total settled claims and described by the statistical model. By this, prediction is facilitated of total annual settled claims in the market depending upon the predicted annual gross written premium. By inclusion of the predicted amount of gross premium in the statistical model, a predicted value of settled claims is obtained. To illustrate the application of the model, the predicted gross premium of 634,270 thousand kunas will be used. This amount, at the same time, represents the annual gross written premium in the health insurance market in 2020, according to the data from the Croatian Insurance Bureau. By inclusion of the predicted amount of gross premium in the model, the amount of the predicted settled claims is obtained in the amount 337,349 thousand kunas. The ratio between predicted settled claims and gross premium shows the number of damages per unit of coverage so, based on the obtained results, it is expected that on one kuna of gross premium written, 0.53kn will be paid for claims.

On the grounds of the illustrated data, a presumption arises that, in insurance companies which operate in the health insurance market in the Republic of Croatia, prognostic regression models which facilitate the predictability of the annual settled claims on the basis of the annual planned gross premium, can be established. This presumption has its starting point in the fact that the analysed information from the insurance market represents a sum of the realised scales of all insurance companies which operate in the health insurance market.

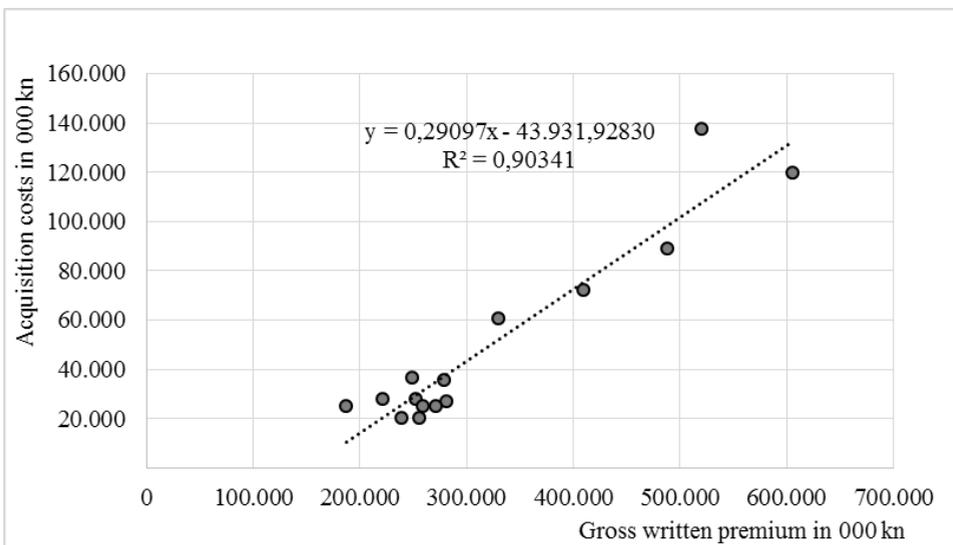
The acquisition costs are created from the processes of sales and underwriting. By the application of the annual gross written premium and annual acquisition costs, the interrelation is tested in the movements of the observed variables, and the results are shown in both the table and the graph.

Table 3 Parameters of the regression model of the relationship between gross premium and acquisition costs in the Republic of Croatia’s health insurance market

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18203418336,630	1	18203418336,630	121,583	,000 ^b
	Residual	1946354892,304	13	149719607,100		
	Total	20149773228,933	14			
a. Dependent Variable: VAR00002						
b. Predictors: (Constant), VAR00001						
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-43931,92830	9091,006		-4,832	,000
	VAR00001	,29097	,026	,950	11,026	,000
a. Dependent Variable: VAR00002						

Source: Authors’ calculation according to the data from table 1.

Graph 2 Scatter diagram and regression model of the relationship between the annual gross premium and acquisition costs in the Republic of Croatia’s health insurance market in the period between 2005 and 2019

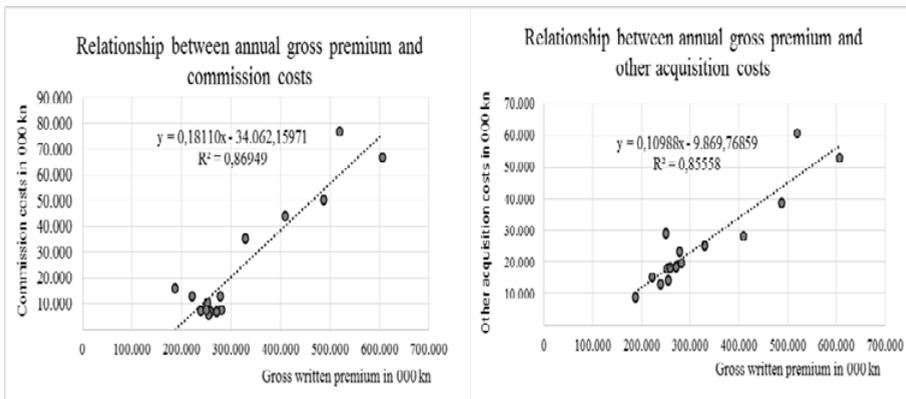


Source: Authors’ calculation according to the data from table 1.

The test results show that movements of acquisition costs can be described using the statistical model, as dependent variables in the regression model, in relation to the gross written premium. This proves yet another characteristic of the analysed health insurance market. Apart from proving the statistical connection of movements, by application of the regression model, the movement of acquisition costs in relation to the predicted gross written premium, is also predicted. For the predicted gross premium of 634,270 thousand kunas, the predicted amount of acquisition costs equals 140,622 thousand kunas, i.e. on one kuna of gross premium, acquisition costs of 0.22kn are expected.

The acquisition costs are divided into two groups, namely into commission costs and other acquisition costs. Due to the importance of acquisition costs in the insurance industry, the hypothesis has been additionally tested according to the acquisition cost groups. From the scatter diagrams which illustrate the relationship between the annual gross written premium with commission costs and the relationship between the annual gross written premium with other acquisition costs, interconnections were perceived between the observed variables. The scatter diagram proves the linear movement of both segments of the acquisition cost with annual gross written premium.

Graph 3 Scatter diagram and regression model of the relationship between the annual gross premium, acquisition costs and other acquisition costs in the Republic of Croatia's health insurance market in the period between 2005 and 2019



Source: Authors' calculation according to the data from table 1.

The regression models of the relationship between the annual gross premium, commission costs and other acquisition costs facilitate the delimitation in the predicted amount of acquisition costs. By including the predicted gross premium in the regression model of commission costs, the amount of 80,804

thousand kunas is obtained, which shows that 57% of the total predicted acquisition costs concern commission costs. The same procedure is applied to calculate other acquisition costs, where the regression model is used which shows the relationship between the annual gross premium and other acquisition costs. By inclusion in the regression model, the amount of 59,825 thousand kn is obtained. So, on one kuna of gross premium, a commission cost is expected equalling 0.13 kn, as well as other acquisition costs, in the amount of 0.09 kn.

Summarising the overall research results, the method of modelling the value effect of the annual gross written premium on the value of the annual settled claims and insurance company acquisition costs in the analysed market, has been confirmed. The modelling method is used to calculate new prognostic information about annual settled claims and acquisition costs. The application of the illustrated methodology facilitates additional information to participants in the health insurance market for comprehension of market trends and use of information for improvement of business operations in this insurance segment.

5. CONCLUSION

The health insurance market provides summary data about business performance of all participants in the market. The information from the insurance market is used for the analysis of previous periods and prediction of annual trends. This information is interlinked for analytic market research and formation of business models for the insurance industry.

