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CONTENTS

MANAGING SUSTAINABLE TECHNIQUES FOR RESILIENT BUSINESS PERFORMANCES:EMPIRICAL EXPERIENCE OF JAPANESE MNC'S

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Abstract

Originating back in January 1981, when the famous management guru Peter Drucker, wrote in the Harvard Business Review the article '*Behind Japan's Success',* accompanied by the distinguished best-seller in 1984, by Peters and Waterman, '*In Search of Excellence: Lessons from America's Best-Run Companies',* the continuous, competitive strive for developing and implementing of management methods, techniques and models, that would increase overall business performances, has proven to possess one of the leading change management roles, in harmonizing the sustainability challenges of economic progress, social stability and environmental circularity, on one hand, with the imperative of increased, dynamic employee capabilities. The illustration of previous capital works reflects the constant orientation for advancing business performances in various dimensions, according to prevalent external and internal pressure on competitiveness and sustainable growth.

These tendencies could clearly be seen in the prior thematic topic of the latest World Economic Forum, held in Davos, in January, 2024, '*Navigating Global Challenges*', which is clearly indicating that the prior economic battle among MNC's is predominantly international, far more than domestic one, through the concept of '*human centered management',* especially it's resilience and agility. While attempting to clear-up the grassroots for increasing national and international competitiveness, Japanese MNC's have manifested recognizable and wholistic advancements, which are vivid through the achieved degree of resilience and excellence.

The developmental process of each Japanese MNC relies on an excessive application of certain Japanese management techniques, like Kaizen, 5S, Amoeba Management etc., which add substantial overall business value. Therefore, the potential for transforming the prevalent business model by applying various Japanese management techniques should be inter-connected to the competitiveness effects that derive from distinctive change management model that generates progressive potential for external adaptation and internal integration. Therefore, modalities for achieving and sustaining business performances constantly change.

Key words: Management methods, resilience, business excellence, Japanese MNC's

INTRODUCTION

Contemporary attempt for achieving advanced business performances, nowadays, involves not only prior focus to effecting economic results, perceived as one of the success performance indicators, but far more to broadening the sustainability framework of each business performance, through unifying the following components:

- Stable and predictable economic results,
- Adding value to collective solving of several municipal and national modalities of social problems, and,

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– Progressive environmental protection, particularly due to increasing categories of environmental challenges which move beyond national borders.

If we pay significant attention to the 'spiritus movens' of the latest World Economic Forum, held in Davos, in January, 2024, which has been titled as '*Navigating Global Challenges*', with an active participation of over 2.500 leaders from over 100 countries, predominantly from the fields of economy, politics, science and culture, we could clearly identify the progressive tendency of inter-depending forms of holistic, national developments, especially illustrated by the four systemic elements of the global landscape Global Risks Report 2024 | World Economic Forum | World Economic Forum (weforum.org), Approached April 26, 2024:

1. Trajectories relating to global warming and related consequences to Earth systems (Climate change).
2. Changes in the size, growth and structure of populations around the world (Demographic bifurcation).
3. Developmental pathways for frontier technologies (Technological acceleration).
4. Material evolution in the concentration and sources of geopolitical power (Geostrategic shifts).

The process of harmonization of above 4 elements undoubtedly leads to the global necessity of managing the critical features for optimal managing of business agility and resilience, both placed in the very center of one of the most prominent developmental, excellence-based concepts world-wide, i.e. 'human-centered management' concept.

Prior research question in the current review analyzes concentrates on identifying the potential for increased potential for consistent application of Japanese management techniques, particularly Kaizen, 5S and Amoeba management in the practice of businesses that attempt to apply the resilience and agility features of their business performances.

LITERATURE REVIEW

The historic, evolutionary comparison of the differences in building-up and sustaining national competitiveness concepts have always manifested an incredibly challenging component of harmonizing the sustainability challenges of economic progress, social stability, and environmental circularity, on one hand, with the imperative of increased, dynamic employee capabilities, on the other hand. Originating at the period when the American MNC's have settled the roots of their ongoing sources of competitive changes, theoretically explained in the distinguished best-seller in 1984, by Peters and Waterman, '*In Search of Excellence: Lessons from America's Best-Run Companies',* the prior focus of the authors has been given to:

– optimization of McKinsey's 7 S management model, composed of strategy, structure, systems, shared values, style, skills, and staff,
– applying the 'rationale model', which places the analytical focus to developing adequate, most appropriate, logical, reasonable, sense-full etc. method for problem-solving competitiveness challenges, aimed at proper identification of the most relevant business philosophy,
– forming the grassroots of contemporary model of business analytics, through progressive managing of ambiguity and paradoxes, seen through 'shaping the culture of organizations', as a pathway to benefiting from the corporate culture of MNC, as well as,
– managing organizational fluidity, as a pre-condition for sustainability transforming in the direction of business agility, back in times implemented through the MBWA –

Management by Walking Around technique, by experimenting with several changes, simplifying the systems hierarchy, and increasing the degree of action – oriented management decisions.

In current, dynamic and, to a great extent, unpredictable times of doing business, in-debt analyses of the 'human-centered management' concept is connected to the work of Lepeley Maria-Teresa in 2017, titled *Human Centered Management: 5 Pillars of Organizational Quality and Global Sustainability.* Principally, 5 pillars that enable fullest and progressive application of the human-centered management (HCM) concept are identified as the following developmental components (Lepeley, 2017):

- human capital,
- disruption resilience,
- talent management,
- agility, and,
- sustainable quality (SQ).

The integrative analyses of above specified components of the HCM concept can be inter-connected with the fundamental determinants of the success of Japanese MNC's, stipulated in the prominent article which originates back in January 1981, when the famous management guru Peter Drucker, wrote in the Harvard Business Review highly influential article '*Behind Japan's Success'.* In detailing the key determinants of Japanese management success, Drucker clearly emphasized that:

- Japanese businesses take very seriously the competitiveness challenges, indicating that, on a national level, it is measured through the policy impact to Japanese productivity in industry, whereas on an industry level, like automotive industry, for instance, it is connected to strategy of 'massive export' and competing both on international and on the domestic market,
- Comparing the prior differences in the leadership model between USA and Japan, implying that Japanese MNC sacrifice their own interests, goals, expectation and value to the overall, national ones, whereas American MNC apply the western leadership practice, concerned primarily with economic consequences of business activities, through 'self-interest first' concept,
- Dominant focus on mutual relationships among employees in Japanese MNC's, developed on the foundations of mutual trust and common interest, in comparison with the American orientation towards problems-oriented communications, actual or perceived ones. In this context, the immense Japanese tradition of non-expressing victory due to the business success, accompanied by fullest respect of the overall business tradition, is an approach established long back in 1920's, in the period of conceptualizing the modern Japanese industry.

Among other scientific works that have presented an immense importance to increasing the resilient and agile performance of businesses, in fact, are '*Managing for Social Impact: Innovations in Responsible Enterprises'* by Cronin J. Mary, Dearing C. Tiziana Editors (2017), '*Progressive Business Models: Creating Sustainable and Pro-social Enterprise'* by O'Higgins Eleanor & Laszlo Zsolnai Ed. (2018), 'Role-based engagement: scale development and validation', in *Journal of Management & Organization*, by Young F. Stephen, Lisa A. Steelman, Matthew D. Pita & James Gallo (2020), '*The Work of Management: A Daily Path to Sustainable Improvement*', by Lancaster Jim & Emily Adams (2017) etc.

RESEARCH METHODOLOGY

Applied methodological framework within this paper would rely on comparative analyses, induction, and deduction methods, as well as analyses and synthesis of interdependences between various components of the resilient business performance, illustrated on the practice of Japanese MNC's.

FOUNDATIONS OF MANAGING PERFORMANCES IN JAPANESE BUSINESS CONTEXT

The structural analyses of the foundations, orientations, and overall potential of the 'human-centered management' concept possesses theoretical, as well as an empirical importance, because it is significantly in relation to fundamental sustainable models for increased organizational effectiveness:

- Circular (Circular Supplies, Resource recovery, Product Life Extension & Sharing Platforms)
- Innovative business models (Triple Layered Business Model Canvas etc.), as well as,
- Management models which benefit from the Japanese management experience.

Specifics that reflect sustainable models arising from the practice and experience of Japanese MNC's would be illustrated through the most influential business elements that add value to the outstanding Japanese managerial performances, i.e.:

- Life-long learning – in accordance with the Japanese cultural foundations, employees are feeling a constant pressure for increasing the quality of performances as the learning process progresses,
- Seniority - based reward system – at equal level of qualifications, older employees have higher salaries, traditionally deeply rooted in the application of an 'experience-based' employee behavior,
- Tradition of excellence in performances (Mitsui, Sumitomo Corp., Konoike Group etc, from XVII century) – as an illustration, in Japan exist more than 3.000 businesses with over 200 years of tradition – as a comparison, in USA the number of these long-lasting businesses are above 1500, in Germany 500 etc.
- Obtaining & benefiting from application of the new and renewed knowledge – it is an ethical duty of every Japanese employee to submit change recommendations within the field of his/her expertise,
- Collective responsibility – everybody knows the CEO of Microsoft; how many people know the name of the CEO of Sony or Toyota? Is it a result of the differences in performances or of undertaking entire corporate responsibility? It is evident that in Japanese MNC's ethical responsibility is much higher than in non-Japanese MNC's,
- Integral focus on work life – within the working period of Japanese employees, their determination is to become one of the best employees in the industry, concentrating far more on the work life, rather than on social life,
- 'Managerial awareness' – critical-to-quality excellence feature, at candidates for managerial positions, subject to testing prior to appointing on certain managerial position, especially at top management.

In unifying the empirical importance of above business elements that add value, the role of dynamic employee capabilities is connected to building up the business capacity to accomplish the following sustainability development requirements:

- Develop, integrate & reconfigure internal & external business competences,

- As a component of the systemic management, dynamic capabilities should concentrate on agility and changes, far more than on adaptability and equilibrium,
- The precise influence of dynamic employee capabilities to specific business model lies in the fact that they are composed of 'micro-foundations', as elements that stimulate changes, and are expected to be found in every dynamic business model, in developing business strategy, as well as in the results of the final products/services, i.e. business performances,
- Determine the level of 'sustainable business value', which is the key element in developing sustainable business models outside of solely economic resilience, by paying equal attention to social cohesion and environmental predictability. It would be explained on the following Figure 1:

Figure 1 Levels of Sustainable Value Creation

Source: Laszlo Chris (2005), "The Sustainable company: How to create Lasting Value through Social and Environmental Performance", pp. 21-37

The importance of differentiating from mitigating risk value level, up to influencing industry standards, as the highest value level, reflects adding sustainability in the overall business performance. In this context, holistic potential of above elaborated sustainability development requirements is dependent to a proper and consistent creation and application of the contemporary 'human-centered management' concept.

CREATION OF 'HUMAN-CENTERED MANAGEMENT' CONCEPT

Very development of the 'human-centered management' concept is determined by the principal conclusions which are arising from the following associations and institutions:

- World economic forum (WEF), particularly the focus on integrating and involving both academia, and private sector, in an inclusive developmental partner's approach, through the following key findings from WEF, 2024:
  - Key developmental areas: fundamental principles that drive trust, including transparency, consistency, and accountability,
  - Key future global challenges: economic growth, climate and activities towards nature, energy safety, technological governance, and integrated human development.

- Adopted 17 SDG's in September 2015, and presented as "UN world to-do list between 2016 and 2030 (THE 17 GOALS | Sustainable Development (un.org), Approached March 13, 2024)",
- Global Infrastructure Initiative (GII) of McKinsey & Co. etc.

As a comprehensive continuation of the behavioral managerial techniques, aimed for achieving sustainability at businesses, it integrates disruption resilience and agility, as 2 out of 5 developmental components of the 'human-centered management' concept, alongside with the human capital, talent management and sustainable quality. Applicative importance of these 2 focal sustainability business components is placed within the following:

1. Resilience, for the purpose of HCM, is "the capacity of people to empower themselves and improve their lives, by developing capacity to help others and become agents for change and continuous performance improvement in organization" (Lepeley, 2017). As such, it leads to the following analytical importance:
   - Is determined by the capacity, i.e. the potential of the employees to increase the performance quality of themselves and afterwards to all others,
   - Is related to the orientation for changes, which is crucial for the development of every sustainability management technique, and,
   - Continuous, generally small improvements, can most frequently be perceived in most popular Japanese managerial techniques, like Kaizen, 5S, Amoeba Management etc. Therefore, the empirical evidence of application of these and many other managerial techniques is important for identifying the future pathway for resilient business performances.
   - Nowadays, in turbulent and highly dynamic external and internal business environment, resilience is often analyzed as disruption resilience, and largely inter-dependent to the economic resilience, which is interwoven in each developmental strategy.

2. Agility, in function of the 'human-centered management' concept implies to the potential to achieve the technological acceleration systemic element of the WEF, 2024, determined in business as:
   - "Continually reducing risk so that the organization does not die, adapting to changes in the environment, the needs of customers and interested parties. And it would help if you did it effectively. It would be best to do this incrementally, with most products. But the point is: try not to die as a company" (Appelo J., 2024), at Business Agility Explained | Management 3.0 (management30.com), Approached March 11, 2024), according to the founder of Management 3.0 model,
   - "a set of organizational capabilities, behaviors, and ways of working that affords your business the freedom, flexibility, and resilience to achieve its purpose, which is composed of the following 5 agility domains:
     - Engaged culture,
     - Responsive customer-centricity,
     - People-first leadership,
     - Flexible operations, and,
     - Value-based delivery" (Business Agility Report, 2023, pp.2-14).

The process of simultaneous functioning of the resilience and agility, in order to achieve an outstanding business performance implies that managers should concentrate on increasing the capacity of their employees for a multiple usage of their knowledge, skills and experience,

which, through agile responding to current and future external and internal possibilities would increase the change capabilities, through applying of sustainable managerial techniques.

It is evident that highly performing MNC's, including European, American and Japanese, consistently apply various methods, models and techniques, which add sustainable value in processes and in behavior, on one side, and enables harmonized implementation of economic, social and environmental implications of every change action, on the other side.

JAPANESE MANAGERIAL TECHNIQUES FOR ACHIEVING BUSINESS EXCELLENCE

The immense experience of Japanese MNC's in developing and implementing sustainable managerial techniques that systematically, consistently, and holistically add value is one of the key advantages for achieving immense national competitiveness of Japanese economy. Out of the Japanese techniques, I would pay particular attention to the most prominent ones, which has a potential in the practice of European MNC's:

- Kaizen,
- 5S, and,
- Amoeba Management.

1. Kaizen technique originates from the Japanese tradition of undertaking continuous, small, evolutionary changes for outstanding performances. It is composed of the following 2 words, known as 'change for the better':

   - Kai – change, and,
   - Zen - improvement

   The fundamental influence of Kaizen technique, originally created by Masaaki Imai, back in 1970 in his legendary book '*Kaizen – The Key to Japan's Competitive Success',* towards reaching business excellence, illustrated through the following excellence indicators:

   - The Kaizen process is composed of PDCA plan (Plan-Do-Check-Act), which, according to 2023 leaders analyses 5 essential attributes of a kaizen leader for 2023 (processexcellencenetwork.com), Approached April 27, 2024, incorporates all critical-to-quality business components, like:

     - Empathy,
     - Digital soft skills,
     - Creativity,
     - Data analytics, and,
     - Growth-mindset.

   - The Kaizen includes agility which is universally in use by European and American business by establishing in 1986 the Kaizen Institute Consulting Group (KICG), focused on agile harmonization of principal Kaizen features, to the western business practices. Originally, it leads to lean practice of continuous improvements, initially seen in the manufacturing experience of Toyota Production System (TPS), which brings marginal gains both in effectiveness and efficiency, achieved through flexible and resilient purpose implementation.

   Kaizen is principally used by the following Japanese MNC's, like Toyota, Nissan, Honda, Sony, Toshiba, Canon, Sojitz etc. The potential and influence of this

management method for future increase of management agility is constantly growing in all business sectors.

2. 5S Japanese sustainability technique implies to introducing an excellent organization and standardization of the types of products or services affected by applying 5S. In general, it comprises of the following 5 components, reflecting the successive managerial steps that add value:

   - Seiri – Sort,
   - Seiton – Set,
   - Seiso – Shine,
   - Seiketsu – Standardize, and,
   - Shisuke – Sustain.

   The prevalent applicative importance of 5S management sustainability technique is placed at the following performance components that lead to excellence:

   - Holistic advancement of the work environment – by developing and adopting of new procedures, methods, models etc.,
   - 5S, widely known as 'the new Japanese managerial doctrine' applied prior to Kaized, sets the sources of excellence, which are later in Kaizen determined through a problem-solving approach,
   - Finally, 5S increases productivity and employee engagement, on one hand, accompanied by sustained progress in the motivation of teams, on the other hand, which is crucial for collective managing of changes for business excellence.

   The advanced form of 5S is the technique 6S, with the component Safety. Nowadays, 5S is implemented in the Japanese health-care system reform, Japanese automotive industry, Samsonite South-Asia etc. The capacity of 5S managerial technique for business advancements, especially in the segment of its' resilience indicates transparent advancement in overall work environment, accompanied by programs for team cooperation and performances.

3. Amoeba management system (AMS) practically presents a unique method developed by Inamori, founder of Kyocera (Kyoto Ceramics) Amoeba Management | Management | About Kazuo Inamori | Official Site of Kazuo Inamori (kyocera.com), Approached April 22, 2024, through the following sustainability features:

   - Division of organization on small Japanese units, i.e. amoeba's,
   - Outstanding cooperation and trust among themselves,
   - Voluntary participating in managing the amoebas by non-managers, through „Management by All", which adds value to the modalities of participative Japanese management,
   - Amoeba management pays major attention on sustainable growth and functions on a higher degree at managers that possess work passion, desire for results, as well as determining adequate pricing system between amoeba's,
   - Develop sustained leadership potential for each amoeba manager.

   Amoeba management system, originally created as an accounting system, is applied in over 700 worlds' famous Japanese MNC's like Kyocera, Japan Airlines etc. In practice, Amoeba increases the capacity for simultaneous adding value between amoebas, as well as focusing on development of leadership potential of employees with a potential to become managers.

CONCLUSION

If we pay significant attention to the 'spiritus movens' of the latest World Economic Forum, held in Davos, in January, 2024, which has been titled as 'Navigating Global Challenges', with an active participation of over 2.500 leaders from over 100 countries, predominantly from the fields of economy, politics, science and culture, we could clearly identify the progressive tendency of inter-depending forms of holistic, national developments, especially illustrated by the four systemic elements of the global landscape, i.e. climate change, demographic bifurcation, technological acceleration, and geostrategic shifts.

By managing organizational fluidity, as a pre-condition for sustainability transforming in the direction of business agility, back in times implemented through the MBWA – Management by Walking Around technique, advanced businesses are experimenting with great number of changes, simplifying the systems hierarchy, and increasing the degree of action – oriented management decisions. Dominant focus on mutual relationships among employees in Japanese MNC's, is developed on the foundations of mutual trust and common interest, in comparison with the American orientation towards problems-oriented communications, actual or perceived ones.

Principally, the 5 pillars that enable fullest and progressive application of the human-centered management (HCM) concept are identified as the following developmental components: human capital, disruption resilience, talent management, agility and sustainable quality (SQ). Specifics that reflect sustainable models arising from the practice and experience of Japanese MNC's, explained through the most influential business elements that add value to the outstanding Japanese managerial performances, like life-long learning, seniority, tradition of excellence in performances etc.

As a component of systemic management, dynamic capabilities are expected to concentrate on agility and changes, far more than on adaptability and equilibrium. The importance of differentiating from mitigating risk value level, up to influencing industry standards, as the highest value level, reflects adding sustainability in the overall business performance.

Resilience, for the purpose of HCM, is the capacity of people to empower themselves and improve their lives, by developing capacity to help others and become agents for change and continuous performance improvement in organization, whereas agility is a set of organizational capabilities, behaviors, and ways of working that affords your business the freedom, flexibility, and resilience to achieve its purpose. As such, it possesses not only a short-term, but rather long-term influence on overall business performances.

Continuous, small improvements, are most frequently analyzed in most popular Japanese managerial techniques, like Kaizen, 5S, Amoeba Management etc. Therefore, the empirical evidence of application of these and many other managerial techniques is incredibly important for identifying the future pathway for resilient business performances. Kaizen leads to lean practice of continuous improvements, initially seen in the manufacturing experience of Toyota Production System (TPS), which brings marginal gains both in effectiveness and efficiency, achieved through flexible and resilient purpose implementation. 5S Japanese sustainability technique implies to introducing an excellent organization and standardization of the types of products or services which are affected, whereas amoeba management is focused on sustainable growth and functions on a higher degree at managers that possess work passion, desire for results, as well as determining adequate pricing system between amoeba's small units.

LITERATURE AND INTERNET SOURCES

1. Process Excellence Network. (2024, April 27). 5 essential attributes of a kaizen leader for 2023. Retrieved from https://www.processexcellencenetwork.com
2. Kyocera. (2024, April 22). Amoeba management | Management | About Kazuo Inamori. Retrieved from https://www.kyocera.com
3. Management 3.0. (2024, March 11). Business agility explained. Retrieved from https://www.management30.com
4. Business Agility Institute. (2023). Business agility report. USA.
5. Drucker, P. (1981). Behind Japan's success. Harvard Business Review.
6. World Economic Forum. (2024, April 26). Global risks report 2024. Retrieved from https://www.weforum.org
7. Reuters. (2024, April 12). Heard in Davos: What we learned from the WEF in 2024. Retrieved from https://www.reuters.com
8. Lancaster, J., & Adams, E. (2017). The work of management: A daily path to sustainable improvement. Lean Enterprise Institute Inc.
9. Laszlo, C. (2005). The sustainable company: How to create lasting value through social and environmental performance. Island Press.
10. Lepeley, M.-T. (2017). Human centered management: 5 pillars of organizational quality and global sustainability. Greenleaf Publishing Limited.
11. Peters, T., & Waterman, R. (1984). In search of excellence: Lessons from America's best-run companies. Warner Books.
12. United Nations. (n.d.). *The 17 goals | Sustainable development*. Retrieved from https://www.un.org

STRATEGIC DECISION-MAKING THEORIES: A HISTORICAL REVIEW

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Abstract

The concept of decision making is considered as one of the key topics in the field of strategic management and related fields. According previous theoretical considerations and discussions of the main contributors, there is no single routine/path used by managers in strategic decision-making. Mintzberg, Raisinghani and Théorêt define strategic decisions with regard to the decision-making level as a combination of entrepreneurial activities and efficient use of resources. The process of making strategic decisions is often described as unstructured, non-routine associated with uncertainty, defining it as a set of activities, which includes the collection of information, the development of alternatives and their evaluation, and ultimately the selection of the best alternative. It is clear, therefore, that it is difficult to talk about strategic decision-making exclusively in the context of a logical sequence of activities by division makers. This type of presentation of strategic decision-making, based on the idea of rational action by top management, as the strategic management executives, is also shown in numerous management text books. In their editorial in a special issue of the prestigious *Strategic Management Journal*, Cyert and Williams synthesized the conclusions of the special issue contributors. Analysing the cause-and-effect relationship between strategy, strategic decision-making and the organization, emphasis is put on the importance of organizational learning. In the conditions of creating an economy based on information and knowledge, a connection is created between information, organizational structure and strategic decision-making. In complex systems, such as companies, one of the key problems that occurs when making decisions is to find out where the decision comes from and how it is realized. Strategic decisions are most often a collection of some individual decisions in the organization or a consequence of informal conversations or actions that lead to collective action. The focus of this paper is an attempt to identified a key theoretical underpinning, through an overview of relevant theories and strategic management schools. In so doing, this paper will use the concept of strategic management schools, presented by Mintzberg, Ahlstrand and Lampel in their popular book *Strategic Safari*.

Keywords: decision-making, strategy, theoretical underpinning, strategic management schools

INTRODUCTION

The concept of decision making is considered one of the key topics in the field of business strategy and related fields. Mintzberg, Raisinghani and Théorêt (1976, p. 246) define strategic decisions with respect to the decision-making level and define them in terms of "actions undertaken and resources engaged". Relying on previous theoretical considerations and discussions of other authors, they studied strategic decision-making processes in 25 companies and proposed a theoretical model, which consists of 12 elements. At the same time, they believe that there is no single routine/path used by managers in strategic decision-making and that the outcome of the decision is determined by the choice of an alternative solution and the influence of dynamic factors. The same authors suggest that any strategic decision making process should

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contain two key routines: recognition of the situation and evaluation/selection of solutions, although it is a process that is complex and dynamic and different from company to company.

The process of making strategic decisions is described as unstructured, non-routine and associated with uncertainty (Eisenhardt and Zbaracki 1992; Mintzberg et al. 1976; Shrivastava and Grant 1985; as cited in: Shepherd and Rudd, 2014), and they define it as a set of activities, which includes the collection of information, the development of alternatives and their evaluation and ultimately the selection of the best alternative (as cited in: Wally and Baum 1994; Goll and Rasheed 2005; as cited in: Shepherd and Rudd, 2014).

Considering the above, it is difficult to talk about strategic decision-making exclusively in the context of a logical sequence of activities, which begins with the analysis of the situation and continues with the phases of identification, evaluation and selection of the best alternative and, finally, with the implementation and control of decisions. This type of presentation of strategic decision-making, based on the idea of rational action of top management, as the bearer of strategic management, is also shown in management textbooks and, for the above reason, is popular and generally accepted.

However, the strategies themselves are not always implemented linearly, in conditions of full rationality and top management control. In their editorial in a special issue of the prestigious Strategic Management Journal, Cyert and Williams (1993) synthesized the conclusions of several authors, selected for publication in a special issue of the journal, on the cause-and-effect relationship between strategy, strategic decision-making, and organization. Cyert and Williams (op. cit.) then emphasized the importance of organizational learning, the sense that organizations learn from experience and use information that can give them a competitive advantage. In the conditions of creating an economy based on information and knowledge, a connection is created between information, organizational structure and strategic decision-making, and the model of decision-making in conditions of uncertainty is acknowledged.

In certain cases, strategy may be a reaction in response to an urgent challenge from the environment, or the result of reaction and learning by employees, and not necessarily the intention of top management (Mintzberg & Waters, 1990, p. 1). In this sense, Mintzberg & Waters (1990) consider theoretical positions and discussions with other authors, who were engaged in the study of decision-making and its application in strategic management. In their analysis, the focus is on decision-makers and decision-making assumptions, where the classical concept of top management as a strategic decision-maker, Mintzberg's model of planned, independently formed (emerging) and realized strategic decisions are contrasted with other relevant concepts.

In the end, it doesn't even have to be a completely correct assumption that decisions precede actions, in such a way that the action represents the consequence of decision-making and the result of the decision-maker's commitment - to implement the formulated strategy. Namely, the decisions do not necessarily have to formally exist, nor necessarily be causally connected with the action, and there does not have to be a commitment of the top management to a certain direction of actions. In complex systems, such as companies, one of the key problems that occurs when making decisions is identifying where the decision came from and how committed all the employees are to its realization. It can be said that strategic decisions are most often a constellation of some individual decisions in the organization or a consequence of informal conversations or actions that lead to joint reflection, as a basis for collective action.

That is why it is of particular importance to try to find a certain theoretical framework, which will provide an overview of the theories and schools of strategic management, with the help of which the analysis of influencing factors on strategic decision-making will be carried out, as well as the literature from the mentioned area. For this purpose, this paper will use the concept

of schools of strategic management, which were presented by Mintzberg, Ahlstrand and Lampel (2004) in their popular book Strategic Safari: A complete guide through the wilds of strategic management, grouping previous research in the field of strategic management through ten theoretical schools. Of the above, only those key theoretical schools, which can be connected with specific theories and theoretical concepts of strategic decision-making, will be discussed below.

FACTORS INFLUENCING STRATEGIC DECISION-MAKING FROM THE PERSPECTIVE OF STRATEGIC MANAGEMENT THEORIES

Strategic decision-making in the school of strategic management design

In this subchapter, strategic decision-making is analyzed through the framework of the school of strategic management design, i.e. within the framework of matching the internal and external environment, which includes various characteristics of the decision-maker, which are essential for understanding the environment (analysis of perceptions, limitations, etc.).

The oldest theoretical approach to strategic management is the school of strategic management design, which starts from the SWOT model as a strategic framework, within which there should be harmony between internal and external factors of the environment. In principle, managers decide rationally, that is, they choose the strategy that best corresponds to their understanding of the goals and specifics of the business. The above assumes that top management has a clear intention and perception of both the external and internal environment of the company. Top management, with an emphasis on the person of the top manager(s), creates a strategy and makes rational decisions about the strategic direction of the company, using simple decision-making models and mostly informal consultations within the company. Therefore, the strategies are simple and completely clearly defined, which is why their implementation should not be too complex a task (Mintzberg, Ahlstrand and Lampel, 2004).

Of course, the reality of strategic decision-making is significantly more complex and, given the challenges in the modern business environment, it cannot be fully relied on just one person, regardless of their knowledge and competence. Therefore, strategic decision-making in contemporary literature, which, in a broader sense, can be considered the heirs of the original school of design, is considered in a broader context. Elbanna, Thanos and Jansen (2020) suggest that an understanding of the impact of selected factors and their characteristics on strategic decision-making should be developed. These factors include (ibid., p. 43):

- external environment and its characteristics,
- internal (organizational environment) and its characteristics,
- individual and collective characteristics of strategic decision-makers, as well as their interaction,
- features of the decision itself.

This approach, which derives from the previous empirical research of the strategic decision-making process (Elbanna and Child, 2007), can be compared to the classic SWOT analysis, which is indirectly related to the idea of designing a strategy, i.e. understanding the external environment and matching internal with external factors of strategy and strategic of decision-making. In this way, an easier understanding of the context of the decision-making process is achieved, the causes and consequences of the decision-making process are delineated, as well as the differences between the decision-making process and its results. Furthermore, it is easier to understand the sometimes conflicting results of existing empirical research, as well as establish guidelines for future research on this issue.

Similar to the aforementioned researches, neither the characteristics of the strategic decisions themselves have been sufficiently empirically investigated, so that they could be brought into a reliable connection with the characteristics of the strategic decision-making process. When analyzing the importance of a strategic decision, the importance of a decision for business has traditionally been associated with an increased level of rationality (Judge and Miller, 1991, as cited in: Elbanna, Thanos and Jansen, op. cit.), which is not confirmed in recent research. (Elbanna and Fadol, 2016a, as cited in: Elbanna, Thanos and Jansen, op. cit.). The unpredictability of the perception of the situation, in which strategic decision-making takes place, can be viewed through the arguments of the necessary increase in rationality in decision-making, with the aim of overcoming limitations and increasing the quality of decisions. On the other hand, strategic decision-makers in situations of high unpredictability can be guided by an intuitive approach and organizational politics, proposing decisions that are sure to be supported by all key managers and other individuals or groups with high power. Decision motives, such as the perception of an opportunity or threat, to which a decision is responded, affect the scope of the decision. However, it is difficult to reach general conclusions about the connection of this factor with strategic decision-making, except in the case of crisis management, as a specific case for making managerial decisions.

The external environment can be a significant factor in decision-making, which, again, is expressed through the way of managerial perception. There are two key factors that determine how managers perceive the environment: the assessment of the amount of uncertainty in the environment and its hostile orientation towards company. The results of empirical research, which try to determine the indirect effect of managerial rationality on the results of strategic decision-making, are different, whereby the perception of the external environment is singled out as an indirect (intermediate) factor. Due to differences in the assessment of strategic decision-makers, which includes their determination, selectivity and the effort they invest in decision-making, different strategic results occur in situations of a similar level of uncertainty (Klingebiel and De Meyer, 2013 as cited in: Elbanna, Thanos and Jansen, op. cit.). Very similar conclusions are reached when observing the results of the connection between the perceived hostile orientation of the environment towards the company and strategic decision-making. Due to a number of factors and the diversity of decision-makers, there are no clear empirical results (Boyd et al, 2013, as cited in: Elbanna, Thanos and Jansen, op. cit.).

According to Elbanna, Thanos and Jansen (op. cit.), neither the research of internal factors, such as the effect of previous business results (performance), the size of the company and its ownership, give a completely clear picture of the empirical connections with the strategic decision-making process. Some of the reasons for such insufficiently clear results can be found in methodological reasons, differences between researchers in defining key variables and ways of measuring them, but also theoretical differences, which relate to the definition and understanding of the term strategic decision-making process and its phases. In this sense, the importance of the content framework can be pointed out, i.e. key theories of strategic management, which will be discussed more in the next chapter.