Prediction of costs in the market has a significant role in the process of insurance company management as it facilitates the comparison and adaption of business operations to market movements. The purpose of such information is to maintain the business acceptable levels of costs which is essential for insurance company business performance and maintenance of a competitive position in the market.

The conducted research proves the existence of a statistical relationship and the effect of the annual gross written premium on the movement of acquisition costs and settled claims in the Republic of Croatia's health insurance market, enabling the modelling and consideration of prognostic movements in the market in a correlation with the predicted annual gross premium. The research results reveal new characteristics of the analysed health insurance market in the covered areas, they widen the information basis for planning and decision making and represent an additional instrumentation for insurance company management in this insurance segment.

With the aim to develop new scientific knowledge, by using the illustrated methodology, research can be conducted according to the groups within health insurances which include compulsory, supplementary, additional private and other voluntary health insurances. In this way, prognostic scales of movement can be formed in the observed categories according to the types of health insurance. The illustrated methodology can be applied in insurance companies for the comparison of movements between insurance companies and health insurance markets.

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MODELIRANJE UTJECAJA GODIŠNJE ZARAČUNATE BRUTO PREMIJE NA TROŠKOVE PRIBAVE I LIKVIDIRANE ŠTETE NA TRŽIŠTU ZDRAVSTVENOG OSIGURANJA REPUBLIKE HRVATSKE

SAŽETAK RADA

Analizom tržišta osiguranja dobivaju se informacije koje omogućuju prepoznavanje tržišnih kretanja i prilagodbu poslovanja osiguravajućih društava tržišnim zahtjevima. U tu svrhu koristi se postupak modeliranja kojim se istražuje međusobni utjecaj varijabli i povezanost kretanja promatranih pojava u vremenskom razdoblju, te za dobivanje novih prognostičkih informacija za predviđanje tržišta i upravljanje osiguravajućim društvima. U provedenom istraživanju obuhvaćeno je tržište zdravstvenog osiguranja Republike Hrvatske. Istraživanje se usmjerilo na godišnju zaračunatu bruto premiju, godišnje likvidirane štete i troškove pribave kao centralan fokus u poslovanju osiguravajućih društava. Cilj rada je primjenom računovodstvenih informacija i znanstveno-istraživačkih metoda istražiti međupovezanost godišnje bruto premije sa troškovima pribave i šteta na tržištu zdravstvenog osiguranja Republike Hrvatske i uobličiti ih putem znanstvenih modela. Primjenom tih modela prikazati prognozirani utjecaj zaračunate bruto premije na troškove pribave i likvidirane štete. Tim putem omogućiti stvaranje novih prognostičkih računovodstvenih informacija za potrebe analize i planiranja poslovanja na tržištu zdravstvenog osiguranja u Republici Hrvatskoj.

***Ključne riječi:** bruto premija, troškovi pribave, likvidirane štete, zdravstvena osiguranja, računovodstvene informacije*

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DEFINING APPELLATE ALLEGATIONS IN PUBLIC PROCUREMENT CASES –THEORY AND PRACTICE

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ABSTRACT:

This paper introduces the appeal process into the legal framework and gives a brief overview of appeal proceedings in public procurement cases in theory and practice. Consequently, in practice, the appeal process usually ends with rejection of the appeal because of the unfoundedness of the appellate allegations and as a result of which months are lost in which the client stops the procedure and cannot contract until the State Commission for Control of the Procedure makes a decision, this paper focuses on the factual basis of the appeal process. Based on the above, at the heart of the subject analysis and reflection are the important issues of good definition of grievance allegations as a product of good practice and imperatives in the skills of filing grievances and proving that grievance allegations are discussed, giving critique and concrete suggestions of key methodology for setting elements of factual support. In this regard, examples of flat-rate appeal proceedings are presented, which stand out as the most common reasons for the loss of time in which the contracting authority could have completed the public procurement procedure in question. Also, from the client's perspective, the importance of willingness to prove and justify annulment or selection is emphasized. The task of this paper is a thorough review of the most common problems during the appeal process in terms of the effective legal protection

encountered by authorized representatives of contracting authorities and tenderers in the procedure, whose phases will try to justify the hypothesis that the demanding administrative complexity of the appeal process in terms of proving and refuting appellate allegations is one of the key reasons for the procedural issues of public procurement.

Keywords: public procurement, appeal process

1. INTRODUCTION

According to the latest data published in the Statistical Report on Public Procurement in the Republic of Croatia for 2019, the total value of public procurement amounts to HRK 54,105,927.15 without VAT. A large number of economic entities on the market, as well as public and sectoral ordering parties, establish contractual relations based on conducted public procurement procedures. A market competition in which such a large number of participants compete for a contract can undoubtedly end up in a way that individual participants feel that they were not selected due to violation of subjective rights and are therefore damaged. In order to guarantee legal security to the participants in the public procurement procedure and ensure the lawful use of budget funds, the legislator provided an appeal procedure as a legal remedy. The possibility of consuming a legal remedy in public procurement procedures provides the possibility of legal protection to many economic entities that are participants in the procedure if they consider that they have suffered damage due to violation of subjective rights provided that they had a legal interest in obtaining a particular public procurement contract. Also, the appeal process's legal security undoubtedly strengthens the participants' confidence in the procedures in the very legality of the implementation of the procedures. Public procurement is a living system of normative frameworks with a tendency to complement through good practice and improvement following the challenges of the new time, which, due to the adjustments, represent a platform for new procedural practice in terms of public procurement of innovative solutions.

2. IMPERATIVE OF THE APPEAL ALLEGATION IN THE APPEAL PROCEDURE

When an aggrieved party considers that it has suffered damage and decides to initiate an appeal procedure, it is first necessary to define well and provide good argumentation on the irregularity due to which it considers that there has been a violation of subjective rights and ultimately damage. Although the burden of proof is on both sides, the prerogative of the appellate

procedures is at the initiative of the appellant. Article 420, paragraph 1, of the Public Procurement Act (hereinafter: PPA)¹ defines the appeal as a description of irregularities and an explanation. The appeal statement is the mandatory content and the core of any appeal. An appeal that would not contain appellate allegations would be devoid of purpose. However, the complexity of the institute itself is, on a case-by-case basis, summarized in the question of which rights should be stated for the allegations to be substantiated. When defining appellate allegations, it is crucial to follow the provisions of the Procurement Documentation and how the ordering party has defined the requirements and the ways of proving that these requirements have been met. If the appellant files an appeal against the provisions of the Procurement Documentation, it is necessary that the appellate allegations have a basis in the legal provisions and that they are unquestionably proven. In principle, very clear, but in practice, the same requires applying both parties' learning outcomes and experiences to the appeal procedure.

2.1. APPELLATE ALLEGATIONS IN PRACTICE

In the continuation of the paper, two examples of defining the appellate allegation and factual determination and proving the circumstances of the appellate allegation are presented. Procedural complexity of appellate allegations, the importance of each segment of argumentation of appellate allegations with a broader picture of achieving the objectives of the ordering party and appellant's appellate rights, within the legal framework, make each appellate procurement procedure a subject that requires a separate systematic analysis of the case. We first point out the appellate procedure case in which the appellate allegation is not adequately defined concerning the procedure stage to which the appeal is lodged. It is clear from the above example that if the appellate allegations are not following the legal provisions regarding the moment of declaring an individual appellate allegation, such allegations are assessed as unfounded, and the appeal is rejected. In the second example, we emphasize the importance of factually establishing and proving the appellate allegations' circumstances. It is necessary that every appellate allegation has a basis in legal provisions and is unquestionably proven. If the appellate allegations remain only allegations, without reference to evidence and a link to laws/bylaws, such allegations are assessed as unfounded, and the appeal is rejected.

¹ Public Procurement Act, the Official Gazette of the Republic of Croatia, No 120/16

2.1.1. An example of appeal definition issues

From the Decision of the State Commission for Supervision of Public Procurement Procedures (hereinafter: DKOM)² of June 24, 2021, in which the appellant Srijem Ltd from Osijek files an appeal against the Decision on Annulment in the open procurement procedure for the subject of the procurement: gloves, ordered by Dr Josip Benčević General Hospital of Slavonski Brod, we see an example of the appeal's rejection due to its unfoundedness. In the appeal, the appellant disputes the validity of the review and evaluation of bids and proposes the annulment of the Decision on Annulment. He considers that the ordering party unfoundedly rejected his offer. The appellant's offer was rejected due to non-compliance with the required description of the technical specification for item 6 of the cost estimate - cotton gloves, packed in pairs, size 6-16. The appellant offered size of 6-12 for the said item. Following the above, the ordering party determines that the appellant does not have sizes 13-16 and rejects the bid. The appellant explains the appeal so that sizes 13-16 do not exist at all and refers to the novelty in the labelling and nomenclature of cotton gloves, according to which the largest size is 12-XXXL. It is clear that the appellant bases the backbone of the appeal on the appeal allegation, which is not appropriate to the stage of the procedure in which the appeal was filed (on the Decision on Annulment). It is primarily emphasized here that the provision of Article 280, paragraph 4, of the PPA, prescribes that tenderers prepare their tender exclusively according to the requirements and conditions defined in the Procurement Documentation. Therefore, in this case, the appellant was obliged to prepare a bid following the Documentation conditions and the ordering party was obliged to evaluate such a bid. According to the provision of Article 202 of the PPA, in the previous stages of the procedures, the appellant had the opportunity to request the ordering party to amend the description of the disputed item. Also, following the provision of Article 406 (paragraph 1, item 1) of the PPA, the appellant could have filed an appeal alleging an unsatisfactory description of the item through an appeal to the Procurement Documentation. It is undisputed that the appellant was dissatisfied with the requested description of paragraph 6 concerning the prescribed sizes requested. However, when the ordering party reviewed and evaluated the tenders and decided to annul the procedure, the appellant's remark on the prescribed sizes was no longer relevant, and the appellate allegations failed.

² Decision of the State Commission for Supervision of Public Procurement Procedures, Class: UP/II-034-02/21-01/491; Registration Number: 354-01/21-6

2.1.2. An example of factual determination and proof of circumstances issues

From the DKOM Decision³ of June 17, 2021, in which the appellant Hrvoje Pozar Energy Institute of Zagreb, lodges an appeal against the Decision on Selection in the open procurement procedure for the subject of the procurement: development of the investment concept of sustainable energy of the City of Rijeka, client City of Rijeka, we also see an example of the rejection of an appeal on the ground that the appeal allegation is unfounded. The appellant disputes the legality of the selection decision and the validity of the bid of the selected bidder and the second-ranked bidder. The challenge to the validity of the selected bidder's bid is based on the complaint stating that the selected bid was extremely low-priced, which distorted competition. In doing so, the appellant explains that the bid of the selected bidder is:

- more than 50% lower than the average selling price in the market,
- 50% lower than the estimated value of the purchase,
- 27% lower than the second-ranked offer.

Furthermore, following Article 22, paragraph 1 of the Regulations on procurement documentation and bidding in public procurement procedures (hereinafter: the Regulations)⁴, some prerequisites must be met if the ordering party finds it necessary to require an explanation of an extremely low bid and these are:

- at least three valid bids have been received,
- the bid price is more than 20% lower than the price of the second-ranked valid bid,
- the price is more than 50% lower than the average price of the remaining valid bids.

The appellant's explanation of the reasons why he considers that the bid of the selected bidder, for which the ordering party was obliged to request an explanation of the extremely low bid, has no basis in the provisions of the Regulations that define an extremely low bid. If the appellant considered that there were circumstances for applying Article 22, paragraph 2, of the Regulations, which prescribes that the ordering party may require an explanation of

³ Decision of the State Commission for Supervision of Public Procurement Procedures, Class: UP/II-034-02/21-01/447; Registration Number: 354-01/21-9

⁴ Regulations on procurement documentation and bidding in public procurement procedures, Official Gazette No 65/2017, 75/2020

the very low price for other reasons, he should have proved and explained this, which he did not do. Also, the appellant's allegation in which the appellant alleges distortion of competition, which puts him in an unequal position, is not related to the established facts or is not substantiated or proved by the appellant. According to the provision of Article 403, paragraph 1, of the PPA, each party to the procedures shall state the facts on which its claims are based, and those facts must be substantiated. Thus, it is not sufficient to merely state the fact as an appellate allegation. If the appellate allegation is not proven, it remains assessed as a flat claim and an unfounded appellate allegation.

3. ISSUES OF PROVING / REFUTING APPELLATE ALLEGATIONS

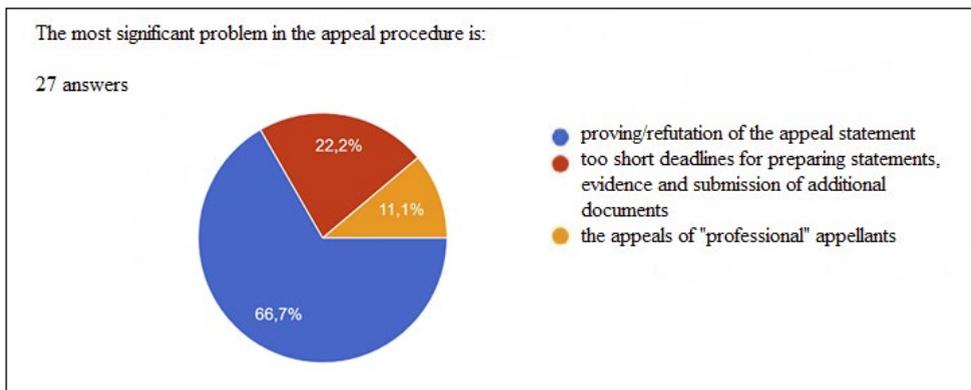
According to a survey conducted for a research seminar paper⁵, in June 2021, we surveyed a sample of 27 respondents who were parties to appeal procedures, bidders and authorized representatives of public ordering parties, including a wide range of professionals engaged in the public procurement system. It is interesting to point out their answers to the question of what is their most significant problem in the appeal procedure. These are the ones who apply the normative frameworks, guidelines and recommendations in practice, thus creating an appeal procedure within this complex institute. As a critical issue in the course of the appeal procedure, 66.7% of the respondents consider proving/refuting the allegations of the appeal. In addition, 22.2% of the respondents see too short deadlines for preparing statements, evidence and submission of additional documents as a problem, and 11.1% of them stated the problem of "professional" appellants. By analyzing the attached survey question, we would like to emphasize the justification of the central topic of this paper in terms of presenting the selection of specific issues of correct argumentation and refutation of appellate allegations, which represents food for thought and a problem "on both sides" of public procurement.