Shepherd and Rudd (2014) follow a similar approach to the one described in their review of the impact of influencing factors on strategic decision-making. According to their analysis of the literature, the internal factors are the characteristics of the type of top management (top manager/decision maker), as well as the characteristics of the decision-making process, as understood by the team members. Their analysis of how the top management team and its characteristics can influence strategic decision-making was previously presented.

The characteristics of the decision-making situation itself, as seen by members of the top management team, are especially related to the perception of the complexity of the situation and its connection with organizational politics (Hickson et al, 2001, as cited in: Shepherd and

Rudd, op. cit.), for which is still not clear whether it is a prerequisite for strategic decision-making, or a factor that influences it. Increasing uncertainty reduces the rationality and formalization of decision-making, but increases flexibility, which, however, also works through organizational politics, considering the need to create coalitions between members of the top management team and mutual negotiation (Papadakis et al, 1998, as cited in: Shepherd and Rudd, op. cit.). Regardless of the importance of SWOT analysis in strategic management, it has not been clearly established that there is a significant empirical influence of opportunity or threat perception on strategic decision-making. Differences in empirical results also exist in relation to the perception of the importance of a strategic decision for the organization, where the same conclusions were not reached regarding the connection between rationality and the scope of the analysis with the perceived complexity of the decision. In the event of a crisis or a time limit for making a decision, due to the need for centralization, top management will communicate less and generate organizational conflicts to a greater extent.

Company characteristics significantly affect strategic decision-making, but mainly through organizational politics, given that the centralization of power and decision-making increases the political behaviour of management, as well as the characteristics of ownership and external control. The rationality and scope of decision-making, on the other hand, are mainly the result of the size of the company and the chosen organizational structure. At the same time, a special problem in empirical decision-making is the way of measuring the results (performance) of business, given that the use of different measures of performance can lead to different conclusions.

The perception of the external environment is, of course, important for strategic decision-making, whereby special attention is paid to the speed and instability of the environment. However, there is a lack of empirical confirmation of the effect of these environmental characteristics on strategic decision-making (Papadakis et al, op. cit.), so it seems that their effect is indirect - through the CEO's perception and decision-making style, as the most influential factors. Some researchers (Eisenhardt, 1989; Judge and Miller, 1991, as cited in: Shepherd and Rudd, op. cit.), prove that increased rationality and the use of strategic management tools, as well as the speed of strategic decision-making, can affect the success of strategic management in a very unpredictable and changing external environment. These results are opposed to those obtained by previous research (Fredrickson and Iaquinto, 1989; Hough and White, 2013, as cited in: Shepherd and Rudd, op. cit., since their research does not find a connection between complexity decision-making, that is, the application of strategic management tools and company success in a dynamic and unpredictable environment.

Strategic decision-making in the school of strategic management planning

In the continuation of the presentation, emphasis will be placed on the school of planning in strategic management, which emphasizes strategic decision-making through a formalized strategic management process. The formalistic model of strategic planning still retains the idea based on maintaining the alignment between the internal (strengths and weaknesses) and external (opportunities and threats) strategic capabilities of the company, while developing a large number of different phases of planning and hierarchical responsibilities for different levels of strategy (corporate, business, functional), as well as the implementation of the plan at the operational management level (Mintzberg, Ahlstrand and Lampel, 2004, pp. 54-58). However, the emphasis on the formal principle of planning means that the focus of strategic decision-making moves from the person(s) - members of top management to experts (planners), who represent the key people of this process, because managers generally devote more and more attention and time to the implementation of program activities, and less knowledge of strategy creation.

In the aforementioned theoretical context, the influence of formal planning on the success of strategic decision-making was first analyzed, which was an important topic from the 1960s to the 1980s, which can be identified as the time period in which the school of planning in strategic management ruled, i.e. the practice of corporate strategic planning, based on a formal process and expert and administrative support. That is why it is not surprising that one of the most cited works, which refers to this issue, is from the early 1980s, authored by J.S. Armstrong (1982), who, in a limited analysis of 15 case studies, concluded that formal planning in 10 cases was perceived (by top management) as useful for making strategic decisions, compared to 2 analyzed cases, in which as more useful assessed informal strategic planning. The same author singled out potential situations that support the role of the formal planning process in strategic decision-making. He analyzed situations of inefficient markets, high complexity or uncertainty in the environment and its major changes (regardless of whether it is an internal or external environment), which he claims are the only situations in which the positive role of formal planning is recognized.

At the same time, one should definitely keep in mind the results of later research on the size and nature of the impact of formal strategic planning on the success of the entire strategic management. Langley (1988) is among the authors who warned that the role of formal strategic planning is not limited exclusively to the implementation of the strategic decision-making process (strategic analysis, identification, evaluation and selection of alternatives), as described by the classic theory of strategic management. Based on the analysis of three case studies, this author concludes that strategic planning can also serve as a form of "group therapy" (through which top management communicates, "sells" and ensures support for its strategic vision from stakeholders within the organization), but and "public relations" (ie influence and positioning towards important stakeholders from the external environment). According to the same author (op. cit.), the formal planning process also has the roles predicted by the traditional theory of strategic management, which is related to the collection of information for the development of a strategic vision at the level of top management, as well as to the direction and control of the implementation of strategic decisions.

This author continued her research into the role of formal aspects of strategic management on strategic decision-making with a study in which she analyzes the relationship between formal analysis and social relations, i.e. the interaction between individuals with different levels of formal power in the company, as well as with different knowledge, motivation and way of thinking (Langley, 1991). And this study is based on a small number of three case studies, which were chosen as typical representatives of Mintzberg's organizational structures (machine bureaucracies, as highly standardized and administratively based organizations; professional bureaucracies and adhocracies, as representatives of organizations with complex work tasks and high demands on employees, but different in terms of innovation and predictability).

Using the analysis of different strategic decision-making situations in these organizations, Langley (op. cit.) develops a general framework of different situations, namely:

(a) a situation of confusion, with a vague definition of the problem and the absence of a vision, where the role of formal analysis is limited to one or more individuals, who need to lay the foundations for understanding the situation;

(b) the situation of convergence, in which the strategic decision is known, as well as the way of its implementation, while the formal analysis is aimed at determining the best individual solutions, within the framework of the implementation of an already known strategic decision;

(c) the negotiation situation, which refers to the communication and "selling" of the strategic vision, most often by lower-positioned management at higher hierarchical levels, and where

formal analysis is used as a communication tool and means of persuasion, but also of control (if top management, on the other hand, "sells" his decision to lower hierarchical levels);

(d) a situation of stagnation, i.e. the existence of a strategic vision by individuals or smaller groups in the organization, with simultaneous differences in priorities, or complete non-acceptance of the vision by the top management, whereby the analysis does not produce appropriate communication between the interested parties (in contrast to the situation of negotiations) and

(e) a situation of divergence, in which individuals from different parts of the organization (eg organizational units) possess different strategic visions and actively conflict in their implementation, whereby the role of formal analysis is aimed at generating arguments for the conflicting parties and supporting conflicting positions.

In short, it can be concluded that, in this case, a large number of situations have been identified, in which the use of formal strategic analysis in decision-making does not coincide with the classic picture, related to the assessment of the problem and the decision-making situation and the evaluation of alternatives. Each of the specific situations of strategic decision-making uses formal analysis as a tool for directing interpersonal relations between managers, who participate in strategic management, which speaks of a series of roles that the formal planning process can have in the process of strategic management.

One of the most popular articles in this area is a study written by Kaplan and Beinhocker (2003), which confirms the aforementioned research results. The mentioned authors indicate that the value of formal strategic planning is not found in the quality of the strategic decisions themselves, which were made within the formal process of strategic management, but in the way it encourages managers to think strategically and discuss important topics, i.e. how the formal process influences managerial thinking for making strategic decisions and creates opportunities for information transfer and individual learning of top management team members.

If experts are involved in strategic decision-making, regardless of whether they are from the organization or external collaborators, the characteristics of expert decision-making, analyzed by Hutton and Klein (1999), should be taken into account. According to the mentioned authors, the key characteristic of expert decision-making is the constant assessment of the situation, based on the expert's ability to recognize and evaluate critical decision-making factors. Experts are regularly characterized by serial thinking, where alternatives are evaluated one by one. In this way, strategic decisions are successfully made in conditions of time constraints, high risk (uncertainty), insufficiently well-defined goals, etc. The aforementioned form of decision-making is possible due to the high specialization of experts, who possess knowledge from a narrowly defined professional field, while relying on the recognition of key factors in the decision-making situation, which they know from previous experience.

Strategic decision-making in the environment-based school of strategic management

The school of strategic management based on the environment (environmental school) is described by Mintzberg, Ahlstrand and Lampel (2004) as the complete opposite of the initial schools of design and planning. In this theoretical school, the role of strategic leadership (top management) is placed in the background, and the success of strategic management is observed through the company's ability to adapt to environmental influences, which cannot be influenced in any way. Therefore, the environment-based school is associated with the so-called contingency approach to management, in which the possibility of choosing one and the best approach to management is denied, given that the success of the company may depend on a number of situational (contingency) factors and their values. Given that, in a certain industry,

companies will be faced with similar factors and methods of action of the external environment, it is usually noticed that they are grouped into certain - more or less successful groups, which will depend on the action of the external environment and the success of the response to it from by strategic decision makers. Groups of successful companies will prosper, because they have adapted well to the external environment and its influence, while groups of unsuccessful companies will slowly lose resources and eventually, most likely, go bankrupt or be forced to leave the industry.

A somewhat newer theoretical school within strategic management, which can be considered a specific form of environment-based school, is the positioning school, with Michael E. Porter as the key theorist. While the school based on the environment generally emphasizes the influence of the external environment and the need to adapt the company and management to the requirements of the environment, positioning develops precise "recipes" for recognizing the impact of the environment, especially the industrial one, on the company, on the basis of which recommendations are developed for the behavior of companies in the industry, how the best possible performance and the competitive advantage of the company would be achieved. Therefore, a key initial step is the use of various analytical tools to obtain information about the conditions in the environment, that is, the industry (Mintzberg, Ahlstrand and Lampel, 2004, pp. 84-87). Many authors have studied this area, but the most popular is its interpretation by M. E. Porter (Mintzberg, Ahlstrand, & Lampel, 2004, p. 85). Porter's theoretical direction is based on the application of the idea, that is, the concept of industrial organization (the so-called "industry analysis approach"), in explaining the effect of the competitive (industrial) environment on managerial decision-making in the field of strategic management.

Industrial organization represents a discipline in theoretical economics, which was based on the appreciation of empirical findings, from which one of the most important conceptual frameworks of company behaviour, better known as the structure-conduct-performance paradigm, was developed. In the literature on strategic management, the SCP paradigm is popularized by M. E. Porter, especially through the two most popular books - Competitive Strategy and Competitive Advantage. In principle, they say that the structural characteristics of the industry (industrial environment) are determinants of the company's behaviour, that is, of the strategic choice of managers, who are limited by them in their decision-making.

At best, managers can recognize the characteristics of the environment (determined by Porter's five industrial forces model) and adapt to it. The managerial response to the industrial environment is based on the choice and consistent application of one of the generic business strategies (the lowest cost strategy, the differentiation strategy and the focus strategy, which is also based on the lowest cost or differentiation, but applied to a narrower market niche). They differ from each other with regard to the volume of the target market and the way of creating value, which Porter explains in more detail with the concept of the value chain (Mintzberg, Ahlstrand and Lampel, 2004, op. cit. p. 104). In the case of choosing an adequate generic business strategy, the company will achieve high performance and realize a competitive (strategic) advantage in the branch/activity. In the case of inadequate analysis and adaptation of managerial decision-making to the environment, the company will not have good strategic performance, nor will it achieve a strategic advantage. In the worst case scenario, when managers try to combine elements of different generic strategies, the worst strategic outcome appears - the company/organization is said to be "stuck-in-the-middle", because it does not adapt at all to the demands of the environment and thus threatens its acquired position on the market, on which its further sustainability depends

Empirical research singles out a number of different contingency factors, which can affect the success of strategic management, which can be considered a key factor in adapting to market conditions and survival in the industry. However, when it comes to strategic decision-making,

the choice of influential factors is limited and can be limited to the influence of the characteristics of strategic decision-makers on strategic decisions and their success. Some of the potentially important demographic characteristics of top management were explored by Elbanna, Thanos, and Jansen (2020) in their review of the literature on strategic decision-making.

According to this literature review, the empirical results do not provide a clear picture of the influence of demographic characteristics of top management on their strategic decision-making. The age and length of work of managers in the company and industry influence the rigidity, but also the rationality of top management's actions (Greening and Johnson, 1996; Goll and Rasheed, 2005, as cited in: Elbanna, Thanos and Jansen, 2020). And the role of the experience of the top management team is not clearly empirically related to the characteristics of strategic decision-making, but depends on the level of their self-confidence, as well as the risk they are willing to take (Jansen et al., 2013, as cited in: Elbanna, Thanos and Jansen, 2020). The education of the top management team is related to the amount of rationality in decision-making, but it seems that the mentioned influence is realized indirectly, through the characteristics of the strategic decision-making process. The connection between the psychological characteristics of strategic decision-makers (related to the internal or external sense of control, the need for achievement, as well as the assumption of risk), give mixed and insufficiently reliable empirical results, related to the realization of different characteristics of the decision-making process.

Shepherd and Rudd (2014) also conducted an analysis of the influence of the top management team on strategic decision-making. In their work, the influence of the top management team on strategic decision-making is considered from different aspects:

- The length of engagement in a top management position refers to the increase in rationality in decision-making, as well as the integration of decisions into the company's strategy, whereby an increase in involvement in the analysis of the environment, proactive search for new opportunities and formal planning is observed;
- The level of education of the top management team is also associated with an increase in the rationality and breadth of strategic decision-making, but this applies to the entire team, and not exclusively to the position of the Chief Operating Officer (CEO);
- Diversity in the demographic characteristics of the members of the top management team only somewhat affects the breadth of strategic decision-making, with the more important characteristics being the diversity in the type and length of work experience, as well as in the discussions that take place between team members;
- Psychological characteristics of the top management type refer to their differences in cognitive processes (understanding and creation of knowledge), cognitive style and personality. Although it could be assumed that the diversity of team members in the cognitive sense is a positive factor, research shows that it actually increases conflicts and reduces the ability to analyze complex strategic possibilities. The way team members think, analyze, solve problems and enter into interpersonal relationships (cognitive style) is not clearly empirically connected to strategic decision-making. The same applies to CEO personality research, which is logical, given the previous findings, which emphasize the importance of the top management team as a decision-making unit.

The mentioned authors conclude that the current research on the personal characteristics of the top management team and strategic decision-making is quite limited, given the small number of studies that relate to certain observed factors.

However, strategy does not always have to be only a rational and logically based process, but it must always count on a certain level of irrationality, which, moreover, is even necessarily

needed, in order to initiate actions in organizations characterized by ideological beliefs, instead of logic and rationality, which are cited in textbooks and academic literature (Brunsson, 1982). Namely, traditionally, literature in the area of decision-making was mainly based on the perspective of individual behaviour, and organizational decision-making was identified with individual, based on the belief that entire organizations obey the leadership of one or more powerful top managers, or their coalition. Taking into account the normative nature of traditional literature, which describes how decision-making should flow, instead of how it normally flows and is implemented in organizations, it is not surprising that there was a lack of understanding of the decision-making process from the perspective of implementing organizational decisions in practice, i.e. through organizational actions. Also, it should be taken into account that there are dominant ideologies in organizations, which limit the way of managerial thinking, prescribe values and forms of behaviour in organizations, and thus guide decisions and, ultimately, determine how decisions are turned into action (Brunsson, op. cit.).

Unsteady or chaotic ("erratic" in English) processes of strategic decision-making, which can be defined as a potential impact on the development of the company, based on inconsistent analyses and behaviour of managers. This specific research problem was analysed by Mitchell, Shepherd and Sharfman (2011), where they started from the managerial understanding of their own thinking and their perception of the external environment, considering that it affects the thinking itself. According to the results of their empirical research, managers who better understand their own way of thinking (that is, have more experience and understanding of themselves) have a lower level of chaos in strategic decision-making, while the situation is the opposite for managers in hostile environments. The stated results are logical and expected, but it was not easy to explain why the empirical results showed that managers in more dynamic environments react less chaotically in their strategic decision-making. The same authors (Mitchell, Shepherd and Sharfman, op. cit.) provide a number of potential answers, which can be reduced to experience in dynamic environments, or to the ability to filter redundant information from the environment, which is not crucial for making successful strategic decisions.

In this sense, Papulova and Gazova (2016) emphasize that the key to the success of strategic decision-making is how individuals - strategic decision-makers apply strategic analysis. As the lowest level of application, they single out the so-called "mechanical thinking", which boils down to the rational application of well-known scientific and practical methods, tried and tested in managerial practice so far, and which as a result have relatively safe but conservative solutions. The next step in the ways in which individual strategic decision-makers apply strategic analysis is the so-called "intuitive thinking", in which innovation and creativity participate, but mainly based on the individual knowledge, experience and abilities of the manager, who makes a strategic decision. Given that this way of carrying out the analysis does not require a lot of time, the decision-maker has the possibility of a quick and flexible response to challenges from the environment, whereby he can focus on solving the most important aspects of the problem, instead of developing complex and comprehensive solutions (ibid, p. 574- 575).

When considering the role of intuition in strategic decision-making, the insufficiently rational process of understanding different segments of the problem, from which a comprehensive solution emerges, is actually valued. Managers arrive at it based on many years of experience and knowledge of all business details and typical business problems, which appear in the company, with competitors and in the entire industry (Khatri and Ng, 2000). It is characteristic of intuition that it is an unconscious process, which is complex and ensures a quick reaction and that it represents a shortcut in strategic decision-making, the results of which are comparable to a much slower rational process, based on individual steps (Khatri and Ng, op.

cit.). The same authors warn that intuition should not be confused with decision-making based on emotions and bias, and empirically show that intuitive thinking is associated with the success of strategic decision-making in an unstable and dynamic environment, while it is not successful in a stable environment.

In accordance with the previous discussion, one of the sources of possible deviation from the model of logical and completely rational behaviour can be innovation, which is understood as a consequence of strategic thinking, i.e. a creative approach to thinking. Papulova and Gazova (2016) believe that it is a combination of a mechanical approach, in the part that refers to the application of proven tools and methods of strategic analysis, as well as an intuitive approach, in the part that stimulates the application of a creative approach and the creation of innovative solutions.

Strategic thinking, therefore, does not dwell too much on existing constraints, but combines a classical rational approach with creativity and an understanding of the unclear and competitive external environment (Steptoe-Warren, Howat, & Hume, 2011). These authors indicate that strategic thinking and decision-making could be a consequence of individual abilities, ie top management competencies, although they concluded that the literature did not clearly establish an unambiguous theoretical framework, nor the sources of such competencies. However, in their review of the literature, they analysed the factors that influence such competences, or limit their development, and among them they specifically singled out the categories of managerial thinking (cognition), as well as their individual values and beliefs.

Strategic decision-making in learning and power-based schools of strategic management

Classical decision-making theory does not sufficiently mention the fact that strategic decision-making, in principle, consists of phases of understanding (structuring) the problem that needs to be solved, as a key prerequisite for the implementation of strategic analysis. Only after the aforementioned has been implemented, one can approach the problem-solving procedure (that is, decision-making in the narrower sense), with all the classical phases - starting with the generation of alternatives, and ending with the strategic control of the chosen decision/solution (Thomas, 1984). Furthermore, the process of strategic management, in which problem-solving is carried out, is not linear, but takes place in cycles, so it can be described as dynamic and open to different influences, which include feedback from different parties within and outside the organization, as well as negotiations and bargaining with top management and other participants in strategic decision-making, whose attitudes and way of thinking can influence the final decision-making (Thomas, op. cit.).

The mentioned facts can be connected with schools of strategic management based on organizational learning and power (that is, organizational politics). According to the arguments of Mintzberg, Ahlstrand and Lampel (2004), the school of strategic management, based on learning (learning school), starts from Lindblom's (1959) concept of strategy as a complex and insufficiently clear process, which means completely abandoning the idea of strategic management as logically organized and a clear process, which was still introduced by the design school. As will be described later in this subsection, the influential research of Quinn, which led to the idea of logical incrementalism, introduces bounded rationality, viewed in the short term, as the key logic of strategic decision-making, as seen by the school of learning. It also opens up the possibility for the strategy to appear "independently" (emergent strategy), i.e. that the strategy arises as a process of organizational learning in the company, which the management will recognize and support. At the same time, it is even possible that the emergent strategy differs from the intended strategy (deliberate strategy), as well as that the realized (implemented) strategy in the end is completely different from both the emergent and the intended one.

In the context of the aforementioned limitations, numerous researches have been conducted on the content of the strategic management process, which offer different models of strategic decision-making. One of the most influential reviews of the literature in this area was made by K. M. Eisenhardt and M. J. Zbaracki (1992), who single out groups of rational and political decision-making models. In doing so, the concept of rationality is used in the usual sense of knowing organizational goals, on the basis of which decision-makers gather information, identify and evaluate alternatives, in terms of possible outcomes and their relationship to known goals, and, in the end, choose a decision that leads to the outcome closest to the goal.

In traditional theory, the mentioned process stems from the assumption of man as an economic being ("homo economicus", in the original Latin), which functions on the basis of the assumption of full rationality. It implies that the decision-maker knows all possible alternatives, the consequences (outcomes) of their implementation, has clear preferences regarding each of the decision-making outcomes, as well as being able to realistically assess the costs and benefits of achieving a particular outcome (Kreitner and Kinicki, 2001, as cited in: Turpin and Marais, 2004, p. 144.).

The traditional process of rational decision-making defined in this way is the subject of an analysis of the limitations of management and its rationality, that is, the very rational nature of strategic decision-making. The most famous analysis is Herbert Simon's concept of bounded rationality, which states the relativity of the concept of full rationality and introduces the idea of a certain degree of rationality in decision-making, which depends on the availability of information, decision-making style and cognitive limitations of strategic decision-makers, as well as other factors (Simon, 1990). Of course, the idea of bounded rationality not only reflects practical limitations in the situation of strategic decision-making (absence of complete information, unclear preferences of the decision-maker, etc.), but also the subjective satisfaction of the decision-maker with the achieved level of rationality, which will also depend on the characteristics of the decision-maker, as well as the decision-maker herself. decision-making situations (Turpin & Marais, 2004).

However, one should not ignore the fact that, in the practice of decision-making, the stages of information gathering, identification, evaluation and choice of alternatives do not have to take place in a prescribed order, but can take place in different combinations and time sequences (Mintzberg, Raisinghani & Théorêt, 1976). In this context, the so-called are of particular importance. incremental models of strategic decision-making, which imply that the stages of strategic decision-making (and strategic management in a broader sense) take place without preparation and a long-term strategic vision. The first concept of incrementalism was introduced into the analysis of strategic management by Lindblom (op. cit.), who proposes abandoning the rational model, given that it assumes knowledge of the entire situation and the possibility of analyzing it as a whole, in order to reach a comprehensive and long-term solution to the problem. Instead of the above-mentioned approach, which in very complex situations can be unrealistic, the realistic behavior of decision makers can be described through a series of short-term and limited decisions, which solve certain aspects of the entire decision-making situation. Choices among alternatives are based on short-term experience, and decision-makers are ready for experimentation and multiple attempts to solve problems, constantly moving from the decision-making phase to the analysis phase, and vice versa.

A somewhat newer concept, which was introduced into the theory by Quinn (1977), and known as logical incrementalism, implies that top managers will try not to publish their strategic vision and goals, in order to avoid political behaviour and the creation of coalitions directed against themselves, but also maintain the greatest possible level of flexibility in creating strategies. Furthermore, refraining from "excessive" planning and publishing detailed strategic plans ensures that competitors will not have enough information about the company's strategic vision.

However, according to Quinn (op. cit.), strategic managers should set a strategic vision and plans in general terms, which ensure general understanding and joint action of employees, while changing the role and behaviour of top management itself. Instead of a detailed understanding of the situation and the formulation, implementation and control of the strategy, with full rationality, it is enough that managers are able to feel the need to change the strategy, create awareness of a new strategic step forward and encourage the first step in its direction.

Historical models of incrementalism in strategic management were analyzed by Rajagopalan and Rasheed (1995), where they described the model from Lindblom's (op. cit.) article with the English phrase "muddling through", which could perhaps be translated as "stumbling", but understood in in a positive sense. Although there is no clear boundary between analysing the situation and formulating and implementing strategic decisions, this model emphasizes "managing" in complex situations, in which mistakes are inevitable, so their correction and learning can be considered key success factors (Rajagopalan and Rasheed, op. cit., p. 291). In the described way, agreement is achieved between the key stakeholders of strategic decision-making, which is very important from the aspect of organizational policy (which will be discussed below). The same authors (op. cit., p. 292) see Quinn's model of incrementalism as a combination of rationality and organizational politics, which will be discussed later in this literature review. According to their interpretation of Quinn's model, strategic management is a conscious and proactive process, which top management derives from its strategic vision, although it deliberately does not communicate its vision in detail and does not publish detailed strategic goals, in order to increase the quality and acceptance of its strategic decisions. In both groups of incremental models there is a common emphasis on mastering limited information, decision makers' ability to analyse, as well as reducing conflicts with strategic management stakeholders (Rajagopalan and Rasheed, op. cit., p. 292).

However, in practice, situations of complete and extreme uncertainty often occur, in which there are no clear preferences and attitudes of decision makers, who do not have clearly defined goals before making a decision, but arrive at them during the decision-making process. Furthermore, neither the participants in the decision-making process are fixed, but the makers of individual decisions differ, with regard to interest and motivation, as well as the availability of time and resources for participation in decision-making processes. An additional limitation in such situations is ignorance of the entire business process, whereby learning is reduced to multiple trials and errors. The aforementioned characteristics of the "anarchic" theoretical model were stated by Eisenhardt and Zbaracki (op. cit., p. 27), based on the theoretical work of Cohen, March and Olsen (1972), who called it the "garbage can" model can“ model). Namely, problems and possible solutions and accompanying strategic decisions can be presented as individual flows, accompanied by the same flow of energy and resources of individuals for participation in the decision-making process. The way in which the aforementioned four flows "match" in a particular situation will determine the quality of the strategic decision, and the authors confirm the practical value of their model with a case study of decision-making at the university, in several different decision-making situations.

Taking into account a number of other studies based on the "garbage can" model, Eisenhardt and Zbaracki (op. cit., p. 31) synthesize their characteristics, citing three common features: (a) acceptance of the idea of the enterprise as "an organized anarchy ", (b) consideration of strategic decision-making as a more or less "random" process, created by the accidental connection of changing problems, opportunities for solving them, available solutions and participants in the decision-making process, and (c) limitations of "organized anarchy" through "introduction of order", which is based on observing the strategic decision-making process through a long-term perspective and observing certain rules and structures. In this sense, the very existence of the

theoretical concept of "garbage can" can be questioned, that is, the limitations of this concept can be discussed.

The analysis by Eisenhardt and Zbaracki (op. cit.) is logically followed by a group of papers by S. Elbanna and associates, who concentrate on the process of strategic decision-making, whose analysis they oppose to research on the content of decision-making, which considers strategic management topics, such as diversification and corporate strategies, alignment strategy with environmental requirements, etc. (Elbanna, 2006, p. 2). In the aforementioned study, Elbanna concentrates on the unfolding of the strategic decision-making process and on the factors that can influence such a specific process dimension of strategic management. He singles out the rationality of decision-makers as a significant factor, which has already been discussed in this literature review. This factor does not cause great discussions in contemporary literature, which accepts the idea of bounded rationality, given that it is mostly supported by the findings of empirical research (Eisenhard and Zbaracki, op. cit.). When viewed from the perspective of the strategic decision-making process, bounded rationality will be reflected in the limitations of strategic decision-making due to the cognitive limitations of managers, as well as the limitations of organizational politics (Snyman and Drew, 2003). Nevertheless, there are also a number of problems and unclear results in determining the empirical relationship between the level of rationality and the results (outcomes) of strategic decision-making, for which Elbanna (op. cit., p. 6) finds the reason in a number of problems from research methodology, such as: different approaches to defining the external environment of the decision-making situation, national cultures in which the research takes place, non-inclusion of other important variables, differences in sample selection and statistical methods, etc.

The second group of theoretical decision-making models is related to the analysis of organizational politics, which implies that strategic decisions are made by managers and stakeholders, who have a number of different goals and are temporarily connected in coalitions, in order to have as much influence as possible on the outcome, but also on the procedure. decision-making process (Eisenhardt & Zbaracki, op. cit., pp. 22-23). Organizational policy and negotiations between the key actors of strategic decision-making are the basis on which the school of strategic management based on power relies.

The aforementioned theoretical school implies that it is not possible to formulate or implement optimal strategies, which lead to maximum profit, because the process of strategic management relies on the creation of interest groups and negotiation (guessing), in order to find a compromise between the interests of powerful stakeholders. They relate to the achievement of status and the distribution of resources in the organization and the resolution of conflicts that arise due to different interests in controlling resources (Mintzberg, Ahlstrand and Lampel, 2004).

According to Pettigrew (1977), organizational politics refers to both the choice of strategic problems to be solved and the choice of alternatives to solve them. The choice of both problems and solutions depends on the power to put the problem on the "agenda" of decision-making, as well as to influence the stages of strategic decision-making. Both dimensions of the political process of strategic management depend on the perception of the legitimacy of the demands of an individual or a group in the organization, which is why the conflict when making strategic decisions can be described in the context of gaining legitimacy for one's own demands, i.e. reducing the legitimacy of competing individuals and groups (Pettigrew, op. cit. pp. 85-86).

Eisenhardt and Zbaracki (op. cit.) emphasize that empirical research of political models of strategic decision-making is mainly based on case studies, which confirm that strategic decisions most often realize the preferences of powerful individuals and groups (ibid., pp. 25-26). Furthermore, this situation encourages general "political behaviour" in organizations, that

is, the creation of coalitions, manipulation and control of information, lobbying, control over the "agenda" - decision-making agenda, etc. (ibid., p. 26). This theoretical school can be briefly presented with the conclusions, which say that: (a) organizations consist of people with partially conflicting goals, (b) strategic decision-making is guided by the individual and group interests of powerful stakeholders, and not necessarily organizational interests, and (c) members and groups in the organization necessarily base their behaviour on their own interests and use organizational politics at the same time (op. cit., p. 27).

Elbanna (op. cit.) states their basic characteristics somewhat differently. These include (Elbanna, op. cit., p. 8): (a) the opposition of the political model of behavior to recommendations on open discussion and free sharing of information during strategic decision-making, which results in (b) long-term decision-making processes, which create divisions among individuals and groups in the organization and (c) poor outcomes of the decision-making process, due to the concentration on individual interests within the organization, instead of the demands of the external environment.

THE ENTREPRENEURIAL DIMENSION OF STRATEGIC DECISION-MAKING AND THE SPECIFICS OF SMALL AND MEDIUM-SIZED ENTERPRISES

With regard to the theoretical schools of strategic management, entrepreneurial strategic decision-making can be observed through the entrepreneurial school of strategic management (entrepreneurship school), the basis of which is proactive action, based on an entrepreneurial way of thinking. This school starts from the position that managers, in principle, should think strategically and act as entrepreneurs, have the characteristics of a leader - strong character traits and personality, with a clear vision of their long-term orientation, observed in the context of strategic decision-making (Mintzberg, Ahlstrand and Lampel, 2004, pp. 130, 136, 150-151). Stevenson and Gumpert (1985, as cited in: Mintzberg, Ahlstrand and Lampel, 2004, p. 139) believe that in business decision-making there is a difference between an entrepreneur and a manager, who can be seen as a person who, in an administrative way, approaches strategic management. Namely, while an entrepreneurially oriented strategic manager observes and listens to his environment and searches for new opportunities, which he quickly materializes, the manager, in such situations, behaves formalistically, in accordance with the principles of corporate decision-making, avoiding any risk in his strategic decisions.

In this sense, the entrepreneurial school of strategic management is not necessarily limited to small and medium-sized companies, but can also be applied to large companies that have developed intrapreneurship.