Regarding the selection of the respondents, it is clear that they had a common answer to one of the questions; unsurprisingly, most of them pointed out the so-called struggle with arguments as a stumbling block in the realization of the stated rights and legal interests. Therefore, the graphic presentation of the answers to this question shows that the

⁵ Matošević, M., 2021, "Pravni lijekovi u postupcima javne nabave", Nikola Tesla" Polytechnics of Gospić, research seminar paper

complexity and administrative demand of the appellate procedure lie mainly in proving/refuting the appellate allegations. From the above, it may be concluded that defining and proving the facts from the appellate allegations is crucial for the successful outcome of the appellate procedures, so it is important to ensure that all elements of the appellate allegation are well defined and proven.

3.1. GRAPHIC PRESENTATION OF THE ANSWER TO THE QUESTION OF THE MOST SIGNIFICANT PROBLEM DURING THE APPEAL PROCEDURE:



Source: Research seminar paper, Matošević, M., "Pravni lijekovi u postupcima javne nabave"

4. PUBLIC PROCUREMENT AND NEW CHALLENGES REGARDING APPEAL PRACTICE

In a time of new challenges, crises caused by COVID-10 disease, parallelly with the development of new technologies, the fourth industrial revolution, energy transition and a whole new digital paradigm, subject reflections on modern public procurement have been placed in the context of time and new challenges. Guidance on Innovation Procurement C(2021) 4320⁶, published on June 21, 2021, at the time of writing, makes an interesting novelty, i.e. legally non-binding practical guidelines in the field of PPA, both for the practical part and professional discussions. The document aims to encourage public investment through guidelines and examples of good practice with a tendency to

⁶ Guidance on Innovation Procurement C(2021) 4320, available at: <https://ec.europa.eu/docsroom/documents/45975>), published on June 21, 2021.

transform the current economy into an economy of sustainable development⁷. The imperative is placed on the green and digital economy in line with the aforementioned new social paradigm. Besides the educational purpose of the inherent nature of the topic aimed at popularization of the practice, the document contains useful examples of how to conduct public procurement of innovative solutions, i.e. how to use opportunities to raise quality in the process and create new opportunities for companies, suppliers and society as a whole. It also prescribes intellectual property rights in the field of public procurement. The Guidance on Innovation Procurement lists the cooperation of public bodies with innovative companies as “first beneficiaries” in terms of public procurement of new or significantly improved products, services or processes that have not yet been placed on the market and are purchased by the first 20% of customers. Here it is important to point out the novelty introduced by the provisions of the PPA, which introduced a public procurement procedure called “Innovation Partnership”, used when no solution is available on the market for the needs of the ordering party⁸, according to which, based on the previous market research and analysis⁹, Article 86., line 2, states that: “An ordering party may use an innovation partnership if it requires innovative goods, services or works which it cannot satisfy by procuring goods, services or works already available on the market”. Sectoral ordering parties can also use innovation partnerships¹⁰. Furthermore, the only criterion for selecting a bid in an innovation partnership is exclusively the best price-quality ratio, qualitative criteria relating to the ability of competitors in the field of research and development¹¹. In this regard, recommendations for the proper determination of the conditions of the ability of economic subjects, since the public procurement of innovative solutions involves risks, and in terms of procedural prerequisites for appealing, lodging an appeal and giving responses to the appeal according to the novelty mentioned above and its implementation in the complex institute of public procurement, will certainly have its place in expert discussions and the practice of appeal procedure, since the practice of appeal procedure in the field of innovation has not existed so far in the Republic of Croatia. However, the implementation of the public procurement procedure is

⁷ See: Komunikacija Komisije. Nova industrijska strategija za Europu, COM(2020)102, 10.3.2020. Available at: <https://eurlex.europa.eu/legalcontent/HR/TXT/PDF/?uri=CELEX:52020DC0102&from=HR>. Komunikacija Komisije, Strategija za MSP-ove i održivu i digitalnu Europu, COM(2020)103 final, 10.3.2020. Available at: <https://eurlex.europa.eu/legalcontent/HR/TXT/PDF/?uri=CELEX:52020DC0103&from=HR>. te Mehanizam za oporavak i otpornost dostupno na web stranici: https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility_hr

⁸ See: Directive 2014/24/EU

⁹ See the Articles 198 and 199 of the PPA, OG No 120/16.

¹⁰ *ibid.* Art. 356

¹¹ *ibid.* Art.130

underway. Namely, in December 2020, the City of Zagreb published the Impo-
sition Notice for the subject of the procurement: Development of technologi-
cal innovation to improve the sludge treatment line at the Central Wastewater
Treatment Plant of the City of Zagreb by building an experimental plant and
managing the experimental plant for one year, depending on success in ex-
perimental plant management and preparation of project documentation for
sludge treatment plants and obtaining permits¹². Given that this is a two-stage
procedure in which negotiations are still underway, there are still no results
on the termination of the procedure. Following all the above, there is no prac-
tice in appellate procedures. Unfortunately, the ordering parties do not ap-
ply this type of procedure, and therefore there is no practice regarding the
remedy and the filing of appeals. Since this is a more recent institute whose
practice is developing together with the transition of the innovation society, it
may be concluded that the institute of public procurement of innovative solu-
tions will be complemented by the practice of appeals whose interpretations
of the most common “on-site” mistakes will be the flagship of good appellate
practice. The challenges of the new industrial revolution bring new solutions
that make business, public and private segments easier for all sectors within
the public administration. With the tendency to introduce managerial princi-
ples in the ways of working of public bodies, the procurement of innovative
solutions, new technologies, services and products should come to life in step
with the digital transition of our society and thus appellate practices in public
procurement innovation solutions. For example, let us imagine the first ideas
of connecting cameras and mobile phones that classic mobile devices did not
have twenty years ago¹³ and a hypothetical case where the Ministry of Labor
and Social Welfare considers purchasing mobile phones with integrated cam-
eras necessary for employees. It prescribes their minimal technical charac-
teristics, in this case, mobile devices for these employees, i.e. for the needs of their
inspectors, whose scope includes fieldwork such as making the records with
photo documentation. Then, for such a publication, it is possible that the ap-
pellant could state that the described technical specifications can be met only
by one specific product, then the only manufacturer of mobile phones with
an integrated camera, make a point on the product and thus the customer is
referred to a specific item. Furthermore, the customer can explain and prove
that the product represents the technical specifications necessary for its func-
tionality, i.e. the realization of the purpose of the procurement in question.
Without the mentioned specification, these devices will not have the required

¹² In the Electronic Public Procurement Notice of the Republic of Croatia (EJON) under the code 2020 / S
OF2-0043800, a tender notice was published for the subject of procurement. (accessed: June 30, 2021)

¹³ The first such device was the Japanese mobile phone Sharp J-SH04, data available at https://global.sharp/corporate/info/his/only_one/item/t34.html (accessed: June 15, 2021)

function. It would be meaningless if we want to improve the way we work, and there is a product on the market whose need we can justify, that we should not look for such a product as long as there are no more manufacturers on the market that meet such a technical specification. It can also happen that when the deadline for submission of bids expires, other manufacturers will develop the technology in question. Although there is an obstacle to competition, in that case, the said condition, although restricting competition, would be justified. Also, the client can never be sure enough that he has researched the market well. However, if there were a dozen products on the market with an integrated camera, and the customer asks as a minimum technical characteristic that the camera should have a certain number of megapixels and thus refers to only one specific manufacturer, it would be difficult to argue.

4.1. REQUIRED FEATURES VS A MORE INNOVATIVE METHOD OF PRODUCTION

Although, as mentioned above, only one procedure of the Institute of Public Procurement Innovation is underway, to achieve the required product specification, the question arises whether the production method is essential, can it be more innovative and achieve the required characteristic? In terms of the issue in question and the reasoning within which we can draw a parallel comparison, the judgment of the High Administrative Court¹⁴, which annulled the Decision of the DKOM¹⁵ of 28 May 2021, is very interesting. Namely, the appellant stated that the technical characteristics are discriminatory because they refer to a particular method of production, which excludes products with the required characteristic (min. separation force required). The same technical characteristic can be achieved by glueing. Therefore, the appellant considers that the ordering party must have provided an equivalent method of production. The ordering party did not eliminate the appellant's objections with the evidence submitted in the appeal procedure and, among other things, did not prove in any way that only the injection method for joining the soles and shoe uppers was acceptable. Prescribing the required technical characteristic of the force of separation of the upper and soles, and prescribing only one method of joining (injection) that must be used to achieve the required characteristic, without allowing the provi-

¹⁴ The judgment of the High Administrative Court, VUS RH-UslI-153/21-11.

¹⁵ Decision of the State Commission for Supervision of Public Procurement Procedures, Class: UP/II-034-02/21-01/194.

sion of other equivalent methods that could also achieve the required characteristic, the ordering party acted contrary to the provisions of Article 210 of the PPA. Although the High Administrative Court annulled that decision, this is undoubtedly an excellent example of reflection in appellate practice regarding new methods and legal interpretation.

5. CONCLUSIVE REMARKS

Evidence and refutation of appellate allegations are key elements of the appellate procedure, and the success of the appeal depends on them, i.e. the success of refuting the appellate allegations and assessing the appeal as unfounded. Therefore, it is clear that the tremendous burden for the parties in the appellate procedures is precisely the quality of proving/refuting the appellate allegations. The justification of the central topic of this paper in terms of presenting the selection of specific issues of proper argumentation of appellate allegations and the issue of refuting them, in the fight against arguments, is a reflection and issues "on both sides" of public procurement. In the appellate procedure, bidders must define, explain and prove the appellate allegations in a good way. The prerogative of the appellate procedure is on the appellant. However, the burden of proof is on both sides, so the ordering parties must be prepared to refute the appellate allegations to prove the legality of the requirements and conditions of the Procurement Documentation, review procedure, evaluation and selection tenders. The outcome of the appeal procedure depends on the skill of proving. In order for the parties to the procedures to approach the appeal procedure as successful as possible, it is advisable to check the practice of the DKOM or the practice of the High Administrative Court in similar cases in case of dilemmas.

The challenges of the new industrial revolution bring new solutions that make business, public and private segments easier for all sectors within the public administration. Since this is a more recent institute whose practice is developing together with the transition of the innovation society, it may be concluded that the institute of public procurement of innovative solutions will be complemented by the practice of appeals whose interpretations of the most common "on-site" mistakes will be the flagship of good appellate practice. In this regard, we face the challenges of a new appellate practice regarding the public procurement of innovative solutions.

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DEFINIRANJE ŽALBENIH NAVODA U POSTUPCIMA JAVNE NABAVE – TEORIJA I PRAKSA

SAŽETAK RADA

U radu se uvodno žalbeni postupak stavlja u zakonske okvire te sažeto daje pregled žalbenih postupaka u predmetima javne nabave u teoriji i praksi. Budući da u praksi žalbeni postupci završavaju odbijanjem žalbe zbog neosnovanosti žalbenih navoda uslijed kojih se gube mjeseci u kojima naručitelj staje s postupkom i ne može ugovarati sve dok Državna komisija za kontrolu postupka ne donese rješenje, ovaj rad u fokus stavlja činjenična uporišta žalbenih navoda. Temeljem navedenog, u središtu predmetne analize i promišljanja raspravlja se o važnim pitanjima dobrog definiranja žalbenih navoda kao produkta dobre prakse i imperativa u vještinama postavljanja žalbe i dokazivanja žalbenih navoda dajući kritike i konkretne prijedloge ključne metodologije postavljanja elemenata činjeničnog uporišta. S tim u svezi, prikazuju se primjeri paušalnih žalbenih navoda koji se ističu kao najčešći razlozi gubitka vremena u kojem je naručitelj mogao okončati postupak predmetne javne nabave. Također, iz perspektive naručitelja, ističe se važnost spremnosti na dokazivanje i obrazloženje poništenja ili odabira. Zadatak ovog rada temeljit je pregled najčešćih problema tijekom žalbenog postupka u pogledu efikasne pravne zaštite s kojima se susreću ovlašteni predstavnici naručitelja i ponuditelja u postupku, čije će faze pokušati opravdati hipotezu da je zahtjevana administrativna složenost žalbenog postupka u pogledu dokazivanja i pobijanja žalbenih navoda jedan od ključnih razloga proceduralne problematike javne nabave.

***Ključne riječi:** javna nabava, žalbeni postupak*

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ABSTRACT

Without doubt, COVID-19 has left significant consequences on the world economy. The decline in business activities reflected primarily on the business results of companies and consequently their financial situation. Thus, a return to normal will require changes in the current way of management. Also, adaptation is necessary because digitalization "grabs forward" with lightning speed, it is present in the everyday life of individuals and in their business activities. Companies are necessarily changing the way of communication by modernizing information systems and the way of reporting in order to increase transparency but also to avoid uncertainty. Controlling as an information-analytical and advisory function changes its concept under the influence of digitalization and automation, and thus analytical and IT knowledge is required from controllers. The pandemic conditions in the last two years have further highlighted the value of applying business analytics and statistics in controlling for the purpose of predicting and forecasting future situations. The question justifiably arises as to what changes are necessary in the management and business partnership between the manager and the controller? What is the orientation of controlling in the current situation and in the future, and what to expect from the controller?

This paper aims to investigate the level of application of business intelligence and analytics tools in the Croatian practice of controlling in "post covid" conditions. The sample consists of companies in the manufacturing industry - 46 of them that have a controlling department and operate in the territory of the Republic of Croatia. Descriptive statistics show the level of application of business intelligence and analytics, i.e. statistical methods and forecasting methods in the year after the appearance of Covid. The research indicates the importance of the application of business intelligence and analytics tools, but also the need for their further expansion.

Key words: *controlling, BI & BA tools, prediction, Covid-19*

1. INTRODUCTION

Undoubtedly, management and leadership are experiencing a change in the environment that is not only becoming more digital but also more uncertain due to the circumstances brought by the Covid pandemic. The way of thinking and the preference of goals are no longer the same, and the vision and strategy are becoming more short-term. Driven by the pandemic and its consequences, the management structure is trying to find a way out of the current crisis, which can be seen as a challenge but also an opportunity. In order to survive and sustain, solutions are sought from cost reduction, optimization to innovation. Controlling as a management support function should offer new solutions, warn and act proactively. Thus, the information-analytical and advisory role of controllers is coming to the fore and is increasingly sought after. That is, with the availability of advanced technology, controlling today has more time to interpret data, advise, and propose strategies and plans in real time (Vitezić and Lebefromm, 2019). In conditions of uncertainty, the advisory and proactive approach of the controller facilitates managers to make prompt decisions. In the full sense of the word, the controller becomes a business partner to the manager and a "constructive critic" (Schäffer, 2019). Holistic approach, fact-based decision making, prediction and forecasting, and visualization are the basic elements that form the features of the controlling function today but are also expected to be significant in the future.