With regard to strategic decision-making, entrepreneurs have certain specificities, depending on the characteristics of entrepreneurs, as well as their environment (Shepherd, Williams & Patzelt, 2015). The psychological characteristics of entrepreneurs, which have been empirically proven as relevant for (strategic) decision-making, are (Busenitz & Barney, 1997): (a) excessive self-confidence, in the function of using the entrepreneurial opportunity as early as possible, while all the data about it are not yet fully available to the wider public public and (b) tolerating non-representative information, resulting in making general conclusions, based on small and purposive samples. Considering that they tend to take advantage of insufficiently known and unexplored market opportunities, it is quite clear that entrepreneurs do not have at their disposal large amounts of reliable data about customers and their behavior, competition, costs, technology, etc. It is interesting to note that the literature also recognizes the reverse relationship, i.e. the impact of entrepreneurial strategic decision-making on some of the essential characteristics of entrepreneurs, such as self-efficacy (the perception of one's own

ability to establish and run an entrepreneurial venture). It has been empirically established that the involvement of employees in strategic decision-making, as well as the complexity and amount of information for decision-making can be associated with higher levels of perceived self-efficacy (Forbes, 2005).

Furthermore, the characteristics of entrepreneurial behaviour relevant to strategic decision-making have also been determined in the literature (Sarasvathy, 2001, p. 252):

- Entrepreneurs prefer thinking in terms of acceptable loss, in relation to setting goals, related to profit maximization;
- Instead of a detailed analysis of the competitive environment, entrepreneurs focus on concluding strategic alliances and using the interests of existing stakeholders;
- Entrepreneurs are oriented towards action and using market opportunities, instead of using expert knowledge;
- Entrepreneurs prefer to focus on controlling the unpredictable future rather than predicting it.

In addition to the entrepreneurial characteristics, specificities related to the limitations in strategic decision-making of small and medium-sized enterprises (SMEs), as typical entrepreneurial organizations, should also be taken into account. The characteristics and limitations of entrepreneurial strategic decision-making are usually viewed as the opposite of the classical theory of (strategic) decision-making, which starts from a problem situation, which has clearly defined causal characteristics. They determine the logical connections between the problem and the solution, namely (Sarasvathy, op. cit., p. 249): (a) what goal needs to be achieved, (b) what are the alternatives for achieving the goal or solving the problem, (c) what constraints (from the environment) are present and (d) what are the criteria for evaluating alternatives. On the other hand, in real entrepreneurial business, the problem of effectuation (strategic decisions) appears, which implies that the entrepreneur has limited knowledge of the situation and the necessary information, and has a number of other limitations.

These limitations include (Sarasvathy, op. cit.): (a) own, relatively unchanging characteristics, (b) general entrepreneurial goals, i.e. a very general perception of the results one wants to achieve, (c) limitations in resources and other business characteristics, whether come from the internal or external environment and (d) criteria for choosing between the desired goals/results, usually based on the level of acceptable risk or loss, which the entrepreneur can bear). In a very similar way, the limitations of entrepreneurial strategic decision-making were also defined by Liberman-Yaconi, Hopper and Hutchings (2010, pp. 74-75), who single out: (a) lack of resources for data analysis and decision-making situations, (b) less centralized and the formalized nature of strategic decision-making, which relies to a greater extent on the intuition and abilities of the decision maker.

From the aspect of the development of the strategic decision-making process, the results of the research of the mentioned authors (Liberman-Yaconi, Hopper and Hutchings, op. cit.), which is based on 11 case studies of micro-enterprises from the information technology industry, except for the role of business experience, ethics and intuition of the decision maker decisions, as key factors in strategic decision-making, also confirm the importance of informal data collection. Owners of micro-enterprises, as strategic decision-makers, collect them in an unstructured manner, most often from customers and business partners. Unsystematic and passive information gathering affects the very nature of strategic decision-making, which cannot fully follow the model of full rationality, but are mostly incremental, as previously described by Mintzberg, Raisinghani and Théorêt (1976) and Quinn (1977). The model of entrepreneurial strategic decision-making, according to the mentioned authors, can be presented

as a series of three overlapping cycles, within which informal information, generation of strategic options and decision-making are carried out.

In the previously described context, the question arises whether entrepreneurs and managers of SMEs are inclined to some specific form of strategic decision-making, based on innovation and innovative use of existing resources, or whether they operate without any strategic management. This issue was analysed by Hauser, Eggers and Güldenberg (2019), using 10 case studies of Swiss SMEs, they showed that effectuation, as a form of innovative approach to strategic decision-making, can be found in most of the analysed case studies. These authors believe that effectuation, as a form of strategic management, which opposes the classic rational model and relies on the entrepreneurial qualities and intuition of the leaders of SMEs, is different from the lack of strategy. Its characteristics, which are described by the mentioned authors, almost completely coincide with the previously described models of incremental strategic decision-making.

CONCLUSION

Strategic decisions can be observed in the context of decision-making theory, considering their characteristics and characteristics of decision-makers, as well as the processes by which they are reached. On the other hand, these decisions can also be viewed from the aspect of strategy, i.e. places and roles in the process of strategic management, as well as positions within the theoretical framework, which refers to strategy and strategic management. In this paper, the hitherto known theoretical approaches in the field of strategic decision-making are presented, whereby the existing works are classified in a way that has not been used in appropriate reviews of the literature so far, which enables a new approach to the study of strategic decisions and their observation in practice.

REFERENCES

1. Armstrong, J. S. (1982). The value of formal planning for strategic decisions: Review of empirical research. *Strategic Management Journal*, 3(3), 197-211.
2. Ateljević, J., & Kulović, Dž. (2015): *Razumijevanje Michaela Portera: Doprinos strateškom menadžmentu.* ISBN 978-9926-403-00-3. Sarajevo: Perfecta.
3. Brunsson, N. (1982). The irrationality of action and action rationality: decisions, ideologies and organizational actions. *Journal of Management Studies*, 19(1), 29-44.
4. Busenitz, L. W., & Barney, J. B. (1997). Differences between entrepreneurs and managers in large organizations: Biases and heuristics in strategic decision-making. *Journal of Business Venturing*, 12(1), 9-30.
5. Cohen, M. D., March, J. G., & Olsen, J. P. (1972). A garbage can model of organizational choice. *Administrative Science Quarterly*, 17(1), 1-25.
6. Cyert, R. M., & Williams, J. R. (1993). Organizations, decision making and strategy: Overview and comment. *Strategic Management Journal*, *14*(S2), 5-10.
7. Eisenhardt, K. M., & Zbaracki, M. J. (1992). Strategic decision making. *Strategic Management Journal*, 13(S2), 17-37.
8. Elbanna, S. (2006). Strategic decision-making: Process perspectives. *International Journal of Management Reviews*, 8(1), 1-20.
9. Elbanna, S., & Child, J. (2007). The influence of decision, environmental and firm characteristics on the rationality of strategic decision-making. *Journal of Management Studies*, 44(4), 561-591.
10. Elbanna, S., Thanos, I. C., & Jansen, R. J. (2020). A literature review of the strategic decision-making context: A synthesis of previous mixed findings and an agenda for the way forward. *Management*, 23(2), 42-60, https://www.cairn.info/revue-management-2020-2-page-42.htm

11. Forbes, D. P. (2005). The effects of strategic decision making on entrepreneurial self–efficacy. *Entrepreneurship Theory and Practice*, 29(5), 599-626.
12. Hauser, A., Eggers, F., & Güldenberg, S. (2020). Strategic decision-making in SMEs: effectuation, causation, and the absence of strategy. *Small Business Economics*, 54(3), 775-790.
13. Hutton, R. J., & Klein, G. (1999). Expert decision making. Systems Engineering: The Journal of The International Council on Systems Engineering, 2(1), 32-45.
14. Kaplan, S., & Beinhocker, E. D. (2003). The real value of strategic planning. *MIT Sloan Management Review*, 44(2), 71.
15. Khatri, N., & Ng, H. A. (2000). The role of intuition in strategic decision making. Human Relations, 53(1), 57-86.
16. Langley, A. (1988). The roles of formal strategic planning. *Long Range Planning*, 21(3), 40-50.
17. Langley, A. (1991). Formal analysis and strategic decision making. *Omega*, 19(2-3), 79-99.
18. Liberman-Yaconi, L., Hooper, T., & Hutchings, K. (2010). Toward a model of understanding strategic decision-making in micro-firms: exploring the Australian information technology sector. *Journal of Small Business Management*, 48(1), 70-95.
19. Lindblom, C. E. (1959). The science of muddling through. *Public Administration Review*, 19, 79–88.
20. Mintzberg, H., Raisinghani, D., & Theoret, A. (1976). The structure of "unstructured" decision processes. *Administrative Science Quarterly*, 246-275.
21. Mintzberg, H., & Waters, J. (1990). Studying deciding: An exchange of views between
22. Mintzberg and Waters, Pettigrew, & Butler. *Organization Studies*, *11*(1), 001-6.
23. Mintzberg, H., Olstrand, B., & Lampel, J. (2004). *Strateški safari: kompletan vodič kroz divljine menadžmenta.* Novi Sad: Prometej.
24. Mitchell, R. J., Shepherd, D. A., & Sharfman, M. P. (2011). Erratic strategic decisions: when and why managers are inconsistent in strategic decision making. *Strategic Management Journal,* 32(7), 683-704.
25. OpenStax (2019). *Principles of Management.* ISBN 0-9986257-7-9. https://openstax.org/details/books/principles-management
26. Papulova, Z., & Gazova, A. (2016). Role of strategic analysis in strategic decision-making. *Procedia Economics and Finance*, 39, 571-579.
27. Pettigrew, A. M. (1977). Strategy formulation as a political process. *International Studies of Management & Organization*, 7(2), 78-87.
28. Quinn, J. B. (1977). Strategic goals: Process and politics. *Sloan Management Review,* 19(1), 21-37.
29. Rajagopalan, N., & Rasheed, A. M. (1995). Incremental Models of Policy Formulation and Non-incremental Changes: Critical Review and Synthesis. *British Journal of Management,* 6(4), 289-302.
30. Sarasvathy, S. D. (2001). Causation and effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of Management Review*, 26(2), 243-263.
31. Shepherd, N. G., & Rudd, J. M. (2014). The influence of context on the strategic decision-making process: A review of the literature. *International Journal of Management Reviews,* 16(3), 340-364.
32. Shepherd, D. A., Williams, T. A., & Patzelt, H. (2015). Thinking about entrepreneurial decision making: Review and research agenda. *Journal of Management*, 41(1), 11-46.
33. Simon, H. A. (1990). Bounded rationality, u: Eatwell, J. (ur.): *Utility and probability* (str. 15-18). London: Palgrave Macmillan.
34. Snyman, J. H., & Drew, D. V. (2003). Complex strategic decision processes and firm performance in a hypercompetitive industry. *Journal of American Academy of Business,* 2(2), 293-298.
35. Steptoe-Warren, G., Howat, D., & Hume, I. (2011). Strategic thinking and decision making: Literature review. *Journal of Strategy and Management*, 4(3), 238-250.
36. Thomas, H. (1984). Strategic decision analysis: Applied decision analysis and its role in the strategic management process. *Strategic Management Journal*, 5(2), 139-156.
37. Turpin, S. M., & Marais, M. A. (2004). Decision-making: Theory and practice. *Orion*, 20(2), 143-160.

HOW STATE AID DURING THE PANDEMIC AFFECTED BUSINESSES – ENTREPRENEURIAL VIEWS FROM GREECE

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ABSTACT

State aid programs employed in several countries to support businesses during the recent coronavirus disease pandemic are coming under examination with an eye to understand if they worked well or not. The paper analyzes the views and assessments of entrepreneurs about the actions of the state aid program put in place in Greece (the program consisted of 28 actions) with respect to: (a) the preservation of jobs, (b) the creation of new jobs, (c) the adjustment of businesses to the pandemic conditions, (d) business continuity during the pandemic, and (e) business resilience. In particular, the paper econometrically estimates the impact of sectoral, regional and other factors and reports the results. It finds that a number of state aid actions are thought to have affected some of the aspects under items (a)-(e) more than other actions did, so perhaps they ought to be considered and employed if similar business support plans are needed in the future.

Keywords: State aid; Strategies for increasing business resilience; Business views; CoViD-2019 pandemic; Greece.

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INTRODUCTION

The recent corona virus disease (CoViD-19) pandemic led many governments to temporarily close major parts of their economies,[2] and to support households, businesses, and individuals adversely affected by the lockdowns and the disruption of the global value chains. These state aid programs have come and are coming under examination with an eye to see which worked well, and which did not work as well, in order to learn more, and use or not use them in case a similar need arises in the future. E.g. by Chaves-Maza and Martel, 2020; Groenewegen et al. 2021; Ambroziak, 2022; Bertschek et al., 2024; and the sources cited therein.

[1] Centre for Planning and Economic Research - KEPE

[2] Thus, they delayed the spread of the pandemic and alleviated its impact on healthcare systems and public health while vaccines were developed.

The paper contributes to this fledging literature by analyzing the views of business owners and managers in Greece about the impact of 28 government initiatives intended to support entrepreneurship during the pandemic on:

I. the preservation of jobs,
II. the creation of jobs (i.e., new jobs),
III. the adjustment of firms to the pandemic conditions (i.e., to the restrictions that were put in place to deal with the pandemic, to the new habits of customers or the requirements of suppliers etc.),
IV. business continuity during the pandemic, and
V. business resilience (i.e., the smooth transition of firms to the post-pandemic era, and their preparation for future challenges, such as hazard controls, lockdowns etc.).

It is organized as follows: Section 2 engages in a brief literature review. Section 3 acquaints the reader with the state actions employed to support entrepreneurship during the pandemic in Greece. Sections 4 provides the research methodology. Section 5 describes the survey and the sample. Section 6 presents the empirical results. Section 7 provides the conclusions.

LITERATURE REVIEW

The international literature explores the impact of state support toward businesses during the pandemic by focusing on different aspects and also using existing (available) or new statistical datasets. For instance, Granja et al. (2022) analyze available US business data and find that the firm-based fiscal policy program set up by the government to prevent job losses in order to provide liquidity to small and medium sized enterprises (SMEs) produced relatively small short- and medium-term employment effects compared to the program's size. Belghitar et al. (2022) analyze available UK data regarding SMEs and find that the government support scheme reduced the number of SMEs with negative earnings, extended the residual life of SMEs with negative earnings, and reduced the number of jobs at risk. Jansen and Radulescu (2022) analyze World Bank data regarding businesses in a number of southern and eastern European counties and find that state aid in the form of deferral of payments was associated fewer layoffs per firm in the surveyed enterprises compared to other types of support. Block et al. (2022) solicit micro-business and self-employed information via an online-survey, compare the cases of those who applied for and received state aid in Germany, and find that the subjective survival probability of the recipients increased modestly.

STATE AID ACTIONS

In the case of Greece the state aid actions carried out were funded by the EU, were in line with EU state aid rules, and consisted of:

- Refundable cash advances, i.e., tax-free aid granted to private companies (regardless of sector) that were financially affected by the outbreak and spread of the pandemic. The advances were repaid, in whole or in part, under specific terms and conditions, and were not offset against any debt.
- Actions taken via the country's thirteen regional programs, namely, for Attica, Central Greece, Central Macedonia, Crete, East Macedonia and Western Thrace, Epiros, the Ionian islands, the North Aegean islands, the South Aegean islands, the south, central, and eastern (SCE) Peloponnese, Thessaly, Western Greece, and West Macedonia.
- Eight sectoral actions, in the form of subsidies to retail businesses; subsidies to existing gym and playground businesses; subsidies to entertainment businesses, event and

exhibition or event catering businesses or gym and dance school services; subsidies to self-employed lawyers; liquidity support subsidies to tourism firms; liquidity support subsidies to catering firms; working capital loans to construction firms; measures taken in the context of the programs for fisheries and the sea.

- Six other actions regarding interest payment subsidies on existing loans; working capital loans with interest rate subsidies for up to two years; business loan guarantees; initiatives of the micro-small-and-medium size enterprises fund; support for start-ups; measures taken in the context of the program for human resource development, education and lifelong learning.

Several of these were repeated, i.e., were carried out in two or more cycles.

RESEARCH METHODOLOGY

While each of the five aspects mentioned in the Introduction may be proxied and analyzed in a number of ways, a straightforward way is through the views of business people. The absence of available data creates the need to: (a) conduct a survey in which businessmen and businesswomen's views are solicited via easy to quantify, structured interviews and questionnaires, and (b) econometrically analyze these views in order to estimate the impact of the various factors involved. The most widely used approach to scale responses in research surveys is the Likert scale; and if the views regarding each of the five aspects of state aid actions (I-V) are expressed on a Likert scale, then the Ordered Probit (OP) model provides an appropriate setting to empirically analyze these views as it preserves the ordering of the responses, while making no assumptions of the interval distances between them (Liddell and Kruschke, 2018).

THE SURVEY, THE SAMPLE AND THE INTERVIEWS

The views analyzed hereinafter regarding actions I-V were solicited from a sample of 3,526 entrepreneurs (business owners or managers) across Greece from all sorts of organizations (mostly businesses, see Table 1) and industries (see Table 2) via a field survey that was carried out in the spring and summer of 2023 by the Patras-based *Data Consultants* for the Greek Ministry of the National Economy and Finance. The survey reached businesses whose applications for government support were accepted, businesses whose applications were rejected, businesses with both successful and unsuccessful applications, and businesses that did not apply for government support.

The responses (the views) were expressed on a Likert scale as follows: disagree (1), rather disagree (2), neither disagree nor agree (3), rather agree (4), agree (5) that the action in question (each and every aid the organization applied for):

- contributed to the achievement of this or that objective, namely, of aspects I-V (in the cases that the aid was approved) and
- would have contributed to the achievement of this or that objective, namely, of aspects I-V (in the remaining cases).

Of the sample's 3,526 businesses:

- 791 applied for support only once: either in a single-cycle action or in one cycle of a multi-cycle action. The applications were approved, and each owner or manager reported in the field survey his or her view about the impact of the specific support on his or her business.

– 1,049 applied for support in two or more cases (single-cycle actions or cycles of multi-cycle actions) via 3,179 applications. The applications were approved, and each owner or manager reported in the field survey his or her view about the impact of each support on his or her business.

Table 1: Composition of the sampled organizations

Domestic owned	99.5%	Autonomous	97.9%
Foreign owned	0.5%	Other (financially partnered, linked)	2.1%
		Operating w. franchise agreement	16.9%
Unincorporated personal businesses	52.6%	Established less than a year ago	0.1%
General partnerships	18.8%	Established 1-10 years ago	29.8%
Public limited companies	10.3%	Established 11-20 years ago	24.3%
Private companies	7.5 %	Established 21-30 years ago	20.9%
Limited partnerships	5.7 %	Established 31-40 years ago	15.5%
Limited liability companies	3.3 %	Established 41-50 years ago	5.5%
Non-profit organizations	0.5 %	Established 51-60 years ago	1.8%
Other organizations *	1.3 %	Established 61-70 years ago	1.3%
		Established 71 or more years ago	0.8%
Located in Attica	21.9%	Located in East Macedonia and Western Thrace	6.3%
Located in Central Macedonia	11.4%		
Located in Crete	7.7%	Located in Western Greece	6.0%
Located in Central Greece	7.7%	Located in the South Aegean islands	5,0%
Located in West Macedonia	7.6%	Located in Epiros	4.5%
Located in the south, central, and eastern Peloponnese	7.4%	Located in the Ionian islands	4.0%
Located in Thessaly	7.2%	Located in the North Aegean islands	3.4%

* Cooperatives, joint ventures, social cooperative enterprises, legal entities established under private law, associations of persons, law firms, shipping companies for recreational craft, unions, institutes, societies, endowments etc.

– 66 applied for support only once. The applications were not approved, and each owner or manager reported in the field survey his or her view regarding the impact the support would have on his or her business.

Table 2: The taxonomy of 20 sectors and 85 sub-sectors (industries) of economic activity (NACE Rev. 2)

A. Agriculture, forestry & fishing: Crop & animal production, hunting, related service activities (01). Forestry & logging (02). Fishing & aquaculture (03).

B. Mining & quarrying: Mining of coal & lignite (05). Extraction of crude petroleum & natural gas (06). Mining of metal ores (07). Other mining & quarrying (08). Mining support service activities (09).

C. Manufacturing: Manufacture of food products (10). Manufacture of beverages (11). Manufacture of tobacco products (12). Manufacture of textiles (13). Manufacture of wearing apparel (14). Manufacture of leather & related products (15). Manufacture of wood, products of wood & cork (except furniture), articles of straw, plaiting materials (16). Manufacture of paper & paper products (17). Printing & reproduction of recorded media (18). Manufacture of coke & refined petroleum products (19). Manufacture of chemicals & chemical products (20). Manufacture of basic pharmaceutical products & pharmaceutical preparations (21). Manufacture of rubber & plastic products (22). Manufacture of other non-metallic mineral products (23). Manufacture of basic metals (24). Manufacture of fabricated metal products, except machinery & equipment (25). Manufacture of computer, electronic & optical products (26). Manufacture of electrical equipment (27). Manufacture of machinery & equipment not elsewhere classified (28). Manufacture of motor vehicles, trailers & semitrailers (29). Manufacture of other transport equipment (30). Manufacture of furniture (31). Other manufacturing (32). Repair & installation of machinery & equipment (33).

D. Electricity, gas, steam & air conditioning supply: (35).

E. Water supply, sewerage, waste management & remediation activities: Water collection, treatment & supply (36). Sewerage (37). Waste collection, treatment & disposal activities, recovery of materials (38). Remediation activities & other waste management services (39).

F. Construction: Construction of buildings (41). Civil engineering (42). Specialized construction activities (43).

G. Wholesale, retail trade & repair of motor vehicles & motorcycles: Wholesale, retail trade & repair of motor vehicles & motorcycles (45). Wholesale trade, except of motor vehicles & motorcycles (46). Retail trade, except of motor vehicles & motorcycles (47).

H. Transportation & storage: Land transport & transport via pipelines (49). Water transport (50). Air transport (51). Warehousing & support activities for transportation (52). Postal & courier activities (53).

I. Accommodation and food service activities: Accommodation (55). Food & beverage service activities (56).

J. Information & communication: Publishing activities (58). Motion picture, video and television program production, sound recording and music publishing activities (59). Broadcasting programming & activities (60). Telecommunications (61). Computer programming, consultancy & related activities (62). Information service activities (63).

K. Financial & insurance activities: Financial service activities, except insurance & pension funding (64). Insurance, reinsurance & pension funding, except compulsory social security (65). Activities auxiliary to financial services & insurance activities (66).

L. Real estate activities: (68).

M. Professional, scientific & technical activities: Legal & accounting activities (69). Activities of head offices, management consultancy activities (70). Architectural & engineering activities, technical testing & analysis (71). Scientific research & development (72). Advertising & market research (73). Other professional, scientific & technical activities (74). Veterinary activities (75).

Table 2 (continued)

N. Administrative & support service activities: Rental & leasing activities (77). Employment activities (78). Travel agency, tour operator reservation service & related activities (79). Security & investigation activities (80). Services to buildings & landscape activities (81). Office administrative, office support & other business support activities (82).
O. Public administration & defense, compulsory social security: (84).
P. Education: (85).
Q. Human health & social work activities: Human health activities (86). Residential care activities (87). Social work activities without accommodation (88).
R. Arts, entertainment & recreation: Creative, arts & entertainment activities (90). Libraries, archives, museums, other cultural activities (91). Gambling & betting activities (92). Sports activities & amusement & recreation activities (93).
S. Other service activities: Activities of membership organizations (94). Repair of computers & personal and household goods (95). Other personal service activities (96).
T. Activities of households as employers of domestic personnel: (97).

- 64 applied for support in two or more cases via 206 applications. The applications were not approved, and each owner or manager reported in the field survey his or her view regarding the impact each support would have on his or her business.
- 214 applied for support in two or more cases via 852 applications. Some applications were approved while others were not approved, and each owner or manager reported in the field survey his or her view regarding both the impact that each type received support had on his or her business, and the impact that each type of unreceived support would have on his or her business.
- 1,342 did not apply for support. However, the owners or managers of 1,088 of these businesses reported in the field survey their views regarding the overall impact of the government's program that aimed to support entrepreneurship.

Most of the (791+3,179 + 66 + 206 + 852 + 1088 =) 6,182 responses feature no omission in all five aspects under consideration (I-V), so the analysis may be performed with 6,154, 6,159, 6,146, 6,139, and 6,131 observations, respectively. And if the sample is weighted at the regional and sectoral level in order to accurately represent the population as per the Statistical Business Register of the Hellenic Statistical Authority at the beginning of the pandemic,[3] then an alternative analysis may be performed with 6,151, 6,156, 6,142, 6,135, and 6,127 observations, respectively.[4]

In the course of the interviews, a number of respondents did not know (or did not relate) the number of workers employed and/or the company turnover; and/or mentioned but could not tell with certainty whether their business had been involved (approved or rejected) in other

[3] The distribution in terms of sectors is 37.9% in sector A, 16.3% in sector G, 9.8% in sector M, 7.8% in sector I, 4.4% in sector F, 4.3% in sector H, 4.1% in each sector C and Q equally, 2.9% in sector S, 1.5% in each sector N, P, R, equally,

1.2% in each sector J and K, equally, 1.2% in sector K, 0.7% in sector L, 0.6% in sector D, 0.1% in sector E, 0.0% in sector B; and in terms of regions 25.0% in Attica, 16.5% in Central Macedonia, 9.7% in Crete, 8.0% in the south, central, and eastern Peloponnese, 7.9% in Thessaly, 6.9% in Western Greece, 6.1% in East Macedonia and Western Thrace, 5.3% in Central Greece, 3,5% in the North Aegean islands, 3.2% in Epiros, 2.7% equally in the Ionian islands and in West Macedonia, and 2,4% in the South Aegean islands.

[4] Two responders, one wholesaler located in the monastic community of Mount Athos (an autonomous region with its own sovereignty within Greece and the European Union) who filed no application, along with a household not engaging in market-oriented production that filed three applications were not weighted and excluded.

programs.[5] So, in the analysis that follows an attempt is made to add these heterogeneity features so as to isolate their impact from the overall evaluation of government policy.

EMPIRICAL ANALYSIS AND FINDINGS

The empirical analysis involves 184 explanatory variables in the case of the unweighted sample and 121 explanatory variables in the case of the weighted sample,[6] so the observations-to-regressors ratio ranges between 1.9 and 3.0%. The econometric regression results are provided in the Appendix.[7]

The positive or negative results associated with coefficients that are statistically significantly different from zero with a probability of error (p-value) less than 1% reveal:

- Positive effects (capturing mostly positive entrepreneurial views) in industries 07, 38-39, 45-46, 53, 55, 58, 61, 69, and sectors G, M and S, and a negative effect (capturing mostly negative entrepreneurial views) in industry 12 regarding the role of state aid in the preservations of jobs (aspect I). Positive effects in industries 07, 47, 69, 71, 97, and a negative effect in industry 12 regarding the role of state aid in the creation of jobs (aspect II). Positive effects in industries 07, 46-47, 55, 62, 69, 71, 74, 77, 95, and sectors G, M, S, and negative effects in industry 12 and sector E regarding the role of state aid in firm adjustment to the pandemic conditions (aspect III). Positive effects in industries 03, 07, 39, 80, and negative effects in industry 97 and sector L regarding the role of state aid in business continuity during the pandemic (aspect IV). Positive effects in industries 07, 53, 80, and a negative effect in industry 03 regarding the role of state aid in business resilience (V).
- A number of additional effects in both the weighted and unweighted OP analysis listed in Table 3.[8] These are discussed below.

Under *item A*, the first line relates the impact of a subsidy paid to a retail business. The negative sign in the first column suggests that, on average, entrepreneurs who received the particular type of support were less likely than the rest to view the support as something that contributed to the preservation of jobs. The second line relates the impact of support supplied via the regional program for the South Aegean islands, and via the program for fisheries and the sea. The positive sign in the first column suggests that, on average, entrepreneurs who received the particular types of support were more likely than the rest to view the support as something that contributed to the preservation of jobs. Likewise, the next five lines suggest that, on average, entrepreneurs who received: (a) A refundable cash advance were less likely than the rest to view the particular support as something that contributed to the creation of new jobs. (b) Support via the regional program for Attica and/or liquidity support for their tourism business were more likely than the rest to view the particular support as something that contributed to

[5] Programs involving accounting services subsidies, interest rate subsidies, special purpose indemnities, loan guarantees, support for digitalization, support to purchase equipment, support to improve competitiveness or some other aspect.

[6] As the number of sectors is smaller than the number of industries.

[7] A linear variant of the specification, namely an ordinary least squares (OLS) regression, is run in order to provide a measure that proxies the widely used measure of a model's fitness: The R^2 ranges between 8.2 and 13.1%. Even though the two approaches are not expected to yield identical results in terms of coefficients and p-values, we report that all coefficients that are statistically significant (featuring a p-value < 1%) in the OP analysis share the same sign in the OLS analysis.

[8] The age, domestic/foreign ownership, autonomy/dependence and franchise effects are not among them.

business continuity during the pandemic. (c) An interest payment subsidy on existing loans were less likely than the rest to view the particular support as something that contributed to business continuity during the pandemic. (d) A subsidy for their personal law firm were more likely than the rest to view the particular support as something that contributed to the firm's adjustment to the pandemic conditions and to its resilience. (e) Support for their start-up were more likely than the rest to view the particular support as something that contributed to the preservation of jobs, to business continuity during the pandemic and resilience, and were less likely than the rest to view the particular support as something that contributed to the creation of new jobs and to the firm's adjustment to the pandemic conditions.

The findings under *item B* suggest that entrepreneurs whose applications for support was rejected, on average, had the view that the particular support: (i) Supplied via the program for human resource development etc. could had contributed to the preservation of jobs. (ii) Supplied via the regional program for Western Greece could had contributed to the creation of jobs. (iii) Supplied via the regional program for Western Macedonia could had contributed to both the preservation and creation of jobs. (iv) Supplied via the regional program for the South Aegean islands could had contributed to the preservation and creation of jobs and the adjustment and continuity of business during the pandemic. (v) In the form of a subsidy to entrainment businesses etc. could had contributed to business resilience. (vi) Supplied via the regional programs for Central Greece and the Ionian islands, as well as in the form of a subsidy to their personal law firm could had contributed to all five aspects. (vii) In the form of a liquidity support subsidy to their catering business could had contributed to the preservation and creation of jobs, and to business continuity during the pandemic, but would not had contributed to business resilience. (viii) In the form of a working capital loan with an interest rate subsidy up to two years could had contributed to their firm's adjustment to the pandemic conditions, continuity during the pandemic and to its resilience, but would not had contributed to the preservation and creation of jobs. (ix) In the form of a business loan guarantee would not had contributed to business adjustment and continuity during the pandemic. (x) In the form of support to their start-up would not had contributed towards all five aspects.[9] On the other hand, the findings under items (i)-(vi) suggest that if more resources were available and directed via the said actions to people whose applications were rejected, they might had been beneficial. Interestingly, the people who benefited from a subsidy to their personal law firm or from the regional program for the South Aegean generally found the support useful in fewer aspects compared to applicants who applied for but did not receive the said support.

[9] This begs the question is which other aspect they thought the particular support (a support they applied for) would help.

Table 3: Factors that appear to exert a positive or negative effect on the business views solicited in 2023 regarding the impact of state aid on the preservation of jobs (I), the creation of jobs (II), the adjustment of firms to the pandemic conditions (III), business continuity during the pandemic (IV), and business resilience (V) as per the statistically significant results (p-values < 1%) of both the unweighted and the weighted ordered probit analyses

The responder's organization	I	II	III	IV	V
Did not apply for support (reference)					
A. Received support via					
1. A subsidy to a retail business	–				
2. The regional program for the S. Aegean; The program for fisheries etc.	+				
3. A refundable cash advance		–			
4. The regional program for Attica; A liquidity support subsidy to a tour. firm				+	
5 An interest payment subsidy on existing loans				–	
6. A subsidy to a self-employed lawyer			+		+
7. A support for a start-up	+	–	–	+	+
B. Was refused support via					
1. The program for human resources etc.	+				
2. The regional program for Western Greece		+			
3. The regional program for Western Macedonia	+	+			
4. The regional program for the South Aegean islands	+	+	+	+	
5. A subsidy to an entertainment or an event business etc.					+
6. The regional programs for C. Greece and the Ionian islands; A subsidy to a self-employed lawyer	+	+	+	+	+
7. A liquidity support subsidy to a catering firm	+	+		+	–
8. A working capital loan with an interest rate subsidy up to two years	–	–	+	+	+
9. A business loan guarantee			–	–	
10. A support for a start-up	–	–	–	–	–
C. Also received support via a number of					
1. Refundable cash advances	+	–			
2. Sectoral and other actions (not via the regional programs)			+	+	
D. Was also refused support via a number of					
Regional program actions				–	
E. Type of business					
1. Unincorporated personal business (reference)					
2. General partnership; Limited partnership; Private capital company	+				
3. Public limited company	+			+	+
4. Union			–		
5. Law firm					–
6. Association of persons	–	–	+	+	–
7. Society	–			–	–
8. Endowment	–	–	–	–	–
F. Respondent heterogeneity: The respondent reports little about additional aid					
1. Regarding loan guarantees	+		+		+
2. Regarding an interest rate subsidy					–
3. Regarding equipment purchases	–	–			–

Source: Appendix.

The findings under *item C* capture a supplementary impact that the various types of support were viewed to have on other types of state aid. Indeed, it turns out that businesspeople who: (a) Received multiple refundable cash advances at different cycles, on average were more likely

to view another aid discussed in the interview as contributing to the preservation of jobs, and less likely to view another aid discussed in the interview as contributing to the creation of jobs. (b) Received multiple support from other, non-regional programs were more likely to view another aid discussed in the interview as contributing to the firm's adjustment to the pandemic conditions and continuity during the pandemic. By contrast, the finding under *item D* suggests that businesspeople who received multiple support rejections from the regional programs on average were more likely to view another aid discussed in the interview as not contributing to business continuity during the pandemic.

The findings under *item E* suggest that, on average, entrepreneurs in: (i) General and limited partnerships and private capital companies were of the opinion more than others that state aid advanced the preservation of jobs. (ii) Public limited companies were of the opinion more than others that state aid advanced the preservation of jobs, business continuity during the pandemic and business resilience. (iii) Unions were of the opinion more than others that state aid did not advance their organizations' adjustment to the pandemic conditions. (iv) Personal law firms were of the opinion more than others that state aid did not advance their resilience. (v) An association of persons were of the opinion that state aid advanced their firm's adjustment to the pandemic conditions and continuity during the pandemic but did not advance the preservation and creation of jobs and business resilience in the post pandemic era. (The association applied and received support.) (vi) A society were of the opinion that state aid did not advance the preservation of jobs, business continuity during the pandemic, and resilience in the post-pandemic era. (The society had applied and received support.) (vii) An endowment were of the opinion that state aid did not advance either of the five aspects. (Quite consistently, the organization did not apply for support.)

The findings under item *F* suggest that entrepreneurs who seemed to relate little about what happened to their: (a) Loan guarantee applications were more likely than the rest to view state aid as contributing to the preservation of jobs and to the firm's adjustment to the pandemic conditions and resilience. (b) Interest rate subsidy applications were less likely than the rest to view state aid as contributing to business resilience. (c) Equipment purchase applications were less likely than the rest to view state aid as contributing to the preservation and creation of jobs and to business resilience.

CONCLUSIONS

The paper empirically analyzes the views of entrepreneurs that were solicited via a survey during 2023 in Greece, about the impact of certain governmental actions aimed to support entrepreneurship in the course of the CoViD-19 pandemic. In particular, it looks into the responses of entrepreneurs who benefited from state aid and the responses of entrepreneurs who did not benefit from state aid; and considers the impact of the various state aid actions, as well as the impact of regional, and other features. It finds statistically significant variation depending on: (a) the sector or industry and the type (legal form) of the organization, (b) whether a business was supported by particular forms of state aid or not, and (c) depending on whether the business was supported by other (additional) state aid. Thus, the paper provides interesting insights that may be useful in the formulation of a theory or a policy-toolkit on the effectiveness or perceived effectiveness of measures aiming to support entrepreneurship at times of crisis.

It turns out that according to the said views, state aid supplied during the pandemic via the regional program for the South Aegean islands, the program for fisheries and the sea, and for start-ups, may have affected (or is perceived as having affected) the preservation of jobs more than other state aid actions did. (To some extent the finding may be in line with both the small

employment effects of the government support program reported in the case of the US, and the reduction in the number of jobs at risk affected by the government's support schemes found in the case of the UK. However, it highlights that some support schemes may have been more effective than others.)

Likewise, the subsidy to self-employed lawyers may have affected the adjustment of their businesses to the pandemic conditions more than other state aid actions did. State aid supplied via the regional program for Attica, and for start-ups, along with the liquidity support subsidy to the tourism sector, may have affected firm continuity during the pandemic more than other state aid actions did. And the subsidy to self-employed lawyers along with the support for start-ups may have affected business resilience more than other state aid actions did. (These findings are in line with the extension of business lives affected by the government's support schemes reported in the UK, and the modest increase in the subjective survival probability of the state aid recipients reported in Germany. However, they also suggest that some support schemes may have been more effective than others.) To the extent they were perceived as more suited to the said aspects, their contents and features ought to be considered and employed in future business support programs in case of need (e.g., natural disasters).

One also notes that state aid actions may have had secondary effects through their impact on other state aid actions; and the rejected support applicants thought that the support of (a) the regional programs for Central Greece, Western Greece, Western Macedonia, the South Aegean and the Ionian islands, (b) the program for human resource development and education and lifelong learning, (c) the subsidies programs (especially, entertainment businesses and event and exhibition or event catering businesses, gym and dance school services, self-employed professionals, such as lawyers) would have helped their businesses.

REFERENCES

1. Ambroziak A. A. (2022). Forms of COVID-19 state aid by beneficiary size in Poland in 2020. *International Journal of Management and Economics*, 58.1: 44-63.
2. Belghitar Y., Moro A., Radić N. (2022). When the rainy day is the worst hurricane ever: the effects of governmental policies on SMEs during COVID-19. *Small Business Economics*, 58.2: 943–961.
3. Block J., Kritikos A. S., Priem M., Stiel C. (2022). Emergency Aid for Self-Employed in the COVID-19 Pandemic. A Flash in the Pan? *Journal of Economic Psychology*, 93: 102567.
4. Bertschek I., Block J., Kritikos A. S., Stiel C. (2024). German financial state aid during Covid-19 pandemic: Higher impact among digitalized self-employed. *Entrepreneurship & Regional Development*, 36.1-2: 76-97.
5. Chaves-Maza M., Martel E. M. F. (2020). Entrepreneurship support ways after the COVID-19 crisis. *Entrepreneurship and Sustainability Issues*, 8.2: 662-681.
6. Granja J., Makridis C., Yannelis C., Zwick E. (2022). Did the paycheck protection program hit the target?. *Journal of Financial Economics*, 145.3: 725-761.
7. Groenewegen J., Hardeman S., Stam E. (2021). Does COVID-19 state aid reach the right firms? COVID-19 state aid, turnover expectations, uncertainty and management practices. *Journal of Business Venturing Insights*, 16.e00262.
8. Janzen B., Radulescu D. (2022). Effects of COVID-19 related government response stringency and support policies: Evidence from European firms. *Economic Analysis and Policy*, 76: 129-145.
9. Liddell T., Kruschke J. (2018). Analyzing ordinal data with metric models: What could possibly go wrong? *Journal of Experimental Social Psychology*, 79: 328–348.

Appendix

The unweighted (U) and the weighted (W) ordered probit analyses regarding the impact of state aid on the preservation of jobs (I), the creation of jobs (II), the adjustment of firms to the pandemic conditions (III), business continuity during the pandemic (IV), and business resilience (IV) as per the views of businesspeople in Greece expressed on a Likert scale – disagree (1), rather disagree (2), neither disagree nor agree (3), rather agree (4), agree (5) – in the spring and summer of 2023

The respondent's organization	I		II		III		IV		V	
	U	W	U	W	U	W	U	W	U	W
Did not apply for support (reference)										
Received support via										
A refundable cash advance	0.02	-0.02	-0.54	-0.45	-0.14	-0.21	0.14	-0.07	-0.07	-0.22
The regional program for Attica	0.76	0.93	0.19	-0.12	0.58	0.44	1.23	1.22	0.69	0.29
The regional program for C.Greece	0.23	0.17	-0.15	-0.13	0.09	0.06	0.13	-0.56	-0.10	-0.62
The regional program for C.Macedonia	0.44	0.72	0.04	0.30	-0.04	-0.42	0.52	0.65	0.13	-0.17
The regional program for Crete	0.62	0.61	0.18	0.26	0.17	-0.14	1.42	1.04	0.92	0.81
The reg. program for E.Macedonia-W.Thrace	-0.13	0.53	-0.45	-0.46	-0.21	0.10	0.17	0.48	0.07	0.54
The regional program for Epiros	0.46	0.39	-0.51	-0.51	-0.10	-0.40	0.52	0.07	0.37	0.14
The regional program for the Ionian islands	0.32	-0.68	0.54	-0.57	-0.56	-1.72	0.40	-0.45	-0.05	0.40
The regional program for the N.Aegean islands	0.71	0.70	0.69	0.41	-0.09	-0.04	0.52	1.05	0.66	1.08
The regional program for the S.Aegean islands	4.72	5.74	-0.56	-0.45	-0.09	-0.54	0.10	-0.45	0.37	0.30
The regional program for the SCE Peloponnese	0.79	0.16	0.39	-0.29	0.26	-0.77	0.49	-0.06	0.47	-0.88
The regional program for Thessaly	-0.05	0.28	-0.14	0.10	-0.60	-0.64	0.58	0.81	0.44	0.62
The regional program for W.Greece	-0.09	-0.19	-0.35	-0.38	-0.33	-0.40	0.06	-0.21	-0.12	-0.59
The regional program for W. Macedonia	0.09	0.34	-0.38	-0.14	-0.02	0.08	0.62	1.26	0.30	0.10
A subsidy to a retail business	-0.53	-0.56	-0.55	-0.32	0.37	0.27	-0.19	-0.31	0.17	-0.12
A subsidy to a self-employed lawyer	-0.16	0.01	-0.29	-0.14	0.64	0.75	0.14	0.18	0.63	0.74
A subsidy to an entertainment business etc.	-0.22	-0.24	0.38	0.44	-0.02	-0.04	-0.53	-0.84	-0.17	-0.36
A subsidy to an existing gym or a playground	-0.47	-0.74	0.05	0.24	-0.22	-0.23	-0.25	-0.72	-0.67	-0.88
A liquidity support subsidy to a tourism firm	0.21	0.84	-0.42	-0.20	-0.28	-0.17	4.56	6.02	-0.76	-0.34
A liquidity support subsidy to a catering firm	0.40	0.56	-0.10	-0.05	-0.17	-0.11	1.07	0.65	0.03	-0.01
A working capital loan to a construction firm	0.65	0.32	0.39	0.67	0.19	0.41	0.82	0.02	0.59	0.10
An interest payment subsid. on existing loans	-0.74	-0.39	-0.66	-0.35	-0.25	-0.02	-0.71	-0.64	-0.41	-0.13
A working capital loan w. interest rate subsidy	-0.05	0.40	-0.04	0.46	0.12	0.47	0.04	0.27	-0.20	0.02
A business loan guarantee	0.08	0.19	0.14	-0.11	-0.08	0.07	-0.07	0.33	0.22	0.05
Support for a start-up	4.54	5.63	-6.53	-7.20	-5.77	-6.88	4.76	5.92	5.09	5.72
The micro-small-medium size enterpr. fund	0.22	0.46	-0.22	-0.29	-0.34	-0.90	0.24	0.28	-0.14	0.07
The program for fisheries & the sea	4.63	6.51	0.80	1.80	0.98	0.77	0.22	6.14	0.71	0.29
Was refused support via										
A refundable cash advance	-0.06	0.13	-0.02	0.10	0.06	0.08	0.14	0.17	0.16	0.20
The regional program for Attica	-0.06	-0.32	0.30	0.27	0.37	0.15	0.41	0.12	0.27	-0.08
The regional program for C.Greece	5.70	6.23	5.37	6.13	5.21	5.75	5.54	6.13	5.68	6.04
The regional program for C.Macedonia	-0.04	0.01	0.29	0.49	0.50	0.78	0.23	0.32	0.54	0.57
The regional program for Crete	0.98	0.96	1.00	1.20	0.79	0.78	0.83	0.77	0.91	0.95
The reg. program for E.Macedonia-W.Thrace	-1.05	-1.29	-0.86	0.13	0.08	0.98	-0.36	0.24	-0.52	0.56
The regional program for Epiros	0.35	-0.11	0.51	0.48	0.66	-0.01	0.26	0.16	0.61	-0.24
The regional program for the Ionian islands	4.91	5.34	5.42	6.45	5.23	5.61	5.03	5.60	5.05	5.34
The regional program for the N.Aegean islands	0.55	0.44	0.42	0.16	0.92	1.69	0.63	1.44	0.25	1.23
The regional program for the S.Aegean islands	4.51	5.66	5.72	6.22	4.98	5.53	4.96	5.77	4.78	5.44
The regional program for the SCE Peloponnese	0.26	-0.31	0.52	0.13	-0.05	-0.56	-0.49	-1.25	-0.47	-1.10
The regional program for Thessaly	0.19	0.38	-0.15	-0.61	0.19	-0.17	-0.04	0.19	0.44	0.16
The regional program for W.Greece	0.96	0.31	6.05	6.85	0.83	0.15	1.14	-0.18	1.06	-0.14
The regional program for W. Macedonia	0.89	1.16	0.70	0.99	0.46	0.33	1.05	0.88	0.90	0.94
A subsidy to a retail business	0.46	0.08	0.59	0.75	0.78	1.63	0.07	-0.36	0.37	1.06
A subsidy to a self-employed lawyer	5.05	6.23	5.36	6.42	4.88	5.77	5.09	5.96	5.10	5.78
A subsidy to an entertainment business etc.	-0.31	0.20	0.02	0.43	-0.08	0.43	-0.34	-0.19	5.64	5.60
A liquidity support subsidy to a catering firm	5.18	5.93	5.25	6.23	-0.53	-0.52	5.05	5.69	-6.08	-6.90
A working capital loan to a construction firm	-0.09	-0.04	0.04	-0.62	-0.45	-0.71	-0.67	-1.01	-0.42	-1.04
A working capital loan w. interest rate subsidy	-6.39	-7.19	-5.87	-6.38	5.08	6.03	4.63	5.71	4.83	5.62

Appendix – Table A (continued)

	I		II		III		IV		V	
	U	W	U	W	U	W	U	W	U	W
Was refused support via										
A business loan guarantee	-0.30	-0.22	0.10	0.42	-0.63	-0.90	-1.09	-1.49	-0.32	-0.46
Support for a start-up	-6.71	-7.19	-6.05	-6.65	-5.50	-6.00	-6.53	-7.56	-6.56	-6.79
The micro-small etc. enterprises fund	-0.24	0.90	0.55	1.59	1.19	1.78	0.40	1.27	0.38	1.34
The program for human resources etc.	5.53	6.33	0.05	0.24	-0.34	-0.53	5.33	5.94	0.19	-0.16
Also received aid via a number of										
• Refundable cash advances	0.08	0.10	-0.07	-0.09	-0.01	-0.01	0.06	0.13	0.03	0.07
• Regional program actions	0.31	0.27	0.35	0.18	0.13	0.04	0.47	0.36	0.36	0.27
• Sectoral programs or other actions	0.12	0.16	0.13	0.12	0.25	0.33	0.22	0.32	0.02	0.01
Was also refused support via a number of										
• Refundable cash advances	0.06	0.02	0.01	0.01	0.08	0.10	0.04	0.12	0.03	0.03
• Regional program actions	-0.03	-0.15	0.02	-0.10	0.00	-0.02	-0.17	-0.26	-0.14	-0.17
• Sectoral programs or other actions	0.14	0.08	-0.05	-0.06	-0.13	-0.11	0.04	0.03	-0.07	-0.15
Industry										
01 Crop, animal production etc. (refer.)										
02 Forestry & logging	0.33		0.30		0.31		0.44		-0.30	
03 Fishing & aquaculture	1.05		-0.05		-0.18		4.97		-1.07	
05 Mining of coal & lignite	-0.55		-0.28		-0.32		-1.11		-0.91	
07 Mining of metal ores	5.54		5.52		5.56		5.25		5.57	
08 Other mining & quarrying	0.31		0.15		0.07		0.38		0.25	
10 Manufacture of food products	0.17		0.05		0.24		-0.15		-0.07	
11 Manufacture of beverages	0.44		0.52		0.33		-0.17		-0.15	
12 Manufacture of tobacco products	-6.05		-5.35		-5.17		-0.52		-0.36	
13 Manufacture of textiles	0.54		0.27		0.53		0.08		0.40	
14 Manufacture of wearing apparel	0.26		0.12		0.23		-0.04		0.16	
15 Manufacture of leather etc.	0.16		0.16		0.59		0.20		0.56	
16 Manufacture of wood etc.	0.42		0.44		0.42		-0.23		-0.23	
17 Manufacture of paper etc.	-0.15		0.11		0.33		-0.06		-0.02	
18 Printing-reprod. of recorded media	0.03		-0.04		0.23		0.07		0.15	
20 Manufacture of chemicals etc.	0.36		0.30		-0.04		-0.27		-0.68	
21 Manufacture of pharmaceuticals	0.60		0.08		0.15		-0.20		-0.01	
22 Manufacture of rubber-plastic pr.	0.35		0.00		0.37		0.29		-0.11	
23 Man. of other non-metallic minerals	0.11		0.32		-0.03		-0.18		-0.10	
24 Manufacture of basic metals	-0.96		-0.28		-0.47		-1.03		-0.63	
25 Manuf. of fabricated metal prod.	0.45		0.12		0.11		-0.26		-0.17	
26 Manuf. of computer, electronics etc.	-0.11		0.32		0.16		-0.18		-0.41	
27 Manuf. of electrical equipment	0.42		0.82		0.70		0.31		0.03	
28 Manuf. of machinery, other equip.	0.07		-0.02		-0.15		-0.55		-0.36	
29 Manufacture of motor vehicles etc.	0.07		-0.25		-0.12		-0.52		-0.53	
30 Manufac. of other transport equip.	0.11		0.45		0.43		-0.34		-0.03	
31 Manufacture of furniture	0.43		0.36		0.49		0.38		0.39	
32 Other manufacturing	0.22		0.17		0.55		-0.03		0.00	
33 Repair-install. of machinery etc.	0.55		0.26		0.27		0.04		-0.04	
35 Electricity, gas, steam & air cond.	-0.30		0.08		0.07		-0.51		-0.66	
36 Water collection, treatment etc.	-0.36		0.13		-0.02		0.07		0.31	
37 Sewerage	-0.32		0.39		-0.99		0.13		-0.19	
38 Waste collection, treatment etc.	0.44		0.38		0.37		0.10		0.15	
39 Remediation activities etc.	0.86		0.65		-0.24		0.81		-0.88	
41 Construction of buildings	-0.02		0.25		0.07		-0.16		-0.21	
42 Civil engineering	0.41		-0.05		0.68		0.19		-0.10	
43 Specialized construction etc.	0.41		0.55		0.39		0.10		-0.19	
45 Sales & repairs of motor vehicles	0.46		-0.17		0.31		0.02		0.21	
46 Wholesale trade, except vehicles	0.42		0.25		0.66		-0.01		0.10	
47 Retail trade, except vehicles	0.20		0.35		0.44		-0.04		0.09	
49 Land transport & via pipelines	-0.06		-0.24		0.04		0.25		0.54	

Appendix (continued)

	I		II		III		IV		V	
	U	W	U	W	U	U	W	U	W	U
Industry										
50 Water transport	0.18		-0.41		-0.28		-0.13		0.05	
51 Air transport	1.08		1.59		1.20		0.78		0.69	
52 Warehousing & support	0.10		0.19		-0.01		-0.16		-0.31	
53 Postal & courier activities	1.10		0.47		-0.60		0.55		0.99	
55 Accommodation	0.43		0.37		0.43		0.16		0.32	
56 Food & beverage service activities	0.12		0.22		0.26		-0.22		-0.09	
58 Publishing activities	0.85		0.55		0.57		0.28		0.26	
59 Motion pictures, video productions etc.	-0.07		-0.43		0.24		-0.06		0.08	
60 Broadcasting programming etc.	0.45		0.46		0.35		0.07		-0.29	
61 Telecommunications	0.96		-0.06		1.03		0.04		0.33	
62 Computer programming etc.	0.45		0.16		0.56		-0.04		0.11	
63 Information service activities	0.53		0.31		0.47		0.18		0.36	
64 Financial service activities	0.82		0.11		0.60		0.06		0.26	
65 Insurance, reinsurance, pension fund.	0.38		0.60		0.56		0.28		-0.24	
66 Activities auxiliary to activities 64-65	-0.02		0.15		0.16		-0.07		0.17	
68 Real estate activities	-0.08		0.18		-0.03		-0.63		-0.56	
69 Legal & accounting activities	0.39		0.37		0.75		0.12		0.27	
70 Activities of head offices etc.	0.31		0.06		0.19		0.21		0.01	
71 Architectural-engineering activ. etc.	0.15		0.48		0.53		-0.01		-0.15	
72 Scientific research & development	0.26		-0.06		0.69		0.11		0.05	
73 Advertising & market research	0.11		0.40		0.31		-0.10		0.07	
74 Other professional-scientific-technical	0.24		0.07		0.68		0.22		-0.05	
75 Veterinary activities	0.41		-0.18		0.32		0.31		0.34	
77 Rental & leasing activities	-0.36		0.41		0.70		-0.08		0.23	
78 Employment activities	-0.66		0.13		-0.24		-0.80		-0.67	
79 Travel agency, related activities	0.50		0.33		0.31		0.83		0.37	
80 Security & investigation activities	0.50		0.45		0.63		1.09		1.48	
81 Services to buildings-landscape activ.	0.52		0.41		0.12		0.14		0.10	
82 Admin.-support-other office activities	0.25		-0.28		-0.33		0.52		0.03	
85 Education	0.18		-0.42		0.17		-0.39		-0.17	
86 Human health activities	0.47		0.18		0.23		-0.02		-0.11	
87 Residential care activities	0.82		-0.08		-0.68		0.57		0.89	
88 Social work activities without accom.	0.72		-0.22		0.19		0.29		0.23	
90 Creative, arts, entertainment activities	-0.09		-0.30		0.33		0.19		0.00	
91 Libraries, archives, museums etc.	0.32		0.74		0.10		0.14		0.47	
92 Gambling & betting activities	0.64		0.30		0.37		0.29		0.36	
93 Sports activities, amusement etc.	-0.02		0.00		0.45		-0.21		0.05	
94 Activities of membership organizat.	0.03		-0.62		0.16		-1.16		0.89	
95 Repair of computers-household goods	0.63		0.28		0.78		0.34		0.19	
96 Other personal service activities	0.26		0.17		0.27		0.07		-0.15	
97 Activities of households as employers	0.10		0.88		0.32		-0.48		-0.06	
Sector										
A Agriculture-forestry-fishing (reference)										
B Mining & quarrying		0.23		0.14		0.00		0.33		0.12
C Manufacturing		0.19		0.05		0.17		-0.06		0.05
D Electricity, gas, steam & air condition		0.20		0.12		-0.13		-0.30		-0.67
E Water supply, sewerage, waste, etc.		-0.25		-0.09		-0.56		-0.30		-0.39
F Construction		0.23		0.24		0.17		0.02		0.02
G Sales, repair of motor vehicles etc.		0.33		0.13		0.41		0.04		0.20
H Transportation & storage		0.03		-0.09		-0.22		-0.01		0.17
I Accommodation, food services		0.21		0.19		0.22		-0.04		0.08
J Information & communication		0.38		0.01		0.18		-0.07		0.08
K Financial & insurance activities		0.31		0.23		-0.11		0.13		0.13
L Real estate activities		-0.56		-0.24		-0.36		-1.01		-0.83
M Professional, scientific, techn. activ.		0.33		0.19		0.51		0.11		0.19
N Administrative & support services		0.26		0.25		0.17		0.29		0.25

Appendix (continued)

	I		II		III		IV		V	
	U	W	U	W	U	U	W	U	W	U
Sector										
P. Education		0.38		-0.29		0.40		0.00		0.18
Q Human health & social work activities		0.29		-0.10		0.05		0.03		0.05
R Arts, entertainment & recreation.		0.00		-0.12		0.12		-0.15		0.06
S Other service activities		0.43		0.21		0.50		0.06		0.05
Situated in										
Central Macedonia (reference)	0.09	-0.06	0.08	-0.05	-0.01	-0.07	-0.02	-0.02	0.08	0.00
Attica	0.09	-0.06	0.08	-0.05	-0.01	-0.07	-0.02	-0.02	0.08	0.00
Central Greece	0.00	0.14	0.23	0.19	0.12	0.11	-0.07	0.19	0.10	0.14
Crete	0.11	0.13	0.15	0.02	0.27	0.36	0.01	0.19	0.05	0.25
East Macedonia & Western Thrace	0.11	-0.36	-0.01	-0.31	-0.20	-0.47	-0.16	-0.30	-0.07	-0.49
Epiros	0.00	-0.07	0.07	-0.16	0.07	-0.06	-0.14	-0.12	-0.06	-0.15
The Ionian islands	0.09	0.21	0.38	0.24	-0.08	0.07	0.19	0.18	0.14	0.10
The North Aegean islands	0.14	-0.05	0.05	-0.05	0.28	0.08	0.15	0.04	0.18	0.16
The South Aegean islands	0.47	0.28	0.35	0.17	0.18	0.06	0.17	0.14	0.36	0.29
The south, central, and eastern Peloponnese	-0.05	0.00	0.10	-0.07	0.01	-0.03	0.02	0.20	0.09	0.23
Thessaly	0.19	-0.35	0.07	-0.11	0.11	-0.09	0.03	-0.35	-0.03	-0.21
West Macedonia	-0.06	-0.23	0.11	-0.26	-0.06	-0.22	-0.02	0.07	-0.08	-0.09
Western Greece	-0.07	0.12	0.07	0.10	0.05	0.25	0.00	0.21	0.03	0.20
Type of business										
Unincorporated personal business (reference)										
Association of persons	-6.24	-6.97	-5.57	-5.92	5.52	6.60	4.96	6.30	-5.84	-6.61
Cooperative	0.28	0.02	-0.36	0.15	0.17	0.32	-0.71	-0.34	-0.68	-0.16
Endowment	-5.72	-6.48	-6.21	-6.11	-5.32	-6.30	-6.14	-7.00	-6.37	-6.72
General partnership	0.27	0.34	0.05	0.17	0.08	0.19	0.17	0.23	0.19	0.17
Institution	-0.65	0.29	0.37	0.75	-0.56	-1.04	-0.66	0.14	-0.81	0.44
Joint venture	0.58	0.97	0.10	0.41	0.43	0.91	0.57	0.77	0.41	0.69
Law firm	0.13	0.03	-0.18	-0.11	-0.08	-0.14	-0.25	-0.14	-0.66	-0.47
Legal entity under private law	1.25	1.03	0.09	0.21	1.07	0.14	0.75	0.54	0.66	0.73
Limited partnership	0.30	0.51	-0.03	0.33	-0.03	0.11	0.20	0.21	0.06	0.18
Limited liability company	0.54	0.50	0.23	0.05	-0.05	-0.34	0.24	0.18	0.19	0.19
Non-profit organization	0.75	0.80	0.37	0.54	0.65	0.75	0.92	0.51	0.05	0.73
Pleasure boat shipping company	0.40	1.01	0.78	1.56	0.55	0.87	0.13	0.57	-0.23	0.54
Private capital company	0.40	0.47	0.19	0.62	0.09	0.45	0.22	0.34	0.12	0.26
Public limited company	0.48	0.58	0.09	0.25	0.09	0.26	0.36	0.30	0.39	0.32
Social cooperative enterprise	1.20	1.45	0.39	0.80	-0.12	-0.42	0.15	0.21	0.00	-0.53
Society	-1.88	-1.87	-1.07	-1.18	-0.27	-0.06	-1.28	-1.04	-1.46	-1.12
Union	0.00	0.15	0.07	-0.11	-1.23	-1.73	0.45	0.18	-0.63	-0.70
Other	-0.20	-0.08	0.18	0.20	-0.23	0.11	0.02	-0.12	-0.09	0.31
Foreign owned	0.49	0.39	0.37	0.49	0.02	-0.05	0.33	0.09	0.08	0.03
Not autonomous: financially partnered, linked	0.18	0.06	0.00	-0.13	0.04	-0.06	0.19	0.21	0.24	0.14
Operates with a franchise agreement	-0.33	0.00	0.10	0.22	-0.12	0.00	-0.25	-0.10	-0.20	0.04
Age (i.e., years of business operation)	0.00	0.00	0.00	-0.01	0.00	-0.01	0.00	-0.01	0.00	0.00
Age squared	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Responder heterogeneity: The responder										
Reports the number of employees & turnover	-0.13	-0.06	-0.28	-0.27	-0.33	-0.28	0.08	0.16	0.08	0.18
Reports number of employees, not turnover	-0.12	0.02	-0.49	-0.31	-0.21	-0.22	-0.05	-0.13	-0.11	-0.08
Reports turnover, not number of employees	0.00	0.00	-0.24	-0.23	-0.01	0.05	0.03	0.00	0.06	0.05
Reports little about additional aid regarding										
• A special purpose compensation	0.68	0.74	-0.21	-0.58	-0.18	-0.42	0.58	0.54	0.62	0.44
• An accounting services subsidy	-0.15	0.04	0.12	0.21	-0.11	0.13	-0.19	0.01	-0.10	0.10
• An interest rate subsidy	-0.73	-0.34	-0.24	0.20	0.33	0.67	-0.48	-0.26	-0.71	-0.94
• Competitiveness	-0.88	-0.19	-0.15	-0.48	-0.64	0.14	-0.44	-0.26	-0.21	-0.13
• Digital transformation	0.49	0.26	-0.17	-0.33	0.33	-0.05	0.16	-0.18	0.30	-0.04
• Equipment purchases	-2.17	-2.77	-5.87	-6.05	-0.78	-1.23	-0.84	0.05	-1.47	-2.13
• Loan guarantees	1.07	1.09	0.32	0.06	1.33	1.52	0.90	0.76	1.16	1.15
• Other aspects	0.03	-0.24	0.38	0.10	0.41	-0.05	-0.01	-0.44	0.25	-0.01

Appendix – Table A (continued)

	I		II		III		IV		V	
	U	W	U	W	U	U	W	U	W	U
Descriptives										
Observations	6154	6151	6159	6156	6146	6142	6139	6135	6131	6127
Pseudo-R^2	5.4%	4.9%	5.0%	4.3%	4.7%	4.9%	4.5%	3.6%	4.0%	3.1%
R^2 of the OLS regressions	12.3%	12.6%	12.8%	11.7%	13.0%	13.1%	8.9%	8.3%	9.7%	8.2%

Notes: The analysis is carried under the assumption of independence between clusters (respondents). The results associated with p-value < 1% are highlighted in yellow.

GREEN TRANSFORMATION OF THE EUROPEAN UNION: IMPLICATIONS ON THE ECONOMIC DEVELOPMENT OF THE WESTERN BALKANS

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Abstract

Regardless of the geopolitical and economic challenges the world as well as the European Union (EU) face, it appears that these issues have not, in the slightest, affected the EU's commitment to the green transition. The European Commission continues to provide strong support to member countries in implementing reforms that encourage the green transition. In conditions of sluggish economic growth, the investments in the green transition are characterized as a significant driver of economic growth. This paper analyzes and evaluates the implications of the EU's green transformation on the economic development of the Western Balkans (WB), with a special focus on the Green Deal and climate neutrality. The Green Deal represents the EU's key strategy for achieving climate goals and transitioning to a sustainable, green economy. Through an analytical approach, the impacts of the green transformation and related policies on the economic, social, and environmental aspects of the region are explored, considering the global Green Economy Index. The research methodology includes cluster analysis and analysis of the green economy index to assess the correlation between factors of the green economy and economic development, considering financial, institutional, and legal aspects of the Green Deal. Additionally, a comparison of development according to the Green Economy Index is applied to identify the position, potential, but also limitations of the Western Balkans in this context. Key indicators of the green economy, such as investments in renewable energy sources, energy efficiency, and sustainable infrastructure, are analyzed in terms of their impact on macroeconomic indicators such as gross domestic product per capita, unemployment, etc., in the Western Balkans. The paper identifies a range of opportunities for economic development, including increasing investments in renewable energy sources and developing sustainable infrastructure projects, but at the same time recognizes limitations, such as a lack of capacity, financial resources and public sector support to implement sustainable policies. Furthermore, there is a risk of increasing economic and social inequalities in the process of green transformation, as well as potential negative environmental consequences if appropriate measures are not taken.