Due to the influence of digitalization, the field of work and tasks of the controller are expanding and the strategic orientation is more and more present. The controller grows from a financial business analyst to an economic business analyst. The availability of relatively reliable data and information in short term is the basis for decision-making at the strategic level. Therefore, it is expected that in the future the role of the controller will be necessary i.e. the "only source of truth" that uses analytical and business skills in strategically oriented organizational topics (Stransky et al., 2019).

As a consequence of the pandemic, reporting on current results and forecasting becomes the priority. That is, key indicators adapt to business conditions that are uncertain and risky in a pandemic. Avoiding risky situations leads to the need to optimize costs, time, supply chains, and even information that is constantly increasing. The business model is changing and scenario analyzes are becoming more frequent given that they are based on real situations.

This paper is structured in four chapters. After the introduction, i.e. in the second chapter, presents the importance of controlling in today's digital environment and its role in the post Covid environment. The third chapter presents the methodology and results of the conducted empirical research, while the fourth chapter contains the conclusion and recommendations for further research.

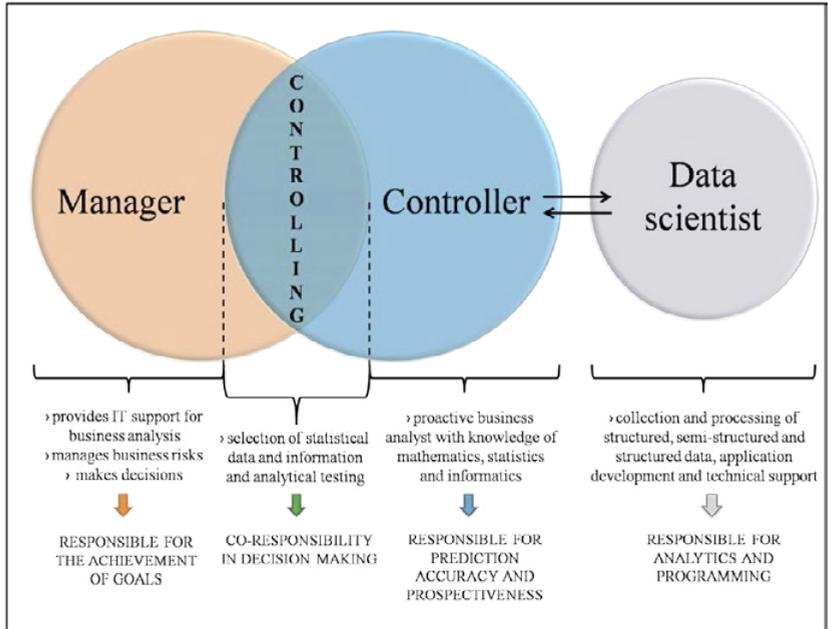
2. DIGITAL CONTROLLING AND POST COVID ENVIRONMENT

Today's digital economy is based on information since they are the key to making any kind of decision. However, the decisions should be based on reliable, i.e. accurate and relevant data. An innovative form of information processing that enables a more detailed insight and analysis of a phenomenon is provided today through "Big Data". „Big Data“, as a term, is not unambiguously defined and there are a number of interpretations, but all could be summarized in processing a large amount of differently structured, semi-structured, and unprocessed data (Giri and Lone, 2014). The characteristic of this data is not only volume, velocity, variety, veracity, but some authors (Arockia Panimalar et al., 2017; Gärtner and Hiebl, 2018) add both visualization and value of the data and even venue, vocabulary and vagueness, which can sometimes be confusing (Moorthy et al., 2015). Big data analytics is one of the technologies in development that is mostly researched today, especially in the field of accounting discipline and controlling, in addition to blockchain technology which according to some research is in second place (Kroon et al., 2021).

With such a huge database enabled by digitalization, the question justifiably arises as to whether and in what direction the role of the controller in the company will change. IT technology has drastically changed the traditional way of reporting, thus management is able to extract information directly from the system (Schäffer, 2019). This is also supported by modern artificial business intelligence, i.e. advanced business analytics (data mining, machine learning, Internet of Things, neural networks and many other tools for sampling, forecasting, visualization, and analytics). Business analytics aims to make business decisions more efficient, rather than just simplifying the automation of standardized processes (Nielsen, 2018). Advanced business analytics is being

developed with the strengthening and improvement of computers, data infrastructure, and the development of new algorithms that have given rise to a new profile of experts - data scientists. Data scientist is described as an analyst, statistician, programmer, hacker (Davenport, 2014). The person who enters the genesis of data, the connection between data, their applicability and usability. The theory has not yet clearly distinguished the connecting points of the controller and the data scientist, and the practice is not yet at the level of possible confirmation of those common elements, and the effects that these two profiles of experts have on management. On the example of German practice, Schäffer and Weber (2018) confirmed that only a few companies employ a data scientist and that they mainly work in the IT sector. That is, that only 22% of the companies are associated with controlling, which indicates very little interaction. The process is slow and Möller et al. (2020) point out that fundamental change takes time and state that the call for a new and more proactive controller dates back to 1974, citing Henzel, 1974, Zünd, 1985 and Siegel, 1999. They also point out that many controllers are reluctant to look at business partnerships with management and that the concept is still far from being accepted internationally by controllers (Möller et al., 2020).

Figure 1: Relationship between management, controller, and data scientist



Izvor: Vitezić (2021)

The relationship between the controller and the data scientist is in the initial stage of development. But with the advancement of digital technology, the effectiveness of their activities will certainly be reflected in the creation of added value and sustainability. Innovation today is most often associated with process and product innovations and business models that are the result not only of technological advances but also of the expansion of the accounting profession, professional constraints, and investment in complementary services (Gardner and Bryson, 2021). Gardner and Bryson (2021) also highlight the dark side of technology in development as innovation creates new jobs but also destroys old ones. In contrast, audit firms (Big 4) emphasize the need for a stronger connection of artificial technology, blockchain, and big data with their profession through partnership, collaboration, and alliances. Hence, the controller is seen in a „face to face“ collaboration with the data scientist where he does not need to be acquainted in detail with statistical methods, but be able to ask the right questions (Schäffer, 2019).

By all means, significant changes in the profile of controllers can be expected in the future because economic knowledge and skills supplemented with quantitative (mathematics, statistics, and informatics) are a condition for the survival of this profession which if not adopted may feel the dark side of digitalization. IT technology has drastically changed the traditional way of reporting, and management is able to extract information directly from the system. Therefore, the controller needs to impose itself using available data, analytical skills, and various methods to justify its mission - to monitor, analyze, evaluate, solve.

3. EMPIRICAL RESEARCH

The aim of this paper was to investigate the level of application of business intelligence and analytics tools in the Croatian practice of controlling in “post covid” conditions.

Accordingly, the research hypothesis has been set: business intelligence and analytics will play a crucial role in performing controlling activities, especially in uncertain business conditions.

3.1. RESEARCH METHODOLOGY AND SAMPLE

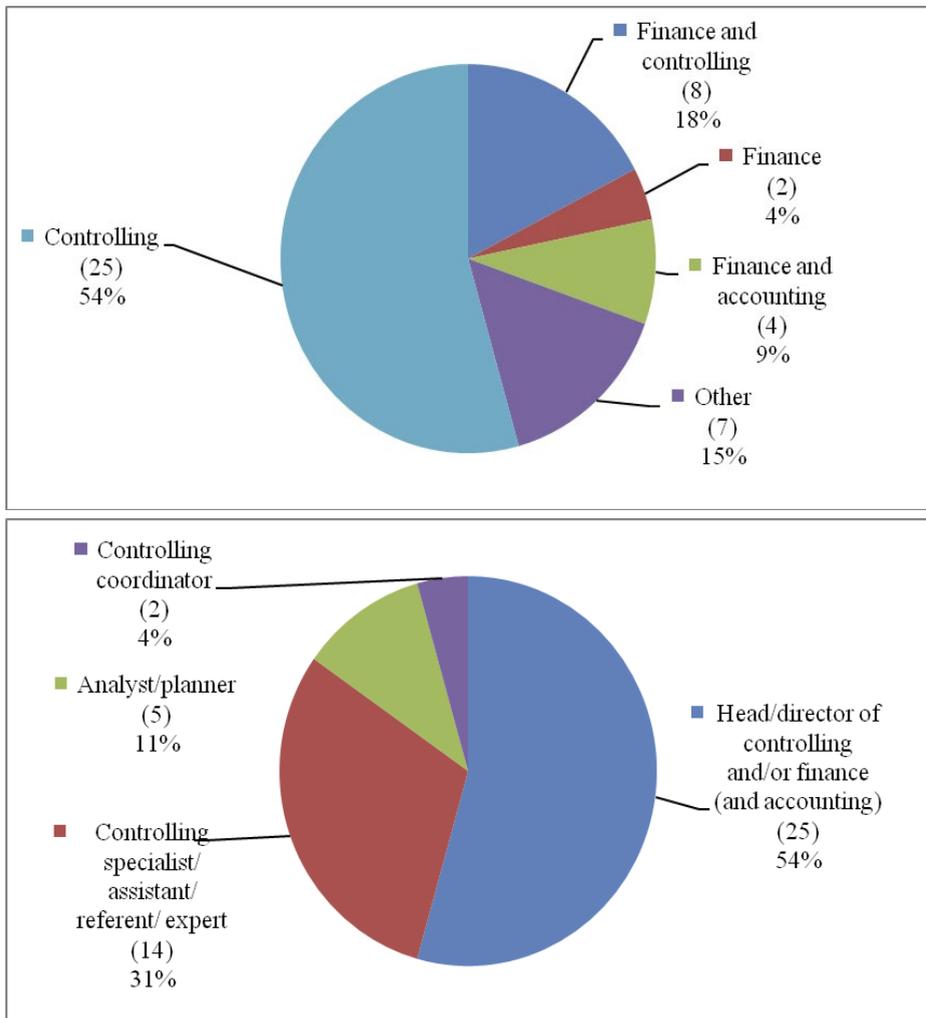
In order to achieve the set goal, an empirical study was conducted in the Republic of Croatia. The survey included 46 controllers working in large and medium-sized enterprises in the manufacturing sector. A survey was used to collect the data. The survey questionnaire was created based on a review of available scientific and professional literature, while the sample of companies,

i.e. controllers, was created based on the database of the Association of Croatian Controllers (cro. Udruga hrvatskih kontrolera - UHK) and available Linked-In profiles. The survey was conducted from October, 2020 to January, 2021.¹

The sample is mostly made up of controllers working in large companies (34, i.e. 74%), while the rest (12 of them, i.e. 26%) includes controllers from medium-sized companies. According to the category of ownership, 24 companies are Croatian-owned and 11 foreign-owned, while the rest are mixed ownership companies. The sample includes 29 female controllers and 17 male controllers, most of whom (34, i.e. 74%) have a master's degree as their highest level of education (e.g. mag.oec.). Further, 5 of them have a master's degree in science, 1 has a bachelor's degree (e.g. bacc.oec.), and even 6 have the title of university specialist (e.g. univ.spec.oec.). In addition, the sample includes different job titles and department names of controllers. Most of the respondents (25 of them, i.e. 54%) perform their job within the department/sector "controlling". However, the work of the controllers is often performed within the departments of "finance and controlling", "finance" and "finance and accounting", but also in departments such as "economy and controlling sector", "corporate reporting department", "company management", etc. Accordingly, the job titles, i.e. the positions of the controllers within the company, also differ. The largest share consists of heads/directors of controlling and/or finance (and accounting) departments, followed by controlling specialists/assistants/referents/experts, analysts/planners, and controlling coordinators.

¹ The results of the research are part of a doctoral dissertation entitled "Characteristics of controllers and managers in the function of efficient decision-making in the conditions of digitization" Antonija Petrić, under the mentorship of professor Nede Vitezić, PhD.

Graph 1 i 2: Names of departments and positions of controllers in the research sample



Source: author's work

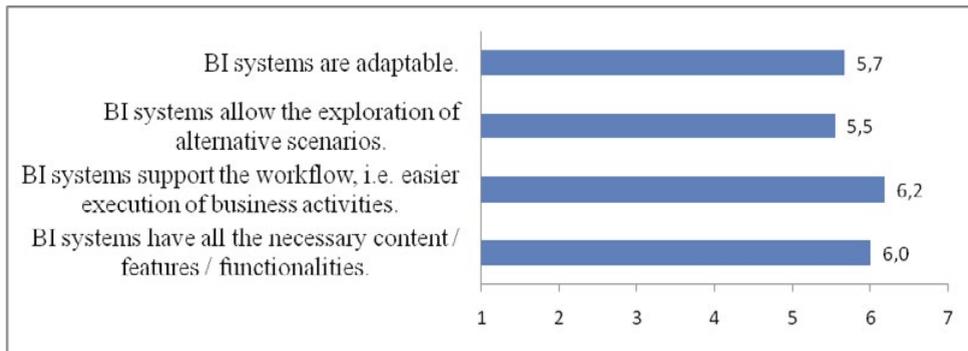
Descriptive statistics were used to process the results of the empirical research, i.e. the results are presented in graphical form.

3.2. RESEARCH RESULTS

Out of a total of 46 respondents, 33 use some type of business intelligence (BI), and the most commonly used are: Microsoft Power BI, SAP BI, and IBM Cognos. The other 13 controllers do not specify the use of BI, but it can be

assumed that they perform the same functions through the indicated ERP system, which includes SAP, Microsoft Dynamics NAV, GoSoft, Apress, and some self-developed systems. On average, controllers rate their Excel skills with a high score of 6.5 (Likert 1-7) and it is to be assumed that controllers mostly rely on its application in carrying out their activities. This agrees with the Gartner survey, which is conducted every year and which has been confirming Microsoft Power BI's leadership in business intelligence for several years (Richardson et al., 2020). Although not all controllers confirm the application of BI tools, 87% of respondents believe that their application is extremely useful, i.e. almost required in controlling. One respondent gave a neutral opinion, while the other 11% considered the application to be somewhat useful. Accordingly, 96% of respondents agree, i.e. completely agree with the fact that the use of BI should be increased in the controllers' work. That is, controllers who did not point out the current use, emphasize the need for a greater future application of BI for the purpose of an efficient controlling function. In addition, controllers who currently apply certain BI systems, on average give high marks to their basic features, especially in terms of the role in supporting the execution of business activities of controllers (Graph 3).