Keywords: Green Deal, Economic Development, Climate Neutrality, European Union, Western Balkan

INTRODUCTION

The Earth is warming and the climate is changing mainly due to human activities, which made the countries of the world in urgent need to change the environment of the economy (Hadouga, 2023; Kaczmarczyk, 2021). Faced with the global challenge of climate change, the EU has set the ambitious goal of achieving climate neutrality by 2050, presenting the Green Deal as its main action plan (European Commission, 2019 a). This initiative is not solely focused on reducing greenhouse gas emissions but also on promoting sustainable economic growth, resource independence, and the protection of the natural environment (European Parliament,

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2018). In the context of these efforts, understanding the implications of the green transformation on the economic prospects of the Western Balkans is particularly significant. The Western Balkans is a term used by the European Union to refer to Balkan countries aspiring to join this integration. These countries include Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, and Serbia (Erić, 2017). In this sense, they are at a crossroads where their economic development and European integration processes can be deeply influenced by the Union's environmental policies and practices (Erić et al, 2023; Mosāne, 2022).

The EU Green Deal encompasses a wide range of objectives aimed at environmental protection and sustainable development. Key elements include a drastic reduction in greenhouse gas emissions by 2030, increasing the share of energy obtained from renewable sources, and promoting the energy efficiency of the entire economy (European Commission, 2019 a; 2019 b). Additionally, the strategy aims to preserve biodiversity, promote sustainable agriculture and food systems, and develop sustainable infrastructure and mobility. The Green Deal represents a fundamental change in the way the EU approaches economic development, creating a growth model that allows for long-term sustainability and competitiveness (Erić et al, 2023). Regardless of the geopolitical and economic challenges the European Union (EU) face, as well as harsh austerity measures (Жарковић, Крајишник & Глигорић, 2014) and fiscal consolidationt taken by the EU countries (Krajišnik, Gligorić, & Gojković, 2019), it appears that these issues have not, in the slightest, affected the EU's commitment to the green transition and green investment.

As part of this long-term strategy, the EU has set a goal to reduce greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels. Achieving this requires strengthening existing climate change policies, introducing new regulations, and encouraging investments, both public and private, in green technologies. One of the aims is also the energy transition, which entails redirecting the EU's energy system from fossil fuels towards cleaner energy sources, such as renewable energy and nuclear power. This includes significant investments in solar and wind energy projects, as well as improving the energy efficiency of buildings and industries (European Commission, 2024).

Regarding sustainable food consumption, the EU has defined the "Farm to Fork" Strategy with the aim of securing a sustainable food system that supports local production and reduces the impact of agriculture on the environment. The goal is also to promote organic farming and reduce the use of pesticides. Furthermore, as part of its strategy, the EU aims to restore damaged ecosystems and address issues such as habitat loss and the decline in the number of animal and plant species. Key activities include the restoration of forests, protection of marine areas, and combating invasive alien species (Popović and Erić, 2021; European Commission, 2019 a).

Through the Green Mobility action, the EU promotes cleaner, cheaper, and healthier modes of transport. The EU encourages the use of electric vehicles, the development of public transport and bicycle infrastructure, and the transition to cleaner fuels for airplanes and ships.

For the effective realization of strategies, a key factor is the financing of the green transition, and the EU has developed sustainable finance taxonomy to guide investments towards sustainable projects (European Commission, 2024). Additionally, European funds targeted at sustainable development support green projects and technologies (Sikora, 2021). The EU's strategy for green transformation lays the foundations for long-term sustainability, while also promoting economic opportunities and competitiveness (Ignjatović et al, 2024; Szpilko, and Ejdys, 2022).

The specific outcomes of initiatives and strategies stemming from the European Union's Global Green Deal are multiple and cover a wide range of sectors. These outcomes are not only a demonstration of commitment to sustainable development and the fight against climate change

but also a roadmap for economic growth that is in line with sustainability principles (European Commission, 2024).

The EU has made significant progress towards reducing greenhouse gas emissions. Achievements include increasing the share of renewable energy in total energy consumption, improvements in energy efficiency, and reductions in emissions from the industry and transport sectors. Furthermore, the share of renewable energy in the EU continues to grow, reducing dependency on fossil fuels and CO2 emissions (The Intergovernmental Panel on Climate Change-IPCC, 2024; European Environment Agency, 2024). Significant financial resources are directed towards renewable energy projects, including wind farms, solar farms, and hydroelectric infrastructure (European Environment Agency, 2024). Areas under organic agriculture in the EU are increasing, aiming to support biodiversity sustainability and reduce the negative impact of agricultural activities on the environment. The "Farm to Fork" Strategy encourages the production and consumption of sustainable, healthy, and fairly produced food products (European Commission, 2019 a). The expansion of the Natura 2000 network, covering protected habitats and species across the EU, plays a key role in biodiversity protection (Rosamond and Dupont, 2021; European Environment Agency, 2024). The EU has introduced various incentives and infrastructure for electric charging, contributing to a significant increase in the number of electric vehicles on EU roads. Improvements in public transport and support for cycling infrastructure encourage citizens to use sustainable forms of mobility (European Commission, 2021). The EU's sustainable activities taxonomy and Green Bond Standard guide investments towards sustainable projects, promoting ecological transition (European Commission, 2023) . The Union continues to play a leading role in global efforts to combat climate change, encouraging other countries to undertake similar actions.

The Western Balkans face specific challenges but also opportunities in the context of the EU's green transformation (European Commission, 2022). On one hand, the EU's ambitious policies provide a model for environmentally sustainable development, while on the other hand, they set requirements for adapting their own economic and regulatory frameworks. The integration of the Western Balkans into the EU and alignment with environmental standards and policies can be key to attracting investments, fostering innovation, and improving energy security and sustainability (European Commission, 2022). This dynamic offers an opportunity for the Western Balkans to evaluate their economic models and identify ways to achieve a green and inclusive economy. Thus, the green transformation imposes the need for the Western Balkans region to invest in renewable energy sources, modernize infrastructure, and develop new skills and capacities. At the same time, the green transition offers opportunities for creating new jobs, reducing energy dependence, improving air quality and health, and stimulating economic growth through innovation and technological development (European Commission, 2022).

The paper is structured in several key chapters that explore in detail the different aspects of the green transformation and its impact on the Western Balkans. The methodological section describes the theoretical approach to the Green Economy Index, provides insight into the percentiles of each analyzed country in the sample, and presents the quantitative tools used in the analysis, while the results and discussion consider the key findings of the research. The conclusion summarizes the main insights of the paper and suggests guidelines for future policy and research.

DATA AND METHODOLOGY

Data

The research methodology is based on an analytical approach that includes cluster analysis and the use of the Global Green Economy Index (GGEI) to assess the impact of the green transformation on economic development. Thus, the GGEI index, published by the consulting firm Dual Citizen, represents an approximation of the success of the transformation into a green economy, and it is calculated for 160 countries. Through selected methods, the paper aims to quantify the connection between EU environmental policies and economic outcomes in the Western Balkans countries, enabling a deeper understanding of how the green transition can impact various aspects of economic development, including investments, employment, and competitiveness.

The GGEI is a key global indicator that measures the performance of countries in the green economy sector, focusing on leadership and climate change, the green economy, resource efficiency, and ecological capital. The Union stands out in this context thanks to the European Green Deal, aiming to make the EU the first climate-neutral continent by 2050. On the other hand, the Western Balkans countries, in their accession process, strive towards a green economy, facing specific challenges.The position of countries according to the GGEI percentile provides important insight into their performance within the green economy. The percentile reflects the country's relative position on a global ranking based on its environmental performances, resource efficiency, sustainable development, and leadership in climate change. Data for individual countries are given in Table 1.

Table 1. Values of GDPpc (USD) and GGEI (percentile), 2022

Country	GDPpc	GGEI	Country	GDPpc	GGEI
Sweden	54,589	0.799	Croatia	15,040	0.667
France	41,558	0.744	Estonia	23,166	0.666
Denmark	61,592	0.742	Slovenia	26,124	0.639
Austria	51,467	0.711	Romania	12,494	0.623
Ireland	79,447	0.703	Greece	19,757	0.617
Portugal	23,563	0.701	Cyprus	29,335	0.613
Latvia	17,865	0.697	Slovakia	19,382	0.606
Luxembourg	116,787	0.696	Bulgaria	9,448	0.604
Belgium	47,545	0.693	Czechia	23,424	0.59
Spain	30,380	0.689	*Albania*	*5,288*	*0.566*
Finland	49,988	0.688	Poland	15,505	0.559
Netherlands	53,045	0.685	Hungary	16,425	0.557
Germany	47,939	0.674	*Montenegro*	*8,850*	*0.531*
Malta	31,786	0.672	*Serbia*	*7,252*	*0.495*
Italy	34,622	0.669	*N. Macedonia*	*6,070*	*0.476*
Lithuania	19,186	0.668	*BIH*	*6,024*	*0.426*

Source: Dual Citizens 2024; World Bank, 2024

The table of percentile values according to the GGEI forms the basis for K-means cluster analysis, which is utilized to test the hypotheses of the paper, draw corresponding conclusions, and determine further research directions.

Methodology

Cluster analysis (K-means method or algorithm) is one of the most well-known methods for clustering or grouping data. It is used to divide a dataset into 'k' distinct subsets (clusters), minimizing the variance within clusters (Arthur, and Vassilvitskii, 2007; Ester et al, 1996).

The steps of K-means analysis are (Likas et al, 2003):

- Initialization: Random selection of 'k' points from the dataset as the initial cluster centers.
- Assignment: Assigning each data point to the cluster whose center is the nearest. Distance is usually measured by Euclidean distance.
- Update: Calculating new cluster centers by taking the mean value of all points assigned to each cluster.
- Repetition: Steps 2 and 3 are repeated until the cluster centers stabilize or the maximum number of iterations is reached.

The goal of the K-means algorithm is to minimize the objective function (J), which is defined as the sum of squared distances between data points and the cluster centers assigned to them:

$$J = \sum_{i=1}^{k} \sum_{x \in S_i} \|x - \mu_i\|^2 \quad (1)$$

where 'Si' is the set of points assigned to the 'i'-th cluster, 'μi' is the centroid of cluster 'i', and ||x - μi|| is the Euclidean distance between point 'x' and the cluster center 'μi'.

K-means is widely used across many fields due to its simplicity and efficiency, although it has some limitations, such as sensitivity to the choice of initial cluster centers.

Euclidean distance: It is used to calculate the distance between two points 'x' and 'y' in a space with 'p' dimensions (attributes) as follows:

$$d(x, y) = \sqrt{\sum_{i=1}^{p} (x_i - y_i)^2} \quad (2)$$

where 'xi' and 'yi' are the values of the 'i'-th dimension of points 'x' and 'y', respectively.

Updating cluster centers: New cluster centers are calculated at the end of each iteration as the arithmetic mean of all points assigned to that cluster. If 'Si' is the set of points in the 'i'-th cluster, the new cluster center 'μi' is:

$$\mu_i = \frac{1}{|S_i|} \sum_{x \in S_i} x \quad (3)$$

where '|Si|' denotes the number of points in the cluster 'Si'.

Convergence: The algorithm is considered to have converged when the positions of the cluster centers no longer change significantly between iterations, implying that the assignment of points to clusters has stabilized. Selection of 'k': The choice of the number of clusters 'k' is crucial for the success of the K-means algorithm. The elbow method is a popular approach for determining 'k', which involves plotting the variance within clusters against the number of clusters and looking for the 'elbow' on the graph, i.e., the point after which adding additional clusters only provides a marginal reduction in variance.

RESULTS

Descriptive Analysis

Above mentioned table 1 displays the position of EU countries and Western Balkan countries within the GGEI, highlighting their specific characteristics and challenges in the context of the green economy. EU countries generally have high GGEI percentile values, indicating their success in implementing policies and practices of the green economy. The EU countries are ranker better, compared to Western Balkans, which is expected. The exception is Albania. The high rank of EU countries is a result of comprehensive strategies, such as the European Green Deal, which aim to reduce emissions, promote renewable energy, and preserve biodiversity. The best-positioned countries within the GGEI are Sweden, France, Denmark, Austria, and Ireland. Sweden is a leader in the green economy, supported by high GDP and strong sustainability policies. It is followed by France, which shows a high level of commitment to the green economy, with a strong focus on the index components specifically related to environmental policies. Denmark, the next best positioned in the ranking, also stands out with advanced policies in the field of renewable energy sources, particularly wind energy. Within the GGEI, Austria leads in the component of conserving natural resources and promoting green energy, while Ireland is particularly noted for improving the green economy through components of renewable energy sources and reducing carbon footprint, giving it a high position on the ranking of this index.

Western Balkan countries have room for improvement, as they have significantly lower GGEI percentiles compared to most EU countries. Their development towards a greener economy involves challenges such as raise awareness about the importance of green transition, the greater investments in green technologies, strengthening the regulatory framework, and aligning with EU standards and practices. Thus, the countries with the poorest position in the analyzed sample are mainly Western Balkan countries: Bosnia and Herzegovina, Serbia, North Macedonia, Montenegro, and Hungary as an EU member state. Bosnia and Herzegovina faces challenges in promoting the green economy, particularly with room for improvement in energy efficiency. North Macedonia has space for greater efforts in implementing environmental policies and technologies, while Serbia is working on improving policies and practices for environmental conservation and sustainable development. Montenegro seeks to improve its performance in the green economy, focusing on the protection of natural resources, with a special emphasis on clean air and sea. Hungary is seen as having space for improvement in energy efficiency and the use of renewable sources.

Cluster Analysis

Cluster analysis using K-means methodology on GGEI percentile data for 2022 proves the obvious significant differences in countries' performances in terms of their green economies. This analysis enables a better understanding of the global distribution of efforts in sustainability and environmental responsibility. The cluster analysis was performed using K-means methodology on a dataset of 32 countries (Table 1), focusing on the GGEI percentile for 2022. The analysis resulted in the formation of three clusters based on the GGEI percentiles of countries.

Initial GGEI percentile values for each cluster (1st cluster: 0.606; 2nd cluster: 0.799; 3rd cluster: 0.426) serve as the basis for the start of the clustering process. These values determine the initial groups of countries to be analyzed. Differences in these initial values suggest the assumption that there are distinct groups of countries with significantly different performances in terms of the green economy.

Table 2. Initial cluster centers

	Cluster		
	1	2	3
GGEI percentile	0.606	0.799	0.426

Source: Author's own calculation in the SPSS software package, version 26

The history of iterations shows how the cluster centers change over time, with convergence achieved after 10 iterations. The reduction in the change of cluster centers over iterations indicates the stabilization of clusters, meaning that further iterations would not significantly change the grouping.

Table 3. History of Iterations[a]

	Change in Cluster Centers		
Iteration	1	2	3
1	0.035	0.059	0.040
2	0.006	0.019	0.016
3	0.005	0.008	0.015
4	0.002	0.006	0.010
5	0.002	0.005	0.008
6	0.012	0.004	0.000
7	0.006	0.000	0.008
8	0.005	0.000	0.010
9	0.004	0.000	0.015
10	0.000	0.000	0.000

a. Convergence achieved due to no or small change in cluster centers. The maximum absolute coordinate change for any center is .000. The current iteration is 10. The minimum distance between initial centers is .180.

Source: Author's own calculation in the SPSS software package, version 26

The elbow method is commonly utilized to ascertain the optimal number of clusters by graphically representing the variance in the dataset relative to the number of clusters. The objective is to identify the "elbow" point, at which the addition of further clusters does not significantly enhance the sum of squares within clusters (WSS), indicating a diminishing return on the benefit of adding more clusters. This methodological approach underscores the inherent compromise in cluster analysis between achieving a granular understanding through detailed segmentation (potentially leading to excessive fragmentation with too many clusters, each containing a small number of countries) and maintaining practical usability and interpretability (which may result in overgeneralization if too few clusters are chosen, thereby potentially overlooking significant variances among countries).

Although specifics regarding the elbow analysis are not delineated within the dataset provided, the election of three clusters is presumably informed by such an analysis. This decision implies a reasoned equilibrium, mitigating the risk of both undue fragmentation and overgeneralization. The resultant convergence and the allocation of countries across the delineated clusters further affirm the appropriateness of selecting three clusters for this dataset. This allocation facilitates a nuanced yet coherent analysis of the disparate performances of countries within the context of the green economy. Subsequently, the distribution of analyzed countries into clusters, according to their GGEI percentile values, is presented as an outcome of this methodological consideration.

Table 4. Distribution of Countries into Clusters

Country	Cluster	Distance	Country	Cluster	Distance
Albania	1	0.032	France	2	0.046
Bulgaria	1	0.006	Germany	2	0.024
Cyprus	1	0.015	Ireland	2	0.005
Czechia	1	0.007	Italy	2	0.029
Greece	1	0.020	Latvia	2	0.001
Hungary	1	0.040	Lithuania	2	0.030
Poland	1	0.038	Luxembourg	2	0.002
Romania	1	0.026	Malta	2	0.026
Slovenia	1	0.042	Netherlands	2	0.013
Slovakia	1	0.008	Portugal	2	0.003
Austria	2	0.013	Spain	2	0.009
Belgium	2	0.005	Sweden	2	0.101
Croatia	2	0.031	*BIH*	*3*	*0.056*
Denmark	2	0.044	*Montenegro*	*3*	*0.049*
Estonia	2	0.032	*N. Macedonia*	*3*	*0.006*
Finland	2	0.010	*Serbia*	*3*	*0.013*

Source: Author's own calculation in the SPSS software package, version 26

Assigning countries to clusters based on their proximity to cluster centers provides tangible insights into how countries are grouped according to their GGEI percentiles. This membership allows for an understanding of which countries share similar characteristics in terms of the green economy and facilitates comparison within and across clusters. The following is an analysis of the outcome for each group of countries by clusters from the previous table.

- Cluster 1: This cluster is characterized by a lower GGEI percentile, indicating that countries within this cluster may not be investing sufficiently in the green economy or lack fully developed policies and practices for sustainability. This presents an opportunity for governments and organizations to target these countries with awareness-raising programs and initiatives to enhance sustainability.
- Cluster 2: Comprising countries with medium to high GGEI percentiles, this cluster indicates a higher commitment to sustainable practices and the green economy. These countries can serve as exemplars of good practices in sustainability and can be sources of knowledge and inspiration for other countries.
- Cluster 3: Positioned between the first two clusters, this cluster contains countries that demonstrate moderate progress towards the green economy. Existing efforts could be enhanced through targeted strategies and investments in green technologies and sustainability.

The results of the analysis of variance (ANOVA) in the following table confirm that there are statistically significant differences between the clusters, with an F-value of 78.552 and a p-value of 0.000. This indicates that the clusters are well-defined and significantly vary in their GGEI percentiles, justifying their existence as separate groups.

Table 5. Analysis of Variance (ANOVA)

ANOVA						
	Cluster		Error			
	Mean Square	df	Mean Square	df	F	Sig.
GGEI percentile	.089	2	.001	29	78.552	.000

The F tests should be used only for descriptive purposes because the clusters have been chosen to maximize the differences among cases in different clusters. The observed significance levels are not corrected for this and thus cannot be interpreted as tests of the hypothesis that the cluster means are equal.

Source: Author's own calculation in the SPSS software package, version 26

The final GGEI percentile values from the previous table (Cluster 1: 0.597; Cluster 2: 0.698; Cluster 3: 0.482) represent the center of each cluster after the iterative adjustment process of the K-means algorithm. The change in values relative to the initial centers indicates an optimization process during which the algorithm more precisely defines each cluster by grouping similar countries.

Table 6. Final Cluster Centers

	Cluster		
	1	2	3
GGEI percentile	0.597	0.698	.482

Source: Author's own calculation in the SPSS software package, version 26

The final values provide a clear insight into the average characteristics of each cluster, followed by a brief commentary.

The existence of a distinct cluster for Western Balkan countries (In the Cluster 3 only Western Balkans countries are classified) may indicate regional differences in the approach to the green economy, which could also be of interest for regional policy analyses and sustainable development strategies.

Countries in Cluster 2, which are leaders in sustainability, can be sources of valuable policies and initiatives that could be studied and potentially adapted by countries in other clusters. Analyzing their strategies could reveal key success factors in the implementation of sustainable practices. Clusters may also suggest the potential for international cooperation between countries within the same cluster, or even between clusters, where countries with higher GGEI percentiles can share their knowledge and resources with countries striving to improve their performances.

Countries within Cluster 3, showing moderate progress, may need to develop tailored strategies that take into account their specific economic, social, and political circumstances. Adapting successful models from Cluster 2 could be key to their advancement.

Understanding the positioning of countries in the global context of the green economy can help in better comprehending global trends and challenges, as well as in identifying leaders and laggards in this field. This could be useful for international organizations dealing with sustainable development issues.

In conclusion, the results of the cluster analysis not only provide insight into the current positions of countries in the context of the green economy but also highlight potential pathways for improvement and cooperation. Further analyses, including comparisons with previous years and in-depth studies of policies and practices within each cluster, could further enrich these findings.

DISCUSSION

Based on the results of the cluster analysis presented, it is possible to engage in a discussion and draw conclusions concerning the performances, policies, and practices of the countries encompassed by this research.

Cluster 2, with countries boasting higher GGEI percentile values, unequivocally identifies nations leading in global efforts toward a green economy. Conversely, clusters 1 and 3 comprise countries with lower GGEI values, signaling a need for the reinforcement of sustainability policies and practices. Development policies and strategies could be tailored to encourage lagging countries to adopt the successful practices of leaders.

A regional concentration of specific countries within clusters, particularly in Cluster 3 containing Western Balkan nations, points to regional factors that might influence performances in the green economy, including economic conditions, political will, and resource availability. There is room for strengthening regional cooperation and knowledge exchange to improve performances.

Differences in performances among clusters provide a basis for developing specific, targeted programs and initiatives that could assist lower-cluster countries in enhancing their ecological performances. For instance, financial assistance programs, technology transfers, and training could be especially beneficial for countries in Clusters 1 and 3.

The results of the cluster analysis can serve as a foundation for contemplating how the green transition can be aligned with economic development. Countries leading in the green economy (Cluster 2) often demonstrate how investments in sustainable technologies and practices can be drivers of economic innovation and growth.

The performances of countries in the green economy (especially through the GGEI) are increasingly recognized as a key factor in global competitiveness. Countries from Cluster 2 not only set standards for sustainable practices but also enhance their attractiveness as partners in international trade and investments, underscoring the importance of aligning national policies with global sustainability trends.

Therefore, the results align with almost all prior research in this area, as well as with the strategies of the European Union in that context. They provide important guidelines for policymaking and resource allocation to support the transition to a more sustainable economy, crucial for achieving sustainable development goals and reducing negative environmental impacts.

The Western Balkans represent an intriguing case when considering ecological performances and the green economy in a global context and analysis. This region faces specific challenges but also opportunities that could impact the transition to a sustainable future. Thus, this discussion offers a detailed examination of the Western Balkans' position through a SWOT analysis:

Strengths

- *Rich natural resources*: The region possesses significant natural resources, including renewable energy sources such as hydro, wind, and solar, providing a solid foundation for developing a green economy.
- *Increasing sustainability awareness*: There is growing awareness among the populace and governments about the importance of sustainable development, which could facilitate the adoption of green policies and initiatives.
- *Young and educated population*: The Western Balkans have a significant portion of the young and increasingly educated population that is open to innovation and changes, including those in the realm of sustainability and the green economy.
- *Geographic position*: The region's geographical position offers strategic advantages for the development of green energy (such as hydro, solar, and wind energy) and ecotourism, providing additional economic and ecological benefits.

Weaknesses

- *Dependence on fossil fuels*: The energy structure of the Western Balkan countries heavily relies on fossil fuels, presenting a significant barrier to the transition toward a green economy.

- *Limited financial and institutional capacities*: A lack of financing and institutional capacities hampers the implementation and management of ecological projects and policies.
- *Infrastructure challenges*: Outdated infrastructure, particularly in the energy sector and waste management, poses a major barrier to the efficient implementation of sustainable practices.
- *Low public awareness of ecological issues*: Despite growing awareness, there is still a considerable portion of the population insufficiently informed about the importance of sustainable practices and ecological issues, slowing change at individual and collective levels.

Opportunities

- *EU integration and funds:* The EU integration process opens access to funds and programs that can support ecological projects and the green transition in the region.
- *Technological advancement and knowledge transfer*: Collaboration with international partners and access to new technologies can accelerate the implementation of sustainable solutions.
- *Development and expansion of regional markets*: Market integration and the development of regional initiatives can provide new opportunities for trade and investments in sustainable technologies and products, stimulating economic activities and sustainable development.

Threats

- *Climate change:* The region is susceptible to the adverse effects of climate change, including extreme weather conditions and natural disasters, which could further strain ecological and economic resources.
- *Political and economic instability:* Political and economic instability can impact the continuity and efficacy of ecological initiatives. Furthermore, political instability and the lack of coherent policy can hinder progress towards sustainable goals, especially in areas requiring long-term and stable political decisions.
- *Competition in the global market:* Western Balkan countries face the challenge of being competitive in the global market, especially in sectors key to sustainable development, such as renewable energy sources and green technologies.

The current analysis applies a single-dimensional cluster analysis to group countries by specific aspects of the green economy. However, future research could expand this analysis to multiple dimensions, including energy efficiency, greenhouse gas emissions, and socio-economic factors. This broader approach would provide deeper insights into the interplay of these factors, offering a more comprehensive view of countries' green transition performance and positioning. Such an expansion would contribute to a clearer understanding of complex patterns and provide researchers with a stronger foundation for developing tailored sustainable development strategies.

CONCLUSION

The analysis clearly shows significant heterogeneity among countries regarding their ecological performances, opening avenues for intensifying efforts toward sustainable development. The research provides insights into how countries are grouped based on their performances in the green economy, highlighting the need for customized approaches in improving ecological performances. Further research could focus on a deeper understanding of the public policies,

innovations, and practices that have enabled countries in Cluster 2 to achieve high performances, as well as identifying specific barriers faced by countries in Clusters 1 and 3.

Beyond economic benefits, the green economy also has the potential to improve social justice and reduce ecological injustices. Cluster analysis in this manner can provide solutions for adopting inclusive and equitable green policies. Encouraging international cooperation and the exchange of best practices between countries can be key to accelerating the global transition to a green economy.

The Western Balkans stand at a crossroads between traditional economic models and the need for sustainable development. While challenges exist, there is also a clear path forward that includes EU integration, regional cooperation, and a focus on renewable energy sources. A key success factor may be the region's ability to align economic and ecological goals, achieving all the prerequisites for sustainable development. This analysis offers significant insight into the current position of Western Balkan countries in the global context of the green economy and highlights the need for coordinated actions on the path to sustainability.

Strengths such as rich natural resources and growing awareness of sustainability provide a solid basis for positive change. However, weaknesses like dependence on fossil fuels and a lack of financial resources, along with institutional and economic challenges, represent significant obstacles. Nonetheless, opportunities provided by European integration, as well as global trends in the development of green technologies, can enable the Western Balkans to overcome these challenges and become a regional leader in sustainable development.

To achieve this, a coordinated approach involving all levels of government, the private sector, non-governmental organizations, and international partners is necessary. A priority in realizing the green transformation includes investments in renewable energy sources, energy efficiency, biodiversity conservation, and green infrastructure. Moreover, strengthening institutional capacities and regulatory frameworks are key factors in the sustainability of ecological policies.

Education and raising awareness about the importance of sustainable development among citizens can contribute to creating a societal consensus on the need for ecological changes. Developing green skills and occupations can also help reduce unemployment and stimulate economic growth. International cooperation and access to international funds and technologies will allow for a faster transition to sustainable energy systems and industries. Partnerships with the EU and other international organizations should be leveraged for the exchange of knowledge, experiences, and best practices in sustainable development.

Further research should focus on longitudinal studies that track the progress of countries in the green economy over time, as well as detailed analysis of the impact of specific policies and initiatives on ecological and economic performances. Additionally, it's important to explore how global challenges, such as climate change, affect countries' ability to make progress in sustainability.

Through understanding these dimensions, it's possible not just to better comprehend the current performances of countries in the green economy, but also to inform the creation of policies and strategies that will support global efforts towards a more sustainable and equitable world.

LITERATURE

1. Arthur, D., & Vassilvitskii, S. (2007). *k-means++: The advantages of careful seeding*. In *SODA* (Vol. 7, pp. 1027–1035). Retrieved from https://theory.stanford.edu/~sergei/papers/kMeansPP-soda.pdf
2. Dual Citizen. (2024). *Performance index*. Retrieved from https://dualcitizeninc.com/performance-index/
3. Erić, O., Kurteš, S., & Amidžić, S. (2023). *Green economy and climate neutrality*. In Ilić, P., Govedar, Z., & Pržulj, N. (Eds.), *Environment* (pp. 553–577). Academy of Sciences and Arts of the Republic of Srpska. https://doi.org/10.7251/EORU2309553E
4. Erić, O. (2017). *Analysis of the effects of the EU official development assistance to the Western Balkans*. *Acta Economica, 15*(26). https://doi.org/10.7251/ACE1726123E
5. Ester, M., Kriegel, H. P., Sander, J., & Xu, X. (1996). *A density-based algorithm for discovering clusters in large spatial databases with noise*. In *KDD* (Vol. 96, No. 34, pp. 226–231). Retrieved from http://www.cs.ecu.edu/~dingq/CSCI6905/readings/DBSCAN.pdf
6. European Commission. (2019b). *Document 52019DC0640*. Retrieved from https://eur-lex.europa.eu/legal-content/HR/ALL/?uri=CELEX:52019DC0640
7. European Commission. (2019a). *European Green Deal*. Brussels: European Commission. Retrieved from https://eur-lex.europa.eu/legal-content/HR/TXT/HTML/?uri=CELEX%3A52019DC0640&from=EN
8. European Commission. (2024). *The European Green Deal*. Retrieved from https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en
9. European Commission. (2022). *Green Agenda for the Western Balkans*. Retrieved from https://neighbourhood-enlargement.ec.europa.eu/system/files/2022-11/factsheet%20green%20agenda%20nov2022.pdf
10. European Parliament. (2018). *European Parliament News*. Retrieved from https://www.europarl.europa.eu/news/hr/headlines/society/20180208STO97442/smanjenje-emisija-staklenickih-plinova-u-eu-u-nacionalni-ciljevi-za-2030
11. European Commission. (2021). *Mobility and transport: New transport proposals target greater efficiency and more sustainable travel*. Retrieved from https://transport.ec.europa.eu/news-events/news/efficient-and-green-mobility-2021-12-14_en
12. European Commission. (2023). *Sustainable finance: The European green bond standard – Supporting the transition*. Retrieved from https://finance.ec.europa.eu/sustainable-finance/tools-and-standards/european-green-bond-standard-supporting-transition_en
13. European Environment Agency. (2024, April 6). *European Environment Agency*. Retrieved from https://www.eea.europa.eu/en
14. Hadouga, H. (2023). *The impact of Green Economy Standards on Competitive Advantage: The study of Romania*. *Acta Economica, 21*(38), 111–131. https://doi.org/10.7251/ACE2338111H
15. Ignjatović, J., Filipović, S., & Radovanović, M. (2024). *Challenges of the green transition for the recovery of the Western Balkans*. *Energy, Sustainability and Society, 14*(1), 1–13. https://doi.org/10.1186/s13705-023-00421-4
16. The Intergovernmental Panel on Climate Change (IPCC). (2024, March 28). *Sixth assessment report cycle*. Retrieved from https://www.ipcc.ch/report/sixth-assessment-report-cycle/
17. Kaczmarczyk, M. (2021). *Global development of the eco-industry sector*. *Acta Economica, 19*(34), 137–152. https://doi.org/10.7251/ACE2134137K
18. Krajišnik, M., Gligorić, D., & Gojković, B. (2019). Effects of fiscal consolidation in Western Balkan Countries. Zbornik radova Ekonomskog fakulteta u Rijeci: časopis za ekonomsku teoriju i praksu, 37(2), 527-551. https://doi.org/10.18045/zbefri.2019.2.527
19. Likas, A., Vlassis, N., & Verbeek, J. J. (2003). *The global k-means clustering algorithm*. *Pattern Recognition, 36*(2), 451–461. https://doi.org/10.1016/S0031-3203(02)00060-2
20. Mosāne, S. (2022). *A theoretical study on economic impact of the European Green Deal*. *Individual. Society. State.* (pp. 57–63). https://doi.org/10.17770/iss2022.7022
21. Popović, G., & Erić, O. (2021). *Evropska ekonomska integracija (European economic integration)*. Faculty of Economics, University of Banja Luka.

22. Rosamond, J., & Dupont, C. (2021). *The European Council, the Council, and the European Green Deal*. *Politics and Governance*, *9*(3), 348–359. https://doi.org/10.17645/pag.v9i3.4326
23. Sikora, A. (2021). *European Green Deal–Legal and financial challenges of the climate change*. *ERA Forum*, *21*(4), 681–697. https://doi.org/10.1007/s12027-020-00637-3
24. Szpilko, D., & Ejdys, J. (2022). European Green Deal–Research directions: A systematic literature review. Ekonomia i Środowisko, 2(81), 8–38. https://doi.org/10.34659/eis.2022.81.2.455
25. World Bank. (2024). *World Bank data*. Retrieved from https://data.worldbank.org/indicator/NY.GDP.PCAP.CD
26. Жарковић, В., Миленко, К., & Драган, Г. (2014). Утицај мјера штедње на економски раст земаља еврозоне//The impact of austerity measures on economic growth in the Eurozone. Acta Economica, 12(21), 43-65. https://doi.org/10.7251/ACE1421043Z

THE ROLE OF THE PUBLIC SECTOR IN PROMOTING SUSTAINABLE BUSINESS AND ACHIEVING COMPANIES´ ENERGY EFFICIENCY GOALS

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Abstract

The role of the public sector in achieving the energy efficiency goals of companies has proven to be a key link that can have a significant impact on the speed and efficiency of the energy transition in companies. Given the different mechanisms at its disposal, the public sector should encourage, support and implement measures and activities that lead to a sustainable and more energy-efficient economy. Through subsidies and tax incentives, research and development funding, educational campaigns and infrastructure development in the field of energy efficiency and renewable energy sources, the public sector can motivate businesses to invest in sustainable technologies and practices. However, sustainable operations cannot be viewed separately from the company's main goal, i.e. achieving positive financial results. Increasing energy efficiency can significantly reduce company costs because energy efficiency is seen as a resource in modern times. The research was conducted on a sample of companies from the energy sector of the Republic of Srpska, analysing the impact of energy efficiency goals on financial results, the level of achieved energy efficiency goals, satisfaction with the level of public sector support, preferred public sector measures, and examining the connection between public sector support and the achievement of these goals. The results of the research suggest that public sector measures to encourage sustainable business are of key importance for achieving the energy efficiency goals of companies in the energy sector, which confirms our research hypothesis.

Keywords: Energy efficiency, sustainable business, corporate governance, company behaviour, business goals, public sector, public-sector measures

JEL: G38, H32, L21

INTRODUCTION

The public sector is crucial in promoting energy efficiency, acting both as a regulator and as a significant user of energy resources. The public sector performs multiple functions, with a particular emphasis on executing EU energy efficiency mandates. In the EU, a new Directive on energy efficiency (Directive (EU) 2023/1791) was adopted on 13/09/2023, which stipulates the reduction of final energy consumption at the EU level. According to the European Commission, energy efficiency is a key area for the full decarbonization of the EU economy, and the public sector will play a critical role in strengthening energy efficiency.

Due to its specific organization, Bosnia and Herzegovina does not have a uniform legal and legislative framework in the energy sector, which complicates the implementation of energy policy (Serdar Raković, 2023). The energy sector is very strictly regulated, so energy policy or energy efficiency cannot be considered without reviewing the legal framework in the energy sector. By ratifying the agreement on the establishment of the Energy Community, BiH

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committed itself to adopting the EU *Acquis Communautaire*, i.e. to adopting and implementing a large number of EU directives and regulations. The complex regulatory framework in BiH includes internationally adopted obligations and ratified agreements, as well as laws at the state level, which are divided into laws and regulations in the Republic of Srpska (RS), the Federation of Bosnia and Herzegovina and the Brčko District. Considering the importance of the energy sector, the public sector is the important link in strengthening this sector and increasing energy efficiency.

The study examines a selection of companies operating in the energy sector of the Republic of Srpska to investigate the influence of energy efficiency objectives on financial performance, the extent of attainment of energy efficiency targets, preferred strategies of the public sector, and the relationship between public sector assistance and the realization of these goals. The research findings offer insights into the interplay between energy efficiency initiatives and financial outcomes in the energy sector of the RS. Support from the public sector is crucial in shifting both mindset and business practices. This can be achieved through new funding sources, tax incentives, and other measures to encourage energy transformation awareness.

LITERATURE REVIEW

The primary focus of contemporary countries is the shift towards an economy that effectively maximizes resource utilization and safeguards people from the adverse effects of environmental change. The importance of energy efficiency is underscored by the uneven distribution of fossil fuels and the unpredictable prices in the energy market. These issues encompass both economic and geopolitical concerns, as nations relying on energy imports are at heightened risk during times of geopolitical turmoil or economic sanctions. It is essential to shift energy production towards renewable sources and improve energy efficiency to decrease the negative impacts.

The energy balance of a country encompasses all economic activities associated with energy, excluding natural biological processes, and is established through meticulous planning and analysis. According to Marković (2010), analyzing the energy balance allows for the assessment of the current status and future projections of a country's energy sector. Energy efficiency encompasses a variety of strategies and actions aimed at reducing energy usage to a minimum level, while concurrently enhancing or maintaining the overall quality of life across various domains. In the shift towards a decarbonized economy, governmental bodies utilize a variety of fiscal mechanisms to facilitate and accelerate the transition process (Thygesen et al., 2022). Achieving carbon neutrality requires the integration of trading and investment systems. The aforementioned changes will undoubtedly have significant implications in terms of macroeconomics, structural adjustments, and budgetary considerations.

Energy efficiency can be conceptualized as a valuable energy resource due to its ability to facilitate energy conservation, thereby reducing the need for generating electricity and other forms of energy from primary sources. This results in significant environmental and economic benefits. Investing in energy efficiency is crucial for resource conservation, as it allows for more strategic investment decisions in new resources and enhances the effectiveness of current systems. The incorporation of energy efficiency as a resource in the decision-making process is essential due to the significant cost-saving advantages associated with it.

According to the European Court of Auditors (2022), EU member states are committed to achieving substantial reductions in carbon emissions in line with the Paris Agreement and the European Green Deal. The ultimate goal is to transition the EU into a climate-neutral economy by the year 2050. Sparkes and Cowton (2004) emphasize that the integration of social and environmental objectives into investment considerations constitutes the foundation of socially

responsible investing. In 2018, the European Commission (EC) introduced a definition for sustainable financing, characterizing it as the practice of incorporating environmental and social factors into investment evaluations to promote the allocation of resources towards sustainable assets with long-term benefits. The European Green Plan, as outlined by the EU (2019), emphasized the necessity of better-directing capital and financial flows towards green investments.

Patterson (1996) highlights that the concept of energy efficiency involves achieving comparable levels of productivity and utility while minimizing energy consumption. According to Galvin (2014), energy efficiency can be assessed using both monetary and physical indicators. This study sheds light on the various ways in which energy efficiency can be measured and evaluated. Galvin (2014) discussed the concept of using the relationship between input and output energy represented in monetary terms as a monetary indicator, specifically in terms of invested energy per gross domestic product (GDP). As Ganda and Ngwakwe (2014) study, energy efficiency encompasses a combination of policies, technologies, and strategies aimed at mitigating the challenges associated with energy consumption in residential, commercial, and national settings. The main objectives of energy efficiency initiatives are to lower financial costs and decrease the release of gases that contribute to global warming.

According to Atalla, Mills, and McQueen (2022), governments have the option to select from a variety of policy interventions and economic-financial tools to facilitate the transition of energy and industrial frameworks, enhance energy efficiency, combat environmental degradation, and safeguard and rehabilitate natural resources. Serdar Raković and Topić-Pavković (2023) argue that the implementation of green taxes, environmental standards, and incentives is crucial for promoting environmentally sustainable practices. Green taxes are imposed on activities that harm the environment, while new standards and certifications focus on energy efficiency and reducing emissions. In addition, incentives such as tax breaks, grants, loans, and subsidies are provided to encourage compliance with these regulations and promote investments in green and sustainable technologies.

The idea of sustainability, particularly concerning energy, has become a key guiding principle in tackling the increasing global issues of environmental degradation and dwindling resources. Indicators for sustainability that concentrate on energy are crucial tools for evaluating and tracking advancements towards a more sustainable energy system. In the study conducted by Muniz et al. (2023), the focus is on the assessment of potential opportunities for enhancing energy efficiency and the evaluation of relevant indicators for assessing the attainment of desired sustainability objectives. The aforementioned indicators yield significant knowledge regarding the environmental, social, and economic aspects of energy activities and their enduring consequences. Through careful analysis and comprehension of these indicators, stakeholders such as policymakers, businesses, and communities can make well-informed decisions, develop impactful policies, and channel their resources towards achieving a more sustainable energy landscape.

Energy, a crucial factor required for all facets of existence, significantly contributes to the advancement of nations. According to Türkoğlu and Pinar (2018), efficient utilization of energy resources is essential for countries to gain a competitive edge in the global arena and promote sustainable development. Enhancing energy efficiency has the potential to markedly decrease energy expenditures for enterprises. The ability of firms to enhance their competitiveness in the marketplace has the potential to yield positive economic implications at a macroeconomic level. Companies that implement energy efficiency practices showcase their dedication to broader societal goals, thus enhancing their social reputation and improving public relations.

The enhancement of energy efficiency measures has the possibility of decreasing the country's dependence on energy imports, consequently boosting its energy autonomy and resilience. Public institutions play a vital role in advancing sustainable business practices as they possess various mechanisms to shape the behaviour of both companies and individuals towards sustainability. This study highlights the significance of the topic and identifies a clear gap in the current literature and research conducted within the country. The discrepancy may be due to the implementation of new regulatory directives within the EU that have not been thoroughly investigated in academic research.

RESEARCH METHODOLOGY

The energy industry holds significant importance in the country, offering substantial potential and a wide range of investment opportunities. The energetic system in the Republic of Srpska encompasses a sophisticated network involving the generation and dissemination of both electrical and thermal energy. This energy is primarily derived from industrial power plants, thermal and hydroelectric power plants, mines associated with thermal power production, as well as the oil and natural gas sector. By the decree of the Government of the Republic of Srpska (2012, 2018), energy was identified as the most crucial sector for the development of the RS. RS is planning to accelerate the development of wind and solar power plants alongside its current hydroelectric, thermal, and mini power plants. The RS's energy potential is currently being utilized at only 30%, but the establishment of renewable energy sources like solar power plants and wind farms will greatly boost its utilization.

This study aims to analyze attitudes and derive insights regarding the significance and extent of incorporation of energy efficiency objectives, as well as to investigate the relationship between public sector initiatives and the attainment of these objectives by firms within the RS energy sector.

The research hypothesis reads: Public sector initiatives aimed to promote sustainability business practices are crucial for energy sector companies reaching their energy efficiency goals.

The research was carried out to verify the proposed hypothesis. Data was gathered through surveys administered to a sample of 25 company managers within the energy sector of RS, during February and March 2024. The energy sector was selected as the focus of the study due to its significant contribution to the national economy. The sample comprised a diverse group of participants including general managers and company managers from various industries within the energy sector such as thermal power, hydropower, mines, oil, and natural gas:

- Electricity production: MH Elektroprivreda Republike Srpske and five subsidiaries: ZP Hidroelektrane na Trebišnjici a.d. Trebinje, ZP Hidroelektrane na Drini a.d. Višegrad, ZP Hidroelektrane na Vrbasu a.d. Mrkonjić Grad, ZP Rudnik i termoelektrana Gacko a.d. Gacko i ZP Rudnik i termoelektrana Ugljevik a.d. Ugljevik; then Hidroelektrana Dabar d.o.o. Trebinje, Hidroelektrane Bistrica d.o.o. Foča, HES Gornja Drina d.o.o Foča, EFT Rudnik i Termoelektrana Stanari d.o.o. Stanari.
- Electricity distribution: subsidiaries of MH Elektroprivreda RS: ZP Elektrokrajina a. d. Banja Luka, ZP Elektro Doboj a. d. Doboj, ZP Elektro-Bijeljina a. d. Bijeljina, ZP Elektrodistribucija a. d. Pale i ZP Elektro-Hercegovina a. d. Trebinje.
- Petroleum industry - procurement of crude oil, oil refining and production of petroleum derivatives, production of base oils, paraffin, motor oils and lubricants and wholesale of petroleum products, oils and lubricants, and placement: OPTIMA Grupa d.o.o. Banja Luka and related legal entities Refinery of Oil a.d. Modriča, Refinery of oil a.d. Brod and Nestro Petrol a.d. Banja Luka.

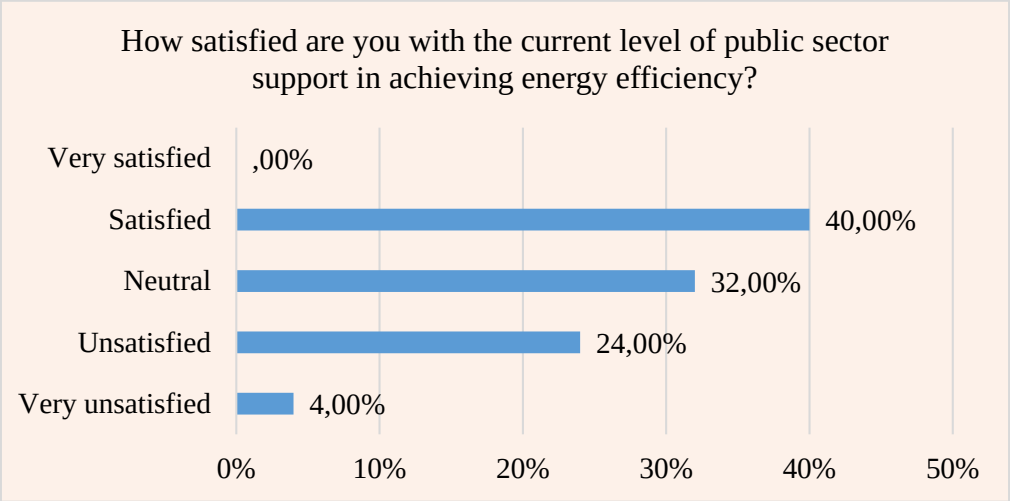
– Mines and aluminium production: Rudnik Stanari (lignite mine), Rudnik Gacko (lignite mine) Rudnik Ugljevik (brown coal mine), and Alumina d.o.o. Zvornik (production of alumina, hydrates, zeolite and water glass).

The majority of questions are closed-ended, such as multiple-choice questions, opinion scales, multiple-choice drop-down lists, binary questions, and multi-factor matrices. Moreover, the survey includes sections for comments, allowing participants to share their views on the research subject. The study is focused solely on investigating the energy industry in RS. While the sample size may be small and limited to a specific sector with a few companies, the research focused only on general managers and top managers. Therefore, we can deem the sample to be appropriate for making conclusions.

RESULTS

The results of the research showed that the respondent's opinions were divided on the issue of satisfaction with public sector measures. Namely, 40% of respondents are satisfied and 28% are unsatisfied with the support they receive from the public sector in the field of energy efficiency. 32% of respondents did not have a clear position on this issue. Interestingly, not a single respondent stated that they are very satisfied with the measures and policies of the public sector in the segment of sustainable business.

Chart 1: Level of satisfaction with the current level of public sector support for achieving energy efficiency goals



Source: Research of the authors

Table 1: Basic Statistic and Chi Chi-Squared Test for Chart 1

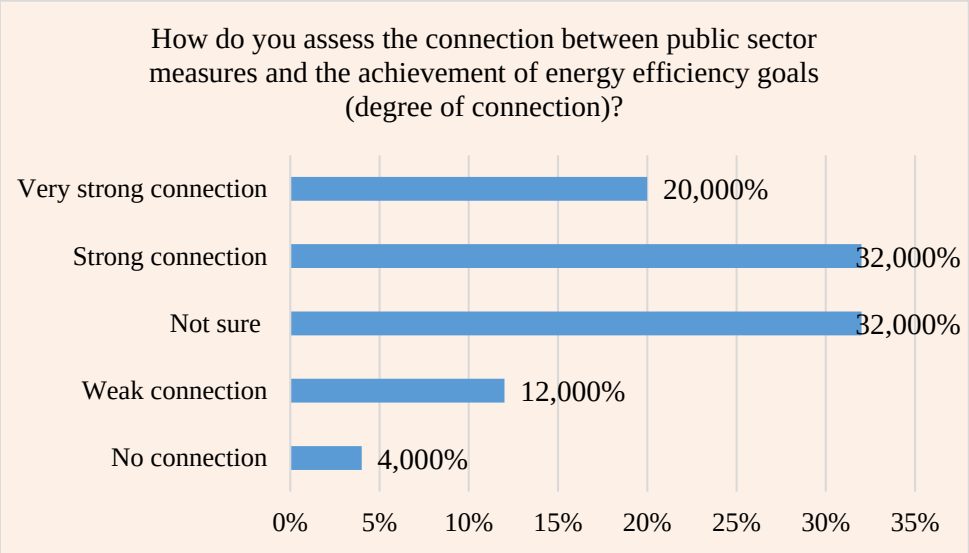
Basic Statistics				
Minimum	Maximum	Median	Mean	Standard Deviation
2.00	5.00	3.00	2.92	0.89
Chi-Squared Test		$\chi 2$ value	df	Significance (p)
		15.20	4	0.0043

Source: Calculation of the authors

The Chi2 test shows that there is a statistically significant difference between the categories of respondents who are satisfied, not satisfied or have no expressed opinion on this issue.

The following graph is particularly significant in terms of the obtained results because it shows that managers are aware of the importance of energy efficiency goals, not only due to the fulfilment of requirements for sustainable business and international obligations but also due to the large impact on the company's financial results.

Chart 2: The degree of connection between public sector measures and the achievement of energy efficiency goals



Source: Research of the authors

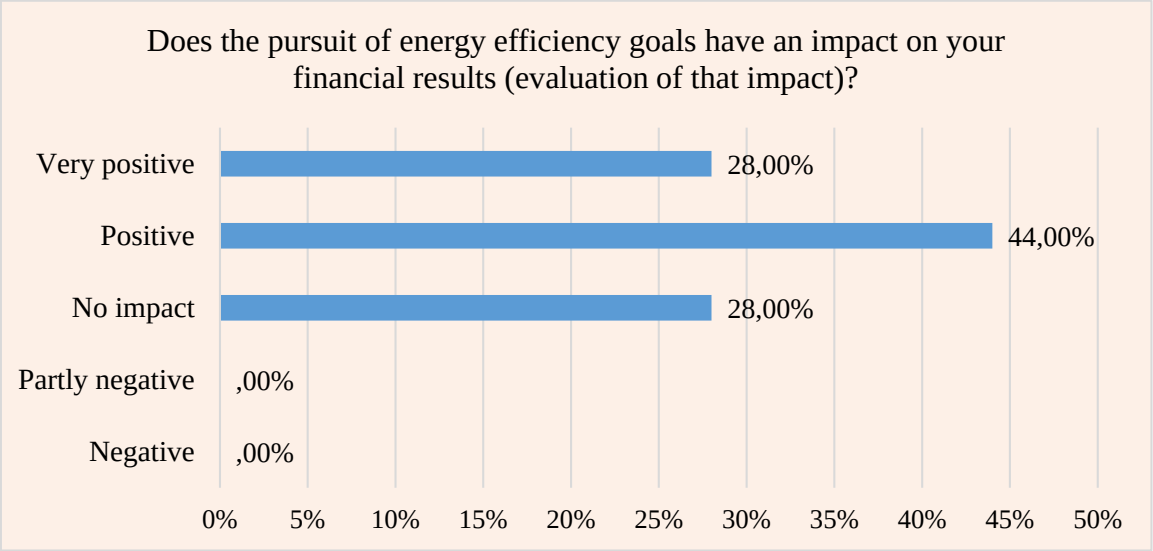
Table 2: Basic Statistic and Chi-Squared Test for Chart 2

Basic Statistics				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	5.00	2.00	2.48	1.06
Chi-Squared Test		$\chi 2$ value	df	Significance (p)
		7.60	4	0.1074

Source: Calculation of the authors

The role of the public sector in achieving the Sustainable Development Goals (SDGs) is essential as it includes a wide range of activities aimed at promoting sustainable development at the global, national and local levels. Thus, the public sector plays a central role in achieving these goals through various mechanisms and strategies. In the domain of the connection between public sector support and the achievement of energy efficiency goals, the results are interesting, because the mentioned connection was perceived as very strong by 20%, and as strong by 32% of respondents. On the other hand, 32% of respondents were not sure and did not express their opinion. Only 16% of managers believe that the relationship is not pronounced (weak connection - 12% and no connection - 4%). Although the majority of respondents (52%) consider the connection between public sector measures and success in achieving energy efficiency goals to be pronounced and strong, due to the large number of those who did not express an opinion, the difference between the degree of connection by categories of respondents is not statistically significant.

Chart 3: The impact of achieving energy efficiency goals on the financial results of the company



Source: Research of the authors

Table 3: Basic Statistic and Chi-Squared Test for Chart 3

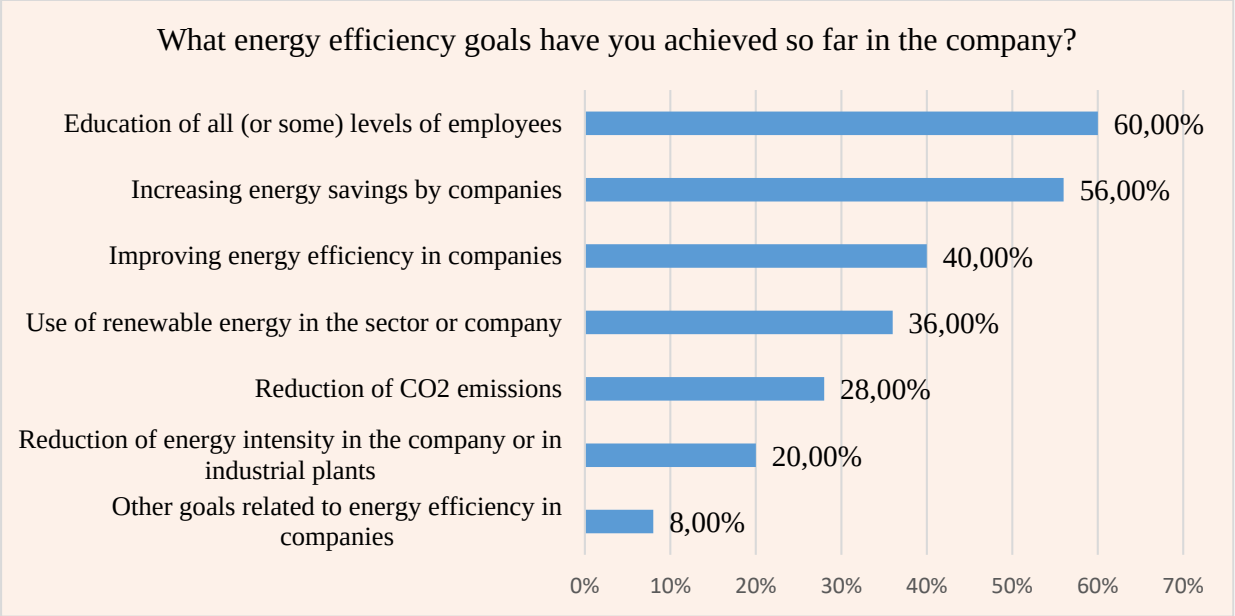
Basic Statistics				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	3.00	2.00	2.00	0.75
Chi-Squared Test		$\chi 2$ value	df	Significance (p)
		18.80	4	0.0009

Source: Calculation of the authors

It is observed that 72% of the respondents agree that the achievement of energy efficiency goals has a positive impact on financial results (28% mark this impact as very positive, and 44% as positive). 28% of respondents did not express themselves, that is, they were neutral on this issue. However, it is very significant that no manager marked this impact as partly negative or as negative. Also, as many as 80% of respondents indicated that it is important for them to accomplish energy efficiency goals in addition to achieving financial results (very important - 60% and important - 20%).

According to conventional criteria (p=0.0009), the difference between categories of respondents who consider the impact of energy efficiency on financial results to be positive, negative or have no opinion is considered extremely statistically significant. Managers in the energy sector are very aware of the connection between achieved energy efficiency goals and financial results in their companies and the sector in general.

Chart 4: Achieved energy efficiency goals in the energy sector



Source: Research of the authors

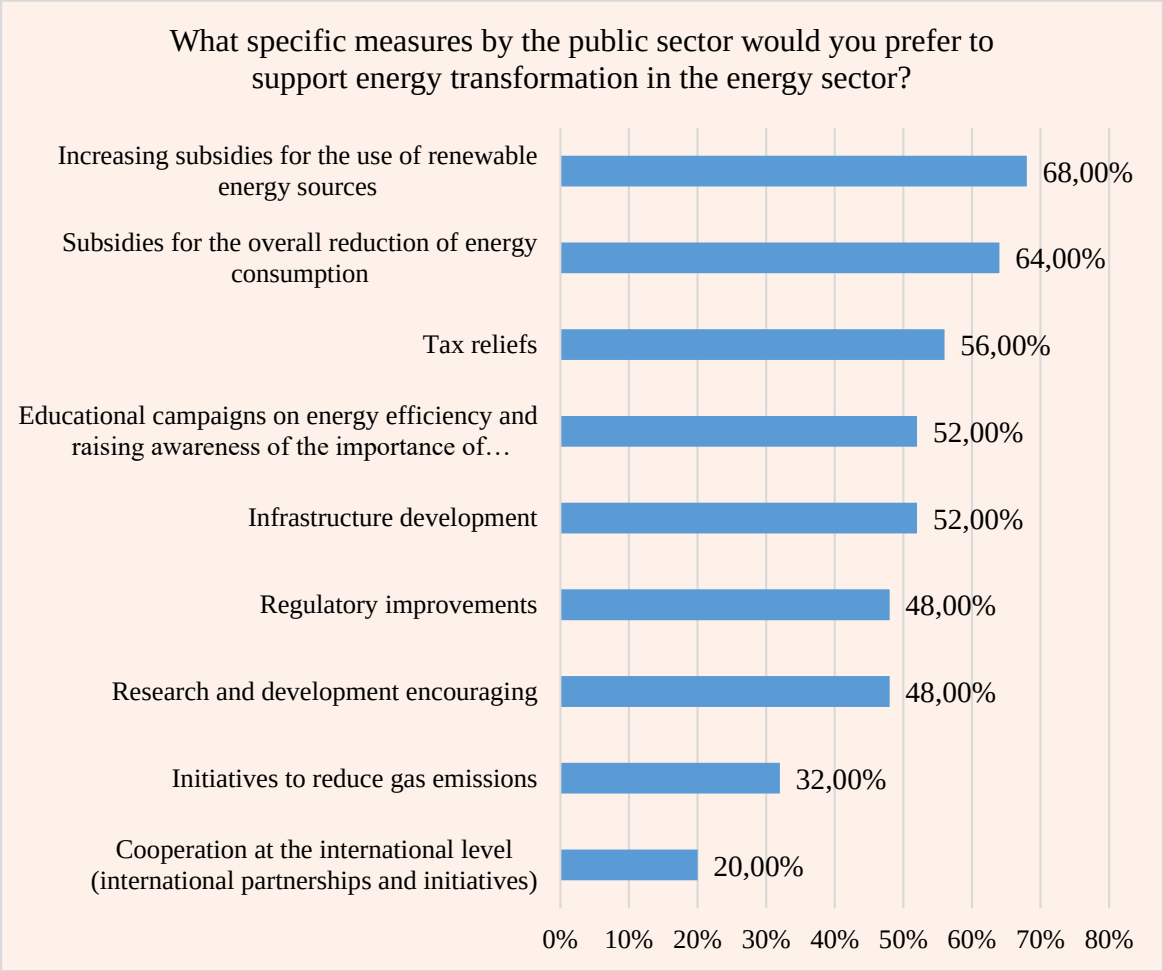
Table 4: Basic Statistic and Chi-Squared Test for Chart 4

Basic Statistics				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	7.00	3.00	3.69	1.88
Chi-Squared Test		$\chi 2$ value	df	Significance (p)
		14.75	6	0.0223

Source: Calculation of the authors

The analysis of energy efficiency goals achieved so far in energy sector companies showed that the most was achieved in employee education - 60% and increased energy savings - 56%. The improvement of energy efficiency in the companies themselves is also significant - 40%, as well as the use of renewable energy - 36%. At the bottom of the scale of accomplished goals are the reduction of CO2 emissions - 28% and the reduction of energy intensity in the company or industrial plants - 20%. Regarding the other achieved goals, the respondents mentioned participation in programs for energy efficiency and setting goals for raising awareness of energy efficiency measures and their importance for the environment and the company (8%). We can state that the accomplished goals are by the difficulty of application and the level of effort that needs to be invested in achieving energy efficiency. Also, statistically analyzed, there is a statistically significant difference between goals whose level of achievement is high and those whose level of fulfilment is at a lower level.

Chart 5: Preferred measures of the public sector in encouraging energy efficiency in the energy sector



Source: Research of the authors

Table 5: Basic Statistic and Chi-Squared Test for Chart 5

Basic Statistics				
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	9.00	4.50	4.53	2.49
Chi-Squared Test		$\chi 2$ value	df	Significance (p)
		9.12	8	0.3326

Source: Calculation of the authors

When it comes to the expected measures and support of the public sector, the high-ranking measures are the increase of subsidies for the use of renewable energy sources - 68% and subsidies for the overall reduction of energy consumption - 64%. Also, tax relief of 56% is a very popular measure, according to the managers. Educational campaigns and infrastructure development were marked as important by 52%, and regulation improvements and research and development were encouraged by 48% of respondents. At the bottom of the scale of preferred measures are initiatives to reduce gas emissions - 32% and cooperation at the international level - 20%. The results are expected, since managers value measures that will enable them to achieve better financial results in the short term (the first three measures), and then in the medium term

(the next four ranked measures). However, there is no statistically significant difference between the preferred public sector support measures ($p>0.05$).

For financial and investment purposes, the public sector can mobilize funds for sustainable development projects and programs through public investments, grants and incentives. Private investment in sustainable technologies and practices can also be encouraged through tax incentives and other financial instruments. Various forms of tax reliefs and exemptions can play a significant role in the improvement and successful implementation of energy transformation from the aspect of public finances. They are the basic mechanisms for encouraging sustainable development. Partial or complete deduction of investment costs for energy efficiency from the tax base for citizens and businesses can be a very significant stimulus for new investments in the country. The public sector can, through educational institutions, encourage the inclusion of sustainability programs in educational and educational plans. This includes encouraging innovation through research and development. All the results suggest that public sector measures in encouraging sustainable business are of key importance for achieving the energy efficiency goals of energy sector companies, which confirms our research hypothesis.

CONCLUSION

Companies´ energy efficiency is important to society and the public interest for many reasons, including economic, environmental and social benefits. By supporting the goals of energy efficiency, the public sector not only influences the fulfilment of international obligations and encourages sustainable development, but through the reduction of company costs, indirectly promotes economic growth and competitiveness in the global market. Currently, there are no tax breaks in BiH, nor an efficient and effective system of subsidizing green business models and projects. Therefore, it is necessary to use different methods in the financing of sustainable development, so that all relevant actors, with the help of the state, fully use their financial potential.

The research results show that the respondents´ opinions were divided regarding their satisfaction with the public sector measures so far. However, respondents are very aware of the importance of energy efficiency goals, not only due to the fulfilment of regulatory requirements for sustainable business but also due to the significant impact on the company's financial results. As many as 72% of managers are convinced that achieving energy efficiency goals has a positive impact on the financial results of their companies. The majority of managers (52%) believe that the connection between the support measures of the public sector and success in accomplishing energy efficiency goals is pronounced and strong. The achieved energy goals are by the difficulty of application and the level of effort that needs to be invested in achieving energy efficiency. It has been shown that managers value public sector measures that will enable them to achieve better financial results in the short term, and then in the medium term. We can conclude that in the energy sector awareness of the importance of meeting new and raising the level of achieved energy efficiency goals, will have a positive impact on financial results, where the public sector support plays a key role. For companies, it is extremely important to shift the focus from traditional to new ways of doing business and develop new business models and innovative practices, which are in line with global requirements for sustainable business.

LITERATURE

1. Atalla, G., Mills, M., & McQueen, J. (2022). *Six ways that governments can drive the green transition*. EY Building a Better Working World. Retrieved from https://www.ey.com/en_gl/government-public-sector/six-ways-thatgovernments-can-drive-the-green-transition
2. Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (recast) (Text with EEA relevance) Document 32023L1791. (2023). *Official Journal of the European Union, L 231/1*. Retrieved from https://eur-lex.europa.eu/eli/dir/2023/1791/oj
3. European Commission [EC]. (2019). *Clean energy for all Europeans package*. Retrieved from https://energy.ec.europa.eu/topics/energy-strategy/clean-energy-all-europeans-package_en
4. European Court of Auditors. (2022). *Energy efficiency in enterprises – Some energy savings but weaknesses in planning and project selection* (Special Report). Retrieved from https://op.europa.eu/webpub/eca/special-reports/energy-efficiency-in-enterprises-02-2022/en/
5. Galvin, R. (2014). *Estimating broad-brush rebound effects for household energy consumption in the EU 28 countries and Norway: Some policy implications of Odyssee data*. *Energy Policy, 73*, 323–332.
6. Ganda, F., & Ngwakwe, C. C. (2014). *Role of energy efficiency on sustainable development*. *Environmental Economics, 5*(1).
7. Marković, D. (2010). *Procesna i energetska efikasnost*. Univerzitet Singidunum.
8. Muniz, R. N., da Costa Junior, C. T., Buratto, W. G., Nied, A., & González, G. V. (2023). *The sustainability concept: A review focusing on energy*. *Sustainability*, *15*(19), 14049. https://doi.org/10.3390/su151914049
9. Odluka o ratifikaciji ugovora o uspostavi energetske zajednice. (2006). *Službeni glasnik BiH - Međunarodni ugovori, 09/06*.
10. Patterson, M. G. (1996). *What is energy efficiency? Concepts, indicators and methodological issues*. *Energy Policy*, *24*(5), 377–390. https://doi.org/10.1016/0301-4215(96)00017-1
11. Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU (Text with EEA relevance). (2021). *Official Journal of the European Union*. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02017R1369-20210501
12. Serdar Raković, T. (2023). *Poglavlje 6: Opcije upravljanja i institucionalni aranžmani za donošenje odluka*. U: *Energetika. Procjena stanja prirode i upravljanja prirodnim resursima BiH*. Univerzitet u Sarajevu, IPBES. Retrieved from https://www.procjenaprirode.ba/wp-content/uploads/2023/06/opcije-upravljanja.pdf
13. Serdar Raković, T., & Topić-Pavković, B. (2023). *Uticaj održivog poslovanja i kompanija prirodne imovine na promjene u korporativnom i javnom sektoru Bosne i Hercegovine*. *Zbornik radova sa XVII Međunarodnog simpozijuma o korporativnom upravljanju* (pp. 309–328). Finrar.
14. Sparkes, R., & Cowton, C. J. (2004). *The maturing of socially responsible investment: A review of the developing link with corporate social responsibility*. *Journal of Business Ethics, 52*(1), 45–57. Special Issue on Ethical Investment and Corporate Social Responsibility.
15. Thygesen, N., et al. (2022). *Public finances and climate change in the post-pandemic era*. Retrieved from https://cepr.org/voxeu/columns/public-finances-and-climate-change-post-pandemic-era
16. Türkoğlu, S. P., & Ozturk Kardogan, P. S. (2018). *The role and importance of energy efficiency for sustainable development of the countries*. In *Proceedings of 3rd International Sustainable Buildings Symposium (ISBS 2017)*. https://doi.org/10.1007/978-3-319-64349-6_5
17. Vlada Republike Srpske. (2012). *Strategija razvoja energetike Republike Srpske do 2030.* Retrieved from https://vladars.rs/sr-SP-Cyrl/Vlada/Ministarstva/mper/std/Pages/Strategija_razvoja_energetike_RS_do_2030_godine.aspx
18. Vlada Republike Srpske. (2018). *Strategija razvoja energetike Republike Srpske do 2035. godine.* Retrieved from https://vladars.rs/sr-SP-Cyrl/Vlada/Ministarstva/mper/std/Documents/StrategijaEnergetika2035%C4%87irilica.pdf

A CROSS-COUNTRY ANALYSIS OF EMISSION TRADING SYSTEMS WITHIN THE EUROPEAN UNION

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Abstract

In the context of global anthropogenic environmental degradation, primarily caused by economic activities, the urgent need for international cooperation and coordination in the implementation of green economic policies becomes increasingly evident. Emission trading systems (ETS) represent a key component of the global strategy for reducing greenhouse gas emissions and promoting sustainable economic development. By analyzing relevant literature and examples of best practices from different EU countries, using desk research methods, this paper demonstrates that emission trading systems (ETS) are effective in mitigating environmental harm while enhancing economic relations among countries, thereby promoting a green economy and sustainable development at a global level.

By examining the implementation of ETS across various EU member states, this paper illuminates the system's potential to significantly reduce environmental footprints, improve international collaboration, and drive economic development. It explores the diverse approaches to ETS integration within the EU, reflecting on the successes and challenges faced by different countries. This cross-country analysis provides valuable insights into the mechanisms through which ETS can serve as a catalyst for effective climate change mitigation, demonstrating the significant impact of aligning national policies with global sustainability goals.

Keywords: Emission Trading Systems, green economy, sustainable development, economic development, European Union, international economic relations

JEL Codes: Q01, Q58, O13, F18

INTRODUCTION

On World Water Day 2022, United Nations Secretary-General Antonio Guterres starkly characterized the plight of our planet, stating, "Drop by drop, this precious lifeblood is being poisoned by pollution and drained by vampiric overuse." These expressive words, while specifically addressing water resources, summarize a global concern for the overall state of the environment. The exploitation of non-renewable natural resources and the anthropogenic threats to our ecosystem represent critical issues today, with significant economic and broader implications. Economists are increasingly tasked with developing strategies for sustainable economic growth and development that avoid further harm to the environment and ensure the continued viability of human life on Earth.

To comprehend the relevance of this challenge for economic theory and practice, it is instructive to consider historical data. The Keeling Curve, which tracks cumulative CO2 levels in the atmosphere, illustrates a dramatic escalation in concentrations beginning with the First Industrial Revolution, as depicted in Figure 1. This surge can be attributed to the advent of the steam engine and subsequent technological advancements, which led to extensive use of fossil

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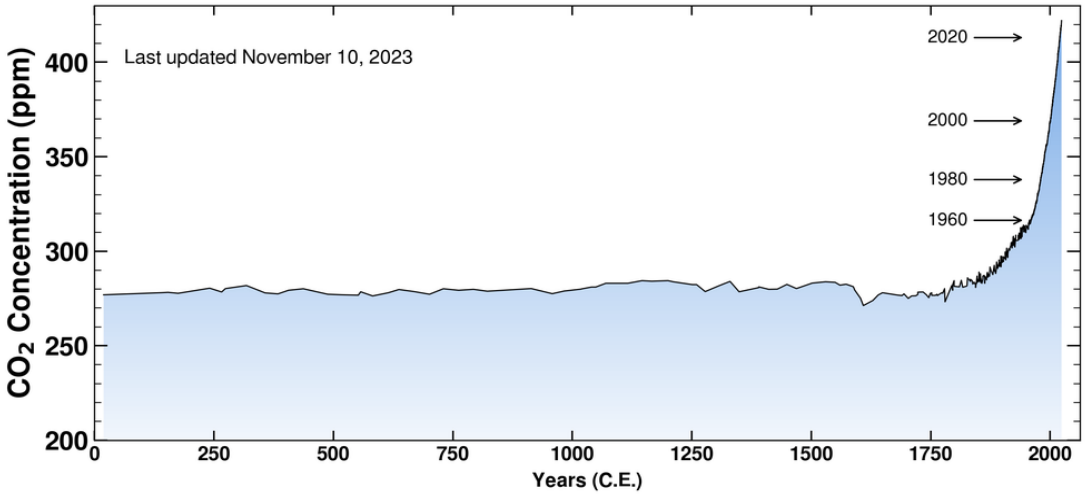
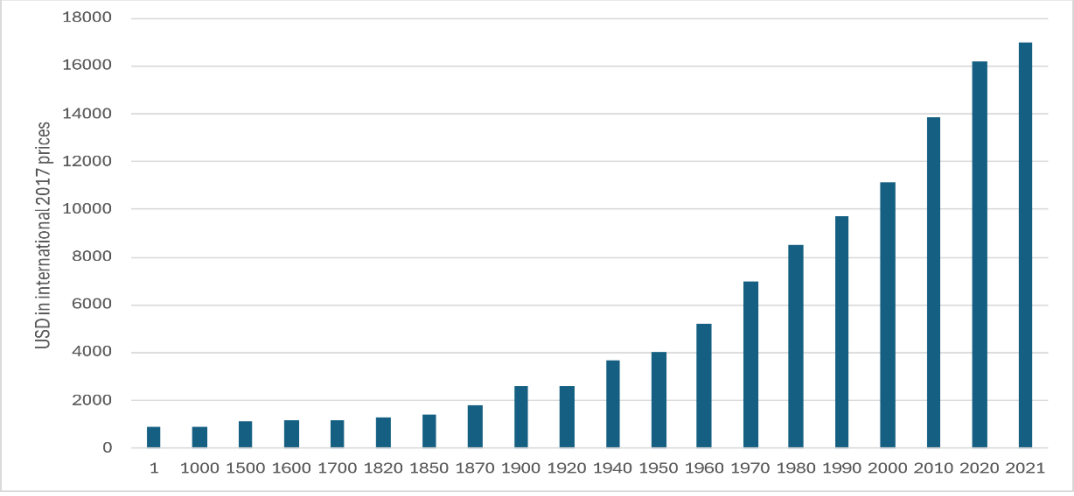
fuels for industrial activities. These activities release substantial quantities of CO2 and other greenhouse gases, posing a profound ecological challenge and driving climate change, primarily through atmospheric warming.

Figure 1. Keeling Curve, graphic from Scripps Institution of Oceanography at UC San Diego



However, the industrial revolutions and the global economic momentum they bring can also be viewed from another angle. Alongside the detrimental effects on the environment, they have also brought about an increase in living standards and a general improvement in the quality of life on Earth, as evidenced by Figure 2.

Figure 2. Average global GDP per capita; Authors' representation based on data from World Bank (2023); Maddison Project Database 2020 (Bolt & van Zanden, 2020); Maddison Database 2010 (Maddison, 2009) available at ourworldindata.com[3]



Due to the reasons mentioned, it is clear why a key question for economists remains how to maintain economic growth with all its benefits without endangering the environment, and even reducing current levels of environmental degradation. The goals for such actions have been set by numerous international agreements, most importantly the Kyoto Protocol (1997) and the Paris Climate Agreement (2015), which quantify targets, specifically that to keep global

[3] https://ourworldindata.org/grapher/global-average-gdp-per-capita-over-the-long-run?tab=table

warming at 1.5 degrees Celsius relative to pre-industrial levels, greenhouse gas emissions must peak by 2025 and be reduced by 43% by 2030 (Rogelj et al., 2016, p-1).

The phenomena leading to climate change vary in nature, but from the perspective of economic theory, they can be encompassed by the phenomenon of (negative) externalities. The fundamental problem of the climate challenge facing the global economy is that those who create emissions of harmful gases and other substances have not been paying for them, which is why one of the essential elements in curbing climate change is curbing negative externalities. According to Nordhaus (2017), the key to addressing the issue of those causing social harm not paying for it, while those who are suffering from it are not getting compensated, lies in "setting a price" for creating negative externalities. Field and Field (2016) explain that economic agents create pollution because they are not compelled to consider the negative social effects that pollution causes.

Following the above, the problem of pollution caused by economic activities is theoretically simple, or its solution is: to determine the price of social harm and compel those who produce it to pay for it. There are two basic mechanisms for such action: pricing instruments and quantity controls. The primary pricing instruments include taxes and permit trading systems. This research explores the use of the former by regulators to achieve the goals of the green economy set by the Paris Climate Agreement and the European Green Deal, i.e., to ensure green growth that implies further economic growth and development while ensuring the continued existence and use of natural resources (OECD, 2011).

Besides reviewing the theoretical basis of these instruments, the paper further explores how they are applied in practice in European countries and what potential there is for applying these instruments in the Western Balkans. Given that the green economy is generally one of the most current domains in economic science, this topic is relevant from the perspective of both environmental economics, as well as regional economies aspiring to become EU members and having some of the highest air pollution rates in Europe (Greenstone & Hasenkopf, 2023).

EMISSION TRADING SYSTEMS (ETS)

Emission trading systems, or emission trading schemes (ETS), alongside environmental taxes, serve as the primary tool for setting the price of pollution and attempting to internalize its cost into the expenses of pollution producers. In addition to this designation, these instruments are often referred to as market trading systems or emission trading schemes, while the term "cap and trade" is also commonly used for the same instrument. These instruments are more specific to environmental policy than taxes, which are broadly used to achieve several other economic policy goals, such as reducing inequality, generating revenue for the general government, etc. Emission trading systems take many different forms depending on the country in which they are applied, its economic system, the way they are administered, or the polluters they are intended to combat. These instruments also differ in how they measure pollution (emissions), set limits (caps), issue permits (both free and paid), and how these can be traded. Naturally, there is a difference in the price of permits between countries. ETS systems can be classified into three groups: offset trading, emission rate trading, and "cap and trade" (Keohane & Olmstead, 2016).

Market trading systems, also known as emission trading schemes and "cap and trade" schemes, are market-based approaches to reducing greenhouse gas emissions. The primary goal of these schemes is to address the negative external effects of climate change by limiting the total amount of emissions allowed for a group of companies or industries. By setting emission caps and allowing companies to trade permits, these systems encourage strategies for reducing

emissions that are cost-effective and promote the development of clean technologies. "Cap and trade" can help countries achieve their climate change mitigation goals and contribute to global efforts to limit global warming.

The regulatory authority, usually a governmental organization, sets a maximum threshold or cap for total emissions allowed for a specific set of companies or industries. This cap is typically determined based on a reduction target that aims to gradually reduce greenhouse gas emissions in line with global and national climate goals. The maximum limit is then distributed among the permits, called allowances or emission credits, where each permit grants the holder the right to emit a certain amount of emissions (such as one metric ton of carbon dioxide).

In practice, "cap and trade" primarily covers carbon dioxide emissions. However, in recent times, this instrument has also begun to be used more widely for other greenhouse gases. For example, in the United States, permits have expanded from carbon dioxide (CO2) to sulfur dioxide (SO2), nitrogen oxides (NOx), and mercury (Fischer & Fox, 2007).

The regulatory authority allocates permits to participating companies. This can be achieved through various methods:

- Free allocation: Permits are allocated to companies based on historical emissions or other reference points. Free allocation can help reduce the potential economic impact on companies and prevent "carbon leakage," where companies relocate their operations to jurisdictions with less stringent climate regulations.
- Auction: Companies compete for a certain number of permits in a competitive auction process. The auction ensures that permits are initially allocated to those who value them most and can generate revenue for the government.
- Hybrid allocation: A combination of free allocation and auction can be used, depending on the specific design and policy goals of the cap and trade system.

Permit allocation, especially free allocation, is one of the key elements of a successful "cap and trade" system. There are several options for authorities regarding how to allocate permits, both among sectors and within a particular sector. The previously explained auctions have similar mechanisms in different legislations. However, free allocation can vary significantly. Models of free allocation include output-based measures, which consider the market share of each company within its industry and allocate permits accordingly, and lump-sum allocation (Fischer & Fox, 2007).

Permit allocation is a key aspect of the "cap and trade" system. Indeed, these are all important factors to consider when designing a cap and trade system, not only from the perspective of state revenue but also from the perspective of overall policy outcomes. When the government initially distributes permits for free, there truly are no direct revenues generated for the government. However, it is important to remember that the primary goal of such a system is to reduce emissions, with revenue generation coming as an additional benefit. If an appropriate cap is set and companies respond by reducing emissions to avoid buying additional permits, the system can still achieve its environmental goals. A drawback of giving permits for free is that it can result in unexpected profit for companies if they manage to pass on the costs of permits to consumers through increased prices, even though the permits are obtained at no charge.

Auctioning permits can help address the issue of unexpected profit. If companies have to buy permits, they cannot gain unexpected profit simply by passing costs onto consumers. This system also generates revenues for the state, which can be used to fund other climate mitigation activities or to reduce other taxes. However, this system can be politically more challenging to implement, as companies generally prefer free allocation, and it can impose a greater burden on certain sectors or companies.

Selling "excess" permits by regulators can serve as a safeguard if permit prices become too high. If the government retains some permits and sells them only when prices exceed a certain level, it can prevent price spikes and provide companies with greater certainty about the maximum price they might have to pay. However, this also effectively raises the cap, which can lead to overall higher emissions. It might also reduce the incentive for companies to invest in emission reductions if they believe they can always buy additional permits from regulators at a predictable price.

In practice, a combination of these methods can be used. Some permits may be allocated for free, especially at the beginning of the program, to help companies adjust. Other permits can be sold at auction to generate state revenues and reduce unexpected profits. The government may also retain some permits to stabilize prices. The optimal combination depends on the specific economic circumstances and policy goals. However, the overall effectiveness of the "cap and trade" system will always depend on the level of the cap and the extent of emission reductions that companies achieve in response to the price signal created by the system.

Companies that emit fewer emissions than their allocated permits can sell their excess permits to other companies that need more permits to cover their emissions. This creates a market for emission credits, where the price is determined by supply and demand. The trading mechanism encourages companies to find the most efficient ways to reduce emissions, as they can make a profit by selling excess permits or avoiding the costs of buying additional permits.

Companies must periodically report their emissions to regulators and prove that they have enough permits to cover their emissions. Those who fail to comply with regulations can face penalties, such as fines or the requirement to buy additional permits. Strict monitoring and enforcement are key to preserving the integrity of the system and ensuring that the cap effectively reduces emissions.

ETS IN EUROPEAN UNION – CROSS COUNTRY ANALYSIS

European Union Emissions Trading System (EU ETS), launched in 2005, is the largest and oldest cap and trade system for greenhouse gas emissions in the world, covering more than 40% of greenhouse gas emissions in the EU (Zaklan et al., 2021). It targeted high energy-consuming sectors such as electricity generation, heavy industry, and aviation within the European Economic Area (European Commission, 2022).

In the European Union Emissions Trading System (EU ETS), a unified EU-wide emissions quota for greenhouse gases has superseded the previous 27 national quotas, streamlining the allocation process across the member states. Emission units are predominantly allocated via auction mechanisms, although certain facilities continue to receive units free of charge. For these facilities, the EU has established harmonized rules for allocation, which are rigorously based on stringent greenhouse gas emission monitoring protocols. The EU ETS encompasses a diverse array of sectors that are significant contributors to greenhouse gas emissions. These include

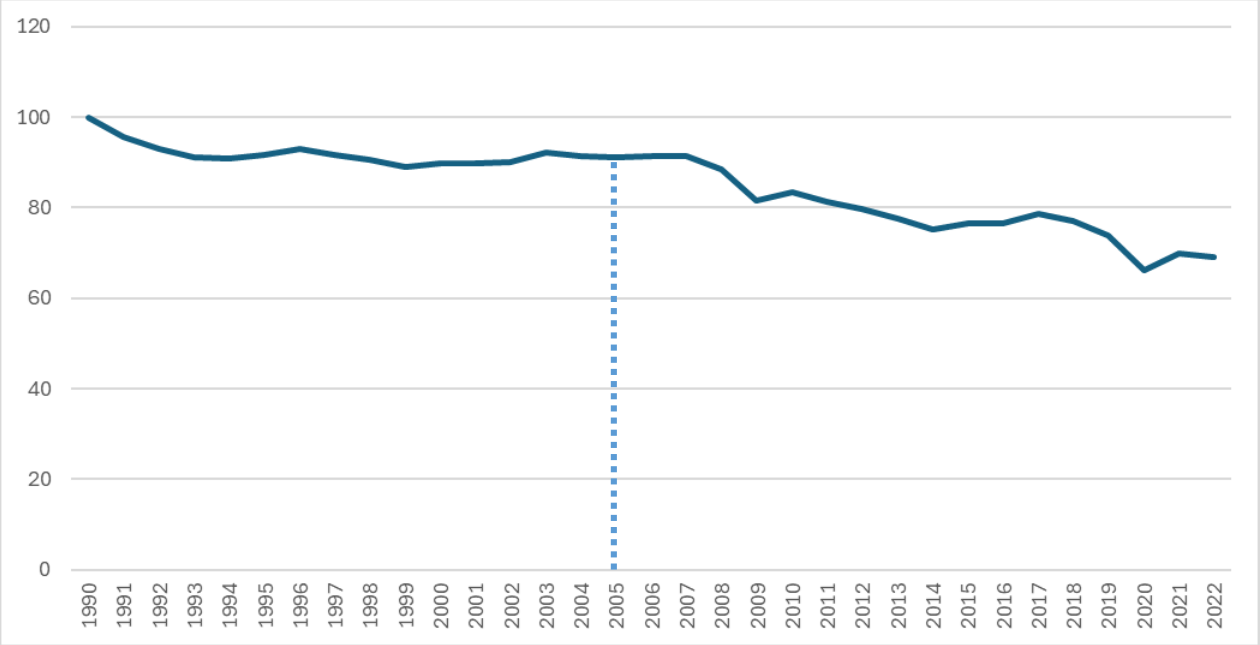
- Carbon dioxide (CO2) emissions from the generation of electricity and heat, as well as from energy-intensive industrial sectors such as oil refineries, steel mills, and manufacturers of iron, aluminum, other metals, cement, lime, glass, ceramics, and pulp and paper.
- CO2 emissions from civil aviation
- Nitrous oxide (N2O) emissions from the production of nitric acid, adipic acid, caprolactam, glyoxal, and glyoxylic acid.

– Perfluorocarbon (PFC) emissions[4]

Bayer and Aklin (2020) state that the EU ETS saved approximately 1.2 billion tons of CO2 between 2008 and 2016, representing a reduction of 3.8% compared to a scenario without carbon markets, which accounts for almost half of the emission reductions pledged by EU governments under their Kyoto Protocol commitments. Figure 3 depicts a significant decline in greenhouse gases after the introduction of the EU ETS in 2005, with net emissions falling to 69% compared to the 1990 level. (European Commission, 2023b) reported a decrease of 21% in emissions reported under the ETS from 2005 to 2020. This decline is attributed to the introduction of the ETS, affecting the shift to green technologies not only because of the introduction of pricing but also because of the constant cutting of the emissions cap, 1.74% per year on average from 2013 to 2020.

A study of installation levels measurement showed a 10% decrease in emissions from 2005 to 2012 in the countries participating in the EU's ETS (Dechezleprêtre et al., 2023). Moreover, the same study showed that despite initial fears, there was no significant negative effect on employment levels and profits across the covered firms. Similar compelling evidence of the non-existence of perceived negative effects of the emissions trading system is also offered by Joltreau and Sommerfeld (2019) who conclude that the ETS introduced in 2005 did not have adverse effects on the competitiveness of covered companies. Nevertheless, the rationale behind this development is somewhat concerning. The primary reasons why the ETS did not affect competitiveness include over-allocated permits, the passing on of costs to consumers, and the limited proportion of electricity in overall costs, which collectively indicate a policy oversight.

Figure 3 Net greenhouse gas emissions in EU 27, 1990=100; Authors' representation based on data from EUROSTAT (sdg_13_10)



Across different EU countries, the implementation and impact of the EU ETS vary significantly due to diverse economic structures, energy dependencies, and industrial activities. For instance,

[4] https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en

in Germany, a heavily industrialized nation, the EU ETS has spurred significant investments in renewable energy and technological innovations to reduce carbon emissions in manufacturing sectors. Contrastingly, in countries like Latvia and Estonia, the focus has been more on improving energy efficiency and transitioning from high carbon-intensive energy sources to more sustainable options due to their smaller industrial base (Flachsland et al., 2018).

The 2005 EU ETS also highlights significant sectoral differences in implementation. The power and aviation sectors, being subject to EU-wide regulations, exhibit a more uniform integration of ETS mechanisms. In contrast, industries like cement and steel have varied integration levels due to different local industrial policies and available technologies for emission reductions (European Commission, 2019).

The power sector across EU member states generally operates under stringent EU-wide regulations due to its substantial impact on carbon emissions. Most countries within the EU have adopted similar strategies to integrate renewable energy sources like wind, solar, and hydroelectric power to replace traditional coal-fired power plants. This shift is facilitated by the EU ETS through the allocation of emissions allowances, which are more economically manageable for renewable energy sources than for coal. The consistent regulatory environment across the EU aids in streamlining compliance and operational strategies for power companies, encouraging a unified move towards greener energy production.

The aviation sector, included in the EU ETS since 2012, follows EU-wide policies that require airlines to monitor, report, and verify their emissions, and to surrender allowances against these emissions. While all airlines operating within and into the EU are subject to these regulations, the impact is uniformly managed through standard procedures that ensure that airlines incorporate emission costs into their operational considerations. This sector’s inclusion in the EU ETS exemplifies a targeted approach to a specific high-emission industry, leveraging EU-wide policy for consistent implementation.

The cement industry presents a contrast, particularly in how different countries have integrated ETS mechanisms based on local industrial strategies and technological availability. For example, countries like Germany and the Netherlands have advanced technologies for capturing and utilizing emissions from cement production, allowing them to more effectively reduce and manage their allowances. In contrast, nations such as Bulgaria and Romania face technological and financial barriers that limit their ability to reduce emissions as efficiently, leading to varied integration levels of ETS mechanisms within the sector. This disparity is often influenced by the availability of investment in green technologies and the economic prioritization of industry upgrades;

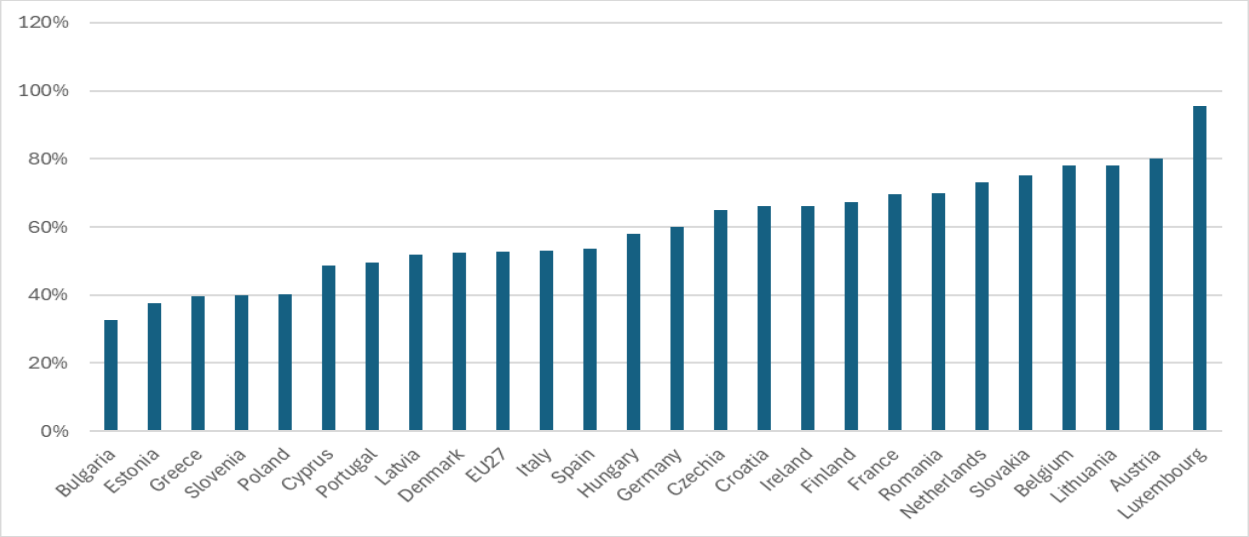
Similarly, the steel industry shows varied responses to the EU ETS. In Sweden, steel manufacturers have started transitioning to electric arc furnaces which use renewable energy, significantly lowering emissions and enhancing their compliance with the EU ETS. Meanwhile, in Italy, traditional blast furnaces still predominate, driven by the existing industrial infrastructure and slower adoption of new technologies. This leads to higher emissions and a greater need for emissions allowances, reflecting the challenges of retrofitting older industrial setups in compliance with EU ETS mandates (European Commission, 2022)

Moreover, the introduction of the Market Stability Reserve (MSR) in 2019 has been a critical development to address the surplus of allowances that might depress the carbon price. The MSR adjusts the supply of allowances to be auctioned, thus strengthening the EU ETS's capability to be an effective tool in reducing greenhouse gas emissions (European Commission, 2019). This has been particularly impactful in countries like Spain and Portugal, where emission levels from industries have been historically high.

Countries like France and the Netherlands have explored additional measures such as a carbon price floor to supplement the EU ETS and provide a stable investment environment for low-carbon technologies. This approach reflects a growing recognition that a robust price signal is crucial for achieving long-term decarbonization goals. An IMF analysis supports this view, highlighting that well-designed carbon pricing strategies, complemented by appropriate revenue recycling and enhancement of investment in green technologies, can enable more effective and equitable transitions across countries. This integrated approach helps in managing both macroeconomic and distributional impacts efficiently, ensuring that the goals of climate policy are met without detrimental effects on economic stability (Chen, 2020).

However, the level of autonomy that countries possess in implementing the ETS serves as a dual-purpose tool. While some countries, such as France and the Netherlands, have established a price floor, others have exercised their discretion to shield key national industries, occasionally at the expense of the collective goal of reducing greenhouse gas emissions. A crucial element in this context is the method of allowance distribution. Free distribution of allowances mitigates the intended impact of emission pricing by not fully internalizing the costs associated with greenhouse gas emissions. Müller and Teixidó (2021) conclude that if Poland auctioned its permits for the greenhouse gas-intensive energy sector, it would have reached decarbonization much faster, following the path of other industries and other countries. Figure 4 illustrates the significant variations among countries in their methods of allowance distribution. Furthermore, the rules of the EU ETS permit countries with a GDP per capita at or below 60% of the EU average in 2013 to opt out of ETS compliance in the electricity sector. This exemption is still utilized by Bulgaria, Hungary, and Romania today (Marcu et al., 2021).

Figure 4 Share of free allowances in total allowances under EU ETS in 2022, except for aviation and electricity; Authors' representation based on data from the European Environment Agency[5]



ETS IN THE CONTEXT OF THE EUROPEAN GREEN DEAL AND IMPLICATIONS ON WESTERN BALKANS COUNTRIES

The European Union's commitment to fostering an environmentally sustainable economic trajectory is encapsulated in the European Green Deal. A critical component of this initiative is

[5] https://www.eea.europa.eu/data-and-maps/dashboards/emissions-trading-viewer-1

the Fit for 55% package, which seeks to regulate greenhouse gas emissions to reduce them by 55% by 2030, thereby setting the stage for the Union to achieve carbon neutrality by 2050 (Pietzcker et al., 2021). Leveraging insights from prior environmental policies, the EU ETS is a fundamental aspect of this strategy, specifically through its comprehensive reform. The revised ETS aims to rectify the original system's deficiencies by expanding coverage to include additional sectors such as maritime transport and international aviation. A major focus of the reform is the gradual elimination of free allowances and the acceleration of emission reductions by lowering the emissions cap by 2.2% annually. Moreover, the Fit for 55 package proposes the creation of a new ETS that would extend beyond businesses to encompass buildings, road transport, and fuels for other sectors (European Council, 2022).

Another crucial element of the new environmental policy under the European Green Deal is the Carbon Border Adjustment Mechanism (CBAM). This mechanism seeks to mitigate carbon leakage by imposing a tariff-like charge on imports from countries that do not employ any form of carbon pricing, such as an emissions trading system or carbon tax(European Commission, 2023a). This charge aims to account for the carbon content of these goods and services. Given that the EU is a significant export market for the Western Balkans, the CBAM could notably impact these countries. The potential increase in the prices of their goods could diminish their competitiveness within the EU market. These countries have committed to align with the EU's Green Deal through the Sofia Agreement and the Green Agenda for the Western Balkans, which might prompt the development of their national emissions trading systems or even a regional system. Efforts in this direction are evident, for instance, in Montenegro, which has implemented an internal ETS for major public enterprises including the steel factory in Niksic, the aluminum factory in Podgorica, and the national power utility company. However, the high levels of air pollution in these countries underscore the urgency not only of compliance with EU standards and the avoidance of CBAM penalties but also of addressing domestic environmental challenges through the adoption of emissions pricing mechanisms.

CONCLUSION

The evaluation of Emission Trading Systems (ETS) across the member states of the European Union highlights the pivotal role of the EU ETS in driving the region's climate change mitigation efforts. As a cornerstone of the EU's strategy to address climate issues, the EU ETS has effectively reduced greenhouse gas emissions through a rigorous regulatory framework coupled with economic incentives for reducing emissions. However, the application of the EU ETS across various countries has shown considerable differences, reflecting the diverse economic landscapes and environmental priorities within the union. This diversity underscores the need for customized approaches that align with national conditions while upholding the goals and coherence of the overarching EU framework. Examples from Germany and Sweden demonstrate how combining ambitious national policies with the ETS framework can lead to significant investments in renewable energies and technological innovations. Conversely, countries like Bulgaria and Romania encounter challenges due to their limited technological and financial resources, impacting their capacity to fully benefit from the ETS.

The expansion of the EU ETS, especially through initiatives like the 'Fit for 55%' package under the European Green Deal, aims to enhance the robustness of the system. New measures, including the Carbon Border Adjustment Mechanism (CBAM) and the gradual elimination of free allowances, are intended to bolster the effectiveness and equity of the ETS. These adjustments are critical to maintaining the EU ETS as a key instrument in reducing emissions while promoting sustainable economic growth.

Looking ahead, the EU must continue refining the ETS by integrating scientific and economic research to address new challenges and support member states in meeting their environmental and economic goals. The future of the EU ETS will rely on ongoing improvements that emphasize transparency, fairness, and inclusivity, ensuring comprehensive engagement across all sectors and regions.

In sum, while the EU ETS has been central to Europe's environmental strategy, its continued success will depend on adaptive enhancements that align with evolving global sustainability targets and cater to the unique needs of each member state. Collective commitment will be essential in guiding the continent toward a more sustainable and environmentally responsible future, solidifying the EU's leadership in global climate initiatives.

REFERENCES

1. Bayer, P., & Aklin, M. (2020). The European Union Emissions Trading System reduced CO2 emissions despite low prices. Proceedings of the National Academy of Sciences, 117(16), 8804–8812. https://doi.org/10.1073/pnas.1918128117
2. Chen, Jiaqian. (2020). EU Climate Mitigation Policy. International Monetary Fund.
3. Dechezleprêtre, A., Nachtigall, D., & Venmans, F. (2023). The joint impact of the European Union emissions trading system on carbon emissions and economic performance. Journal of Environmental Economics and Management, 118, 102758. https://doi.org/10.1016/j.jeem.2022.102758
4. European Commission. (2023a). Carbon Border Adjustment Mechanism. https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en#cbam-definitive-regime-from-2026
5. European Commission. (2023b). REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL on the functioning of the European carbon market in 2022 pursuant to Articles 10(5) and 21(2) of Directive 2003/87/EC.
6. European Council. (2022). Fit for 55.
7. Flachsland, C., Pahle, M., Burtraw, D., Edenhofer, O., Elkerbout, M., Fischer, C., Tietjen, O., & Zetterberg, L. (2018). Five myths about an EU ETS carbon price floor. www.ceps.eu
8. Joltreau, E., & Sommerfeld, K. (2019). Why does emissions trading under the EU Emissions Trading System (ETS) not affect firms' competitiveness? Empirical findings from the literature. Climate Policy, 19(4), 453–471. https://doi.org/10.1080/14693062.2018.1502145
9. Marcu, A., Kawnik, M., Vangenechten, D., & Bartosik, A. (2021). The role of the EU ETS funding mechanisms in delivering the European Green Deal.
10. Müller, N., & Teixidó, J. J. (2021). The effect of the EU ETS free allowance allocation on energy mix diversification: the case of Poland's power sector. Climate Policy, 21(6), 804–822. https://doi.org/10.1080/14693062.2020.1870914
11. Pietzcker, R. C., Osorio, S., & Rodrigues, R. (2021). Tightening EU ETS targets in line with the European Green Deal: Impacts on the decarbonization of the EU power sector. Applied Energy, 293, 116914. https://doi.org/10.1016/j.apenergy.2021.116914
12. Publication of the total number of allowances in circulation in 2018 for the purposes of the Market Stability Reserve under the EU Emissions Trading System established by Directive 2003/87/EC. (2019). https://ec.europa.eu/clima/sites/clima/files/ets/docs/com
13. REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL on the Functioning of the European carbon market in 2021 pursuant to Articles 10(5) and 21(2) of Directive 2003/87/EC (as amended by Directive 2009/29/EC and Directive (EU) 2018/410). (2022).
14. Zaklan, A., Wachsmuth, J., & Duscha, V. (2021). The EU ETS to 2030 and beyond: adjusting the cap in light of the 1.5°C target and current energy policies. Climate Policy, 21(6), 778–791. https://doi.org/10.1080/14693062.2021.1878999

ROLE OF BANKS IN SUSTAINABLE FUTURE OF BOSNIA AND HERZEGOVINA

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Abstract
Bosnia and Herzegovina's (BiH) sustainable future assume proactive role of financial sector, side by private sector, government, and all other relevant sector. The country is making slow progress in its commitment to sustainable development, with the conventional and noninnovative financial sector.
The relationship between stock market capitalization and banking sector capitalization in financing sustainable growth is complex, where neither does not have straightforward impact on economic growth. Overall conclusion in mainstream literature is that both stock markets and banking sector play significant roles in financing sustainable growth, but their impacts can vary depending on other factors.
This paper assumes that role of banks in achieving Sustainable Development Goal in Bosnia and Herzegovina is and will be important.
K mean clustering of all countries based on data from 1990 based on CO2 emissions per capita and deposits in banks in percentages of GDP, divides world in two big clusters, where significant number of countries is not classified in neither cluster. Only neighboring country of BiH that is in same cluster is Montenegro.

INTRODUCTION

Bosnia and Herzegovina's (BiH) sustainable future assume proactive role of financial sector, side by private sector, government, and all other relevant sectors. The country is making slow progress in its commitment to sustainable development, with the conventional and noninnovative financial sector. While the stock markets in BiH are more flexible and open in terms of innovations, the banking sector could play a significant role in the financial transformation towards sustainable development.

The Sarajevo Stock Exchange (SASE) and Banja Luka Stock Exchange (BLSE) are central marketplaces for trading securities in BiH. To be precise BLSE, is marketplace in Republika Srpska and SASE is in Federation of Bosnia and Herzegovina.

The financial system in BiH is dominated by a moderately concentrated banking sector and banks are currently adequately capitalized and liquid. Most of the foreign owned banks increasingly practise conservative policies from their mother banks. Such developing is coupled with the fragmented market results with only modest profitability for the banking sector.

The supervision of the banking sector in BiH is at an entity level, with competent agencies in both the Republika Srpska and the Federation of BiH. These agencies have recently introduced Environmental, Social, and Governance (ESG) guidelines for banks operating in each entity. The introduction of these guidelines is a significant step towards sustainable development, and

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it will have and has impact on existing portfolio companies, but also aligns with the global trend of integrating ESG considerations into business and investment decisions.

This study provides a review of environment, social and governance options that are applicable for the BiH in which banks as financial institutions have and will have important role. The potential applicability of the proposed instruments can vary, some of them can contribute to improvements in the BiH's capital markets, on one side, but the banks' contribution in whole process can be crucial, on the other side.

Also, we emphasize the importance of flexibility in corporate governance within the banking sector. As BiH continues to develop and strive for sustainable growth, the banking sector must adapt to meet these evolving challenges.

The banking sector, particularly its governance, needs to be dynamic and responsive to changes in the economic, social, and environmental landscape. This includes being receptive to new sustainable development goals, adjusting policies and practices to support ESG requirements, and fostering innovation in financial engineering.

In this context, banks in BiH need to take a proactive role in driving sustainable development. This could involve introducing new financial products that align with ESG requirements, supporting projects that contribute to energy efficiency and renewable energy, and promoting financial inclusion through instruments like microcredits.

Analysis in this research is centered on three questions:

- Are stock market capitalization and capitalization of banking sector complementary in the process of financing sustainable growth?
- Are countries' sustainable future possible if banks offer only conventional financial products?
- The Green Agenda for the Western Balkans represents a shared blueprint for a climate-neutral future by 2050. Hence, *one-size-fits-all* approach for all Western Balkan countries may be challenging due to their varying levels of development, regulatory frameworks, and priorities.

The following sections delve into existing literature, detail our research methodology, and present the empirical results.

LITERATURE REVIEW

The study by Buchetti & Santoni (2022) underscores that the banking sector's ability to adapt and innovate will be crucial for sustainable future, where BiH cannot be exception. Thus, corporate governance in the banking sector must be flexible and forward-thinking to navigate the path towards sustainable development effectively.

The relationship between stock market capitalization and banking sector capitalization in financing sustainable growth is complex, where neither does not have straightforward impact on economic growth. A study found a robust negative relationship between banking sector development and economic growth, whereas the effect of stock market development on economic growth is positive up to a threshold after which the effect becomes negative (Cave et al., 2019). But, overall conclusion in mainstream literature is that both stock markets and banking sector play significant roles in financing sustainable growth, but their impacts can vary depending on other factors such as the level of economic development, foreign direct investment, and inflation (Alshubiri, 2021).

Also, there is a complex and multifaceted relationship between stock market capitalization and economic growth in emerging economies and a lot of studies underscore the importance of a well-developed and functioning stock market in promoting economic growth. (Aali-Bujari et al., 2017; Akel & Torun, 2017; Bako Sunday Samuel, 2013; "Effect of market capitalization on economic growth of east African community", 2021; Evan, 2023). The same discussion is present when a group of developed countries is considered where question about relation between stock markets, banks, their relation and their effect on growth is a problem that can have different representation depending on specific situations (Beck & Levine, 2002; Black & Gilson, 1996; Levine & Beck, 1999; Levine & Zervos, 1999; Rousseau & Xiao, 2007). Stock market development, measured by indicators such as market capitalization, has been found to positively influence the level of economic growth. Nevertheless, the stock market and the banking sector in emerging economies are complementary rather than substitutes in providing financial services to the economy (Masoud & Hardaker, 2012).

This paper assumes that role of banks in achieving Sustainable Development Goals in Bosnia and Herzegovina is and will be important. Form of that role can vary and compared to the rest of the world, and BiH is no exception in that regard (Habib et al., 2024; Mélon & Mercina, 2024; Musah et al., 2022).

The shift towards sustainable finance is seen as a critical step towards achieving a sustainable future where conventional financial products may not fully address the ESG factors that are increasingly considered important in today's financial landscape (Mateev et al., 2021).

DATA

The empirical part of analysis will initially be explanatory based on data presented with table below.

Table 1 Data extracted from World Bank database

Stock market capitalization to GDP (%)
Bank deposits to GDP (%)
CO2 emissions (metric tons per capita)

Because all CO2 emissions related data are available from 1990, we set our time span of the analysis starting from that year and ending in 2021. Data are extracted from the World Bank database. Key variables are presented on the graph (Appendix).

METHODOLOGY

K-means clustering is a method of vector quantization that aims to partition n observations into k clusters. This process minimizes the within-cluster sum of squares (variance), resulting in a partitioning of the data space into Voronoi cells.

This method has been used in studies to understand the impact of various factors on greenhouse gas emissions in different countries (Akıllı, 2023). Also it is powerful tool for identifying patterns and trends in banking data, and can provide valuable insights for policy-making and financial strategies and has been used in studies to understand the riskiness of banks and to manage investment portfolios (Mercadier et al., 2021). Some authors use this approach to identifying patterns and trends in stock market related data (He et al., 2007).

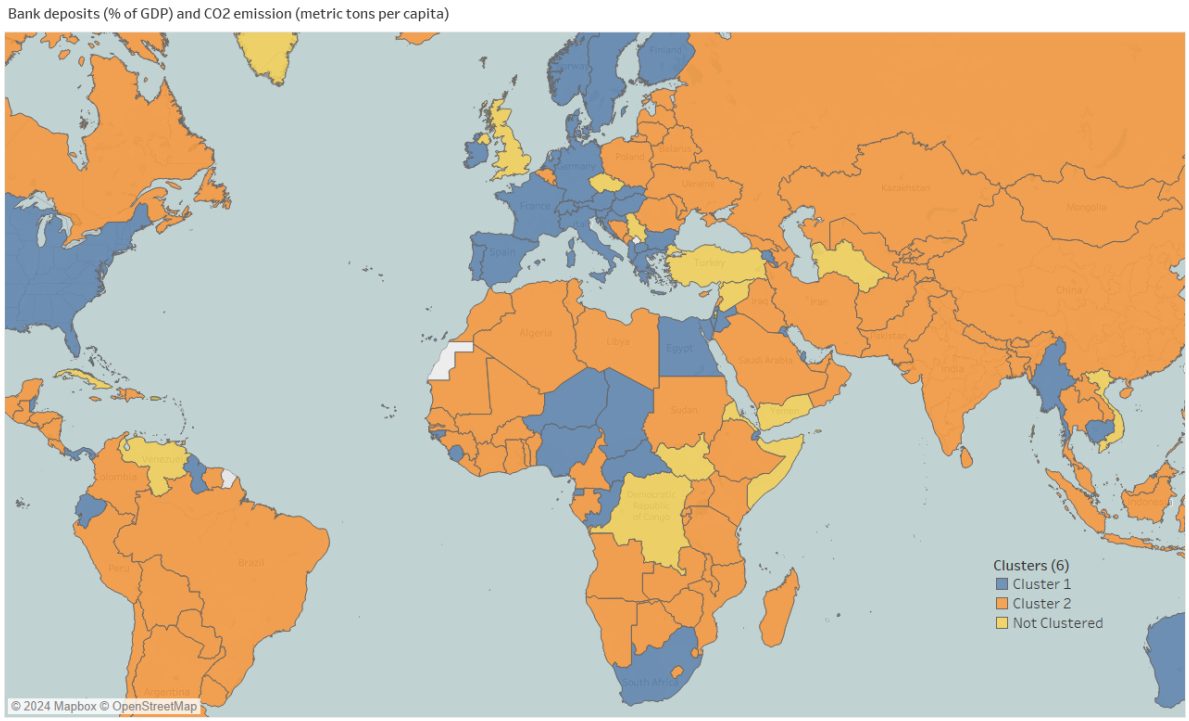
The K-means algorithm assumes that clusters are convex and isotropic:

- Convexity means that the cluster has a shape such that for every pair of points within the cluster, every point on the straight-line segment that joins the pair of points is also within the cluster.
- Isotropy means that the cluster looks the same in all directions, implying that the data points are distributed evenly around the center of the cluster.

RESULTS

K mean clustering of all countries based on data from 1990 to 2021 based on CO2 emissions per capita and deposits in banks in percentages of GDP where criteria for the number cluster is based on the algorithm used for automatic clustering picks the number of clusters corresponding to the first local maximum of the Calinski-Harabasz, divides world in two big clusters, where significant number of countries is not classified in neither cluster. Only neighboring country of BiH that is in same cluster is Montenegro.

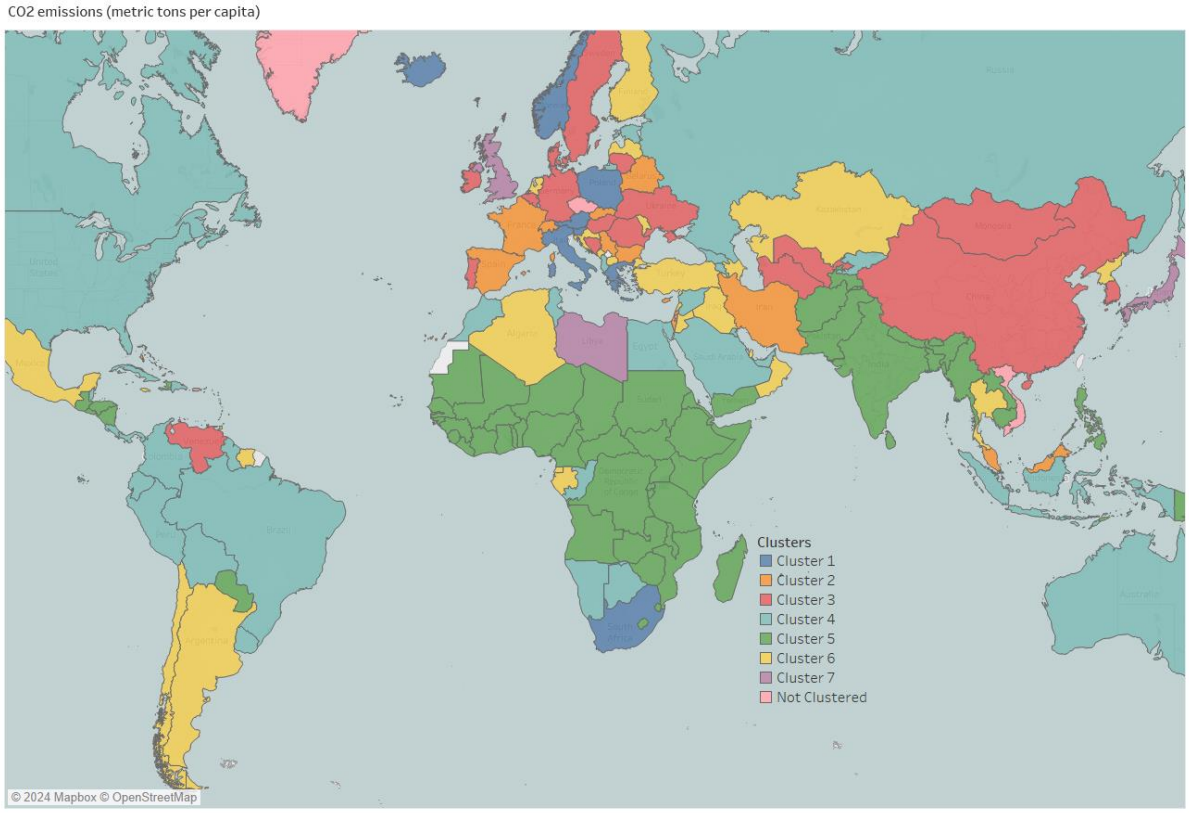
Figure 5 Clusters based on bank deposits and CO2 emission in metric tons



Source: Authors' analysis

Even criteria for clustering is trimmed to only single variable, either CO2 emissions or percentages of bank deposits in GDP, centroid of cluster in which BiH is classified is geographically not near. To be precise, it is hard to identify a single special centroid.

Figure 6 Clusters based on CO2 emission in metric tons.



Source: Authors' analysis

Mismatch between cluster's centroid and geographically meaningful centre, where CO2 emission is variable used for clustering, is imminent to most European countries (picture above). But, when capitalization of banks is criteria for clustering, then we can see geographical groups in West Europe and South Europe, where West Balkan countries are scattered across the different clusters (picture below). This is obvious when we look at bubble chart below where we have identified clusters on subsample made from countries from Europe and Central Asia.

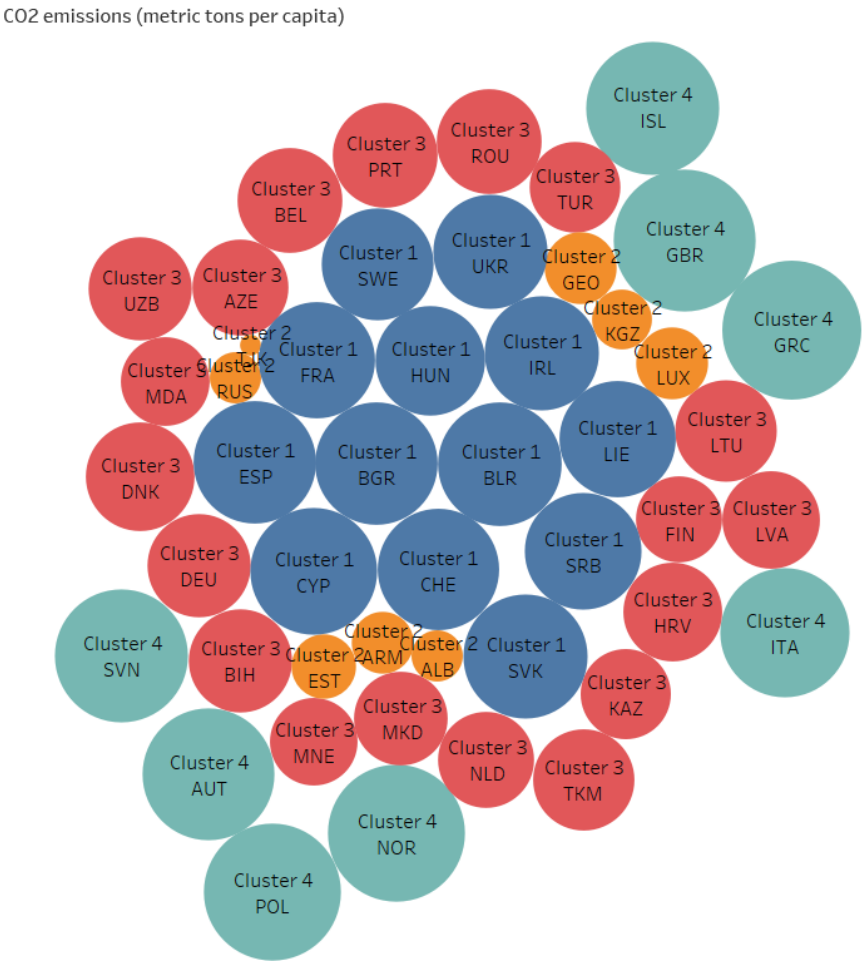
In K-means clustering, a method we used in this analysis, the centroid is the mean position of all the points in a particular cluster. When the centroid does not match with the geographical concentration, it suggests that the variable used for clustering (in this case, CO2 emissions or bank capitalization) is not geographically concentrated. This situation is present in Europe, and in West Bakan.

We can identify three main reasons for this mismatch. The dispersion of the variables within region is quite high. In some cases, this dispersion is in expected range, but in some cases, we have significant outliers. For instance, in case of Poland we have three outliers for CO2 emission per capita (1990, 1991, and 1996 data point). Extreme values simply pull the centroids to themselves. Finally, the variable used for clustering might be influenced more by non-geographical factors and this is the most relevant reason. Hence, bank capitalization could be more related to the economic policies of individual countries rather than their geographical location. But, what is interesting, is that both variables, bank capitalization and CO2 emission are highly regulated in EU.

Bank capitalization is a critical aspect of the EU's economic policy, playing a vital role in maintaining financial stability and resilience in the face of economic shocks. Hence, the European Central Bank (ECB) assesses how much capital banks should hold, defines monetary strategy and impacts bank capitalization as it influences interest rates, inflation, and overall economic stability.

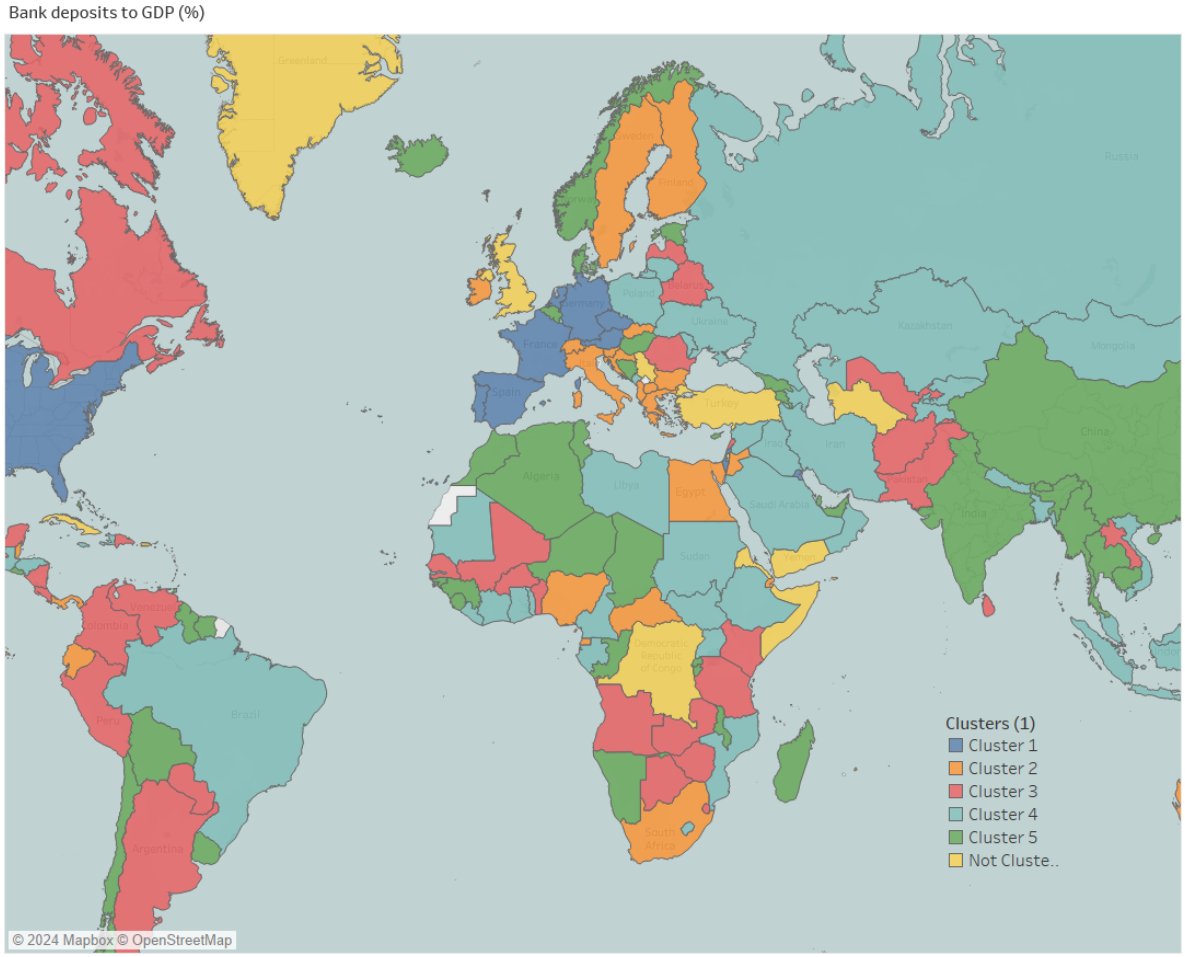
EU has implemented stringent regulations to control CO2 emissions, by imposing EU Climate Law, CO2 Emission Performance Standards, Fit for 55 Package (aims to reduce the EU's net greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels), Future Targets and so on.

Figure 7 Clusters in Europe and Central Asia based on CO2 emissions (metric tons)



Source: Authors' analysis

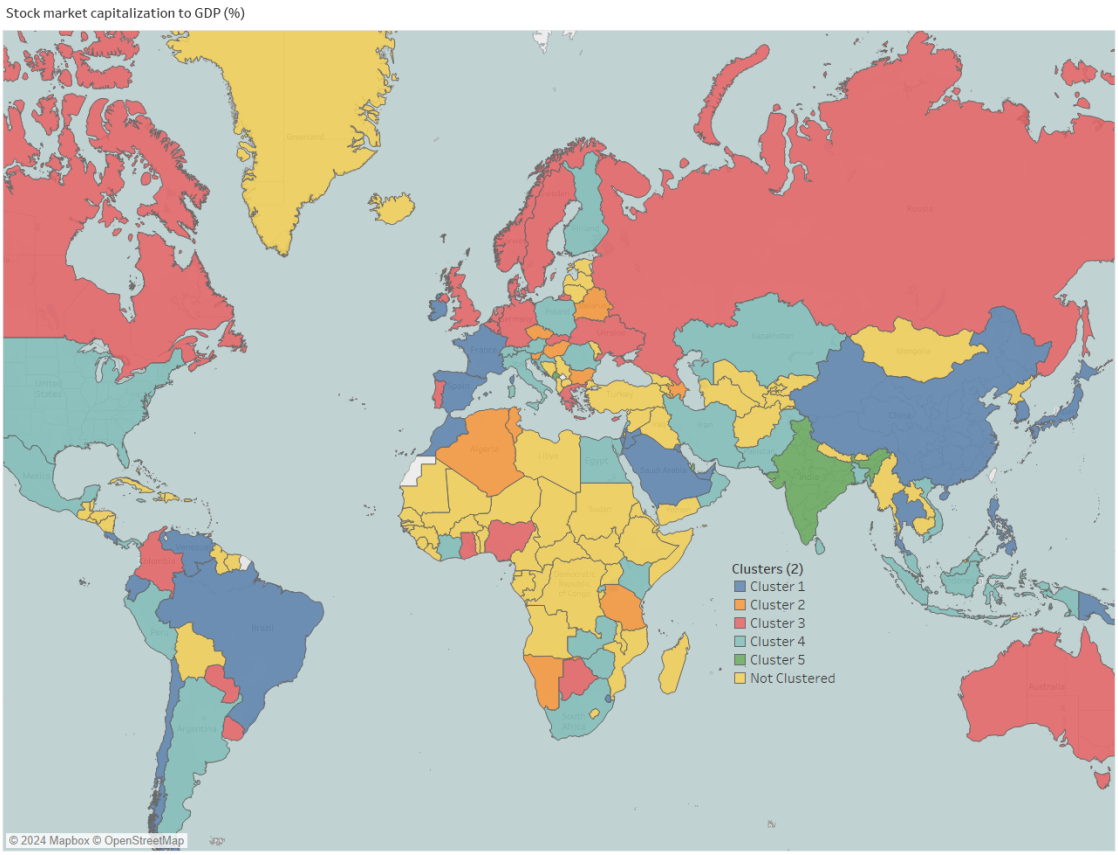
Figure 8 Clusters based on bank deposits to GDP (%)



Source: Authors' analysis

Considering the overall development of stock market exchanges in West Balkan it is almost expected that there is no grouping on regional level because those are non-liquid and isolated markets, with relatively small numbers of transactions. This is obvious when trying to apply the K mean clustering approach based on stock market capitalization in percentages of GDP (picture below). Huge numbers of countries simply do not belong to any cluster (yellow color). We could doubt that model might not capture the complexity of the data, leaving many countries ungrouped because imposed number of clusters is too small. But, we have defined K based on mentioned algorithm. Most probable reason for this is that clusters are not convex and isotropic, meaning that our data are irregularly shaped.

Figure 9 Clusters based on Stock market capitalization to GDP (%)



Source: Authors' analysis

DISCUSSION

Both stock market capitalization and the capitalization of the banking sector could play complementary roles in financing sustainable growth. Stock markets provide a platform for companies to raise capital for sustainable projects and this mechanism is straightforward if financial markets are adequately developed. The value of the global sustainable finance market, which includes bonds, funds, and voluntary carbon markets, reached $5.8 trillion in 2022 (Kim Park, 2023; United Nations Conference on Trade and Development, 2023) . This suggests that investors view sustainable finance as a longer-term strategy and are convinced by the business case for sustainable sectors, such as renewable energy (United Nations Conference on Trade and Development, 2021).

Banks provide loans and other financial services to businesses and individuals, enabling them to invest in sustainable projects. The World Bank, for instance, has raised over $1 trillion from private investors since issuing its first bond in 1947. In fiscal 2023, it raised about $43 billion in sustainable development bonds (United Nations Conference on Trade and Development, 2021). Hence, despite the turbulent economic environment, banks globally have seen strong revenue growth and comfortable Tier 1 capital ratios (Podder & Haque, 2016)

The United Nations has launched a program in BiH to support the government in defining models and creating solutions for financing the achievement of Sustainable Development Goals (SDGs). This program recognizes that achieving the SDGs in the next decade will not be possible only through government financing, Therefore, BiH, like other countries in the world, will need to explore other ways to raise financing from alternative sources.

One of these alternative sources could be the stock market, which can mobilize funds from partnerships with private sector investors. This suggests that the stock market could play a crucial role in financing sustainable development in BiH (*A Path Towards the SDGs Financing Ecosystem in Bosnia and Herzegovina | United Nations in Bosnia and Herzegovina*, n.d.). But it seems obvious that significant role of stock markets in whole process is predetermined with development of this financial mechanism in general. Ideas about utilizing financial solutions that are implemented in highly or medium developed financial markets are appealing but more realistic scenario assumes relying on those financial mechanism that are more immanent to the establishment of overall economic system.

Banks already provide