Graph 3: Evaluation of features of used BI systems (n = 33)

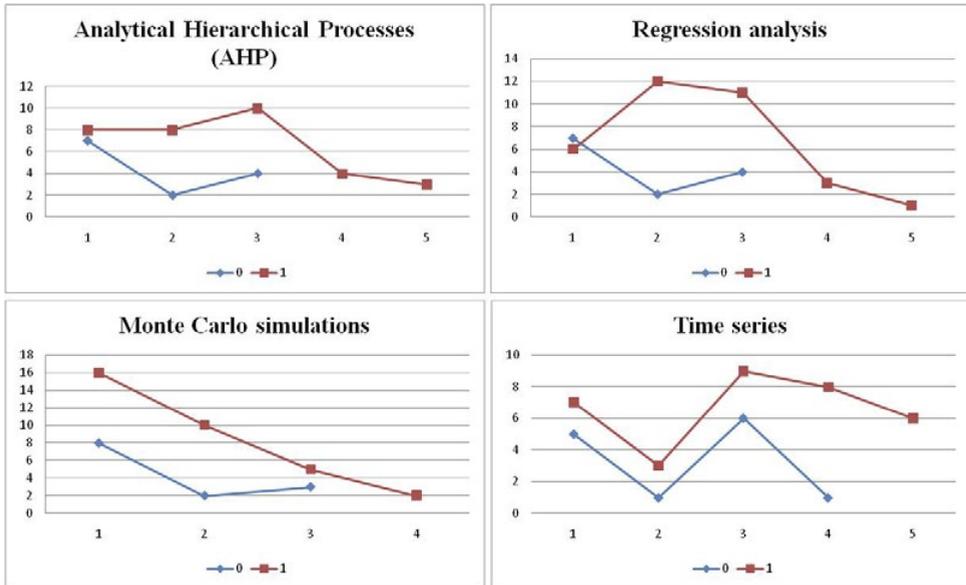


Source: author's work

Closely related to business intelligence, oriented towards descriptive analytics, is business analytics (BA). BA involves predictive and prescriptive techniques (Appelbaum et al., 2017) aimed at predicting future events and reducing business uncertainty. Although BI is considered an indispensable controlling tool, in today's dynamic environment, advanced analytical methods and models are given increasing importance in business decision making. This imposes also a need for their increased application in controlling, and according to some authors, it can be concluded that in the future they will become more important for controlling than BI (Richards et al., 2017).

Regarding the results of the research of this paper, one can see the current application of certain techniques of business analytics in controlling in the part of the manufacturing industry in the Republic of Croatia.

Graph 4: Level of application of business analytics techniques (n = 33)



Legend:

0=controllers who don't use BI tools

1= controllers who use BI tools

Note:

values on the abscissa = Likert scale 1-5 (1-never, 2-almost never, 3-sometimes, 4-almost regularly, 5-regularly)

values on the ordinate = number of controllers who gave a particular grade

Source: author's work

In accordance with the results of the research, a relatively low application of BA tools in controlling can be seen in the chosen sample of the manufacturing industry in the Republic of Croatia. Of the four techniques selected according to the BA classification by Appelbaum et al. (2017), it can be concluded that time series have the greatest application, given that 6 controllers indicated their regular application. That is, Monte Carlo simulations are the least represented since only 2 controllers report almost regular application. However, it can be assumed that this method of decision-making in conditions of uncertainty and risk could prove significant in future circumstances such as COVID-19, where the validity of the application will primarily depend on the

quality and reliability of available data (e.g. Big Data). The results show that controllers that apply BI systems also have a greater preference for the use of advanced analytical methods. In addition, 15 respondents reported regular and almost regular use of some form of predictive model, and an additional 15 occasional use. That is, 73% of controllers, in addition to basic activities (such as variance analysis, performance analysis, operational planning and budgeting, and monitoring of key business indicators), state prediction and forecasting as a regular and almost daily business activity. Thus, although the application of BA tools is currently low, the importance of their application can be emphasized, and in accordance with scientific and professional literature in the field of controlling, the importance of their future role and expansion of use.

4. CONCLUSION

The challenges posed by digitalization and the Covid pandemic are also reflected in controlling as a support to the management function. Controllers are increasingly in demand because uncertainty forces analytical thinking and quick action in order to adapt business models to the current situation. Therefore the question arises of what is changing in the approach and tasks of controlling? First, it upgrades the profile of the controller through the application of new knowledge and skills of a quantitative nature and proactive action. The tools are changing, becoming more sophisticated - big data, blockchain, artificial intelligence. That requires additional learning and application. The way of thinking is changing, so the controller is expected to be more analytical, creative, and innovative. The relationship with the management structure rises to a higher level as the business partnership requires a different organizational status, verbal and nonverbal, formal and informal communication, and above all the trust gained through validation of the controller's effects on decision-making.

This research has shown that in the Croatian practice of controlling the use of business intelligence and business analytics is not unknown. The research on a sample of companies from the manufacturing industry, in which controlling is usually most represented as a function, showed that most controllers use business intelligence tools. But, although much smaller, there is also a use of business analytics tools aimed at analyzing scenarios and forecasting business events. Knowledge and use of business analytics does not differ from the most developed European countries and only an upward trend can be expected in the future. Therefore, in the field of controlling and future training of controllers, the emphasis is placed on the adoption of modern tools that will ensure the effective performance of controllers' activities in business decision-making. Hence, this research can be expanded by including a larger sample of companies in the Republic of Croatia that have an organizational unit of controlling, structured by industries and dynamic over periods, but also compared with some other countries in the EU.

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ODGOVORNOST KONTROLERA U POST COVID POSLOVNOM OKRUŽENJU

SAŽETAK RADA

Bez dvojbi COVID-19 je ostavio značajne posljedice na gospodarstvo diljem svijeta. Pad poslovnih aktivnosti odrazio se je prvenstveno na poslovne rezultate poduzeća i posljedično financijsku situaciju, te će povratak u normalu zahtijevati i promjene u dosadašnjem načinu upravljanja. Prilagodba je nužna i iz razloga što digitalizacija munjevito „grabi naprijed“, prisutna je u svakodnevnom životu pojedinca pa tako i u njihovim poslovnim aktivnostima. Poduzeća nužno mijenjaju način komunikacije osuvremenjujući informacijski sustav i način izvještavanja u cilju veće transparentnosti ali i izbjegavanja neizvjesnosti. Kontroling kao informativno analitička i savjetodavna funkcija mijenja svoj koncept pod utjecajem digitalizacije i automatizacije, a od kontrolera se traže ne samo analitička već i informatička znanja. Pandemijski uvjeti u posljednjih više od godinu dana dodatno su istakli vrijednosti primjene poslovne analitike i statistike u kontrolingu a u svrhu predviđanja i prognoziranja buduće situacije. Opravdano se postavlja pitanje koje su promjene nužne u upravljanju i poslovnom partnerstvu između menadžera i kontrolera. Koja je orijentacija kontrolinga u trenutnoj situaciji i budućnosti i što očekivati od kontrolera? Ovaj rad ima za cilj istražiti razinu primjene alata poslovne inteligencije i analitike u hrvatskoj praksi kontrolinga u „post covid“ uvjetima. Uzorak čine poduzeća prerađivačke industrije – njih 46 koji imaju kontroling odjel i djeluju na području RH. Deskriptivnom statistikom prikazuje se razina primjene poslovne inteligencije i analitike tj. statističkih metoda i metoda predviđanja u godini nakon pojave Covida. Istraživanje ukazuje na značaj primjene alata poslovne inteligencije i analitike, ali i potrebu za njihovim dodatnim proširenjem.

***Ključne riječi:** kontroling, BI & BA alati, predviđanje, covid-19*

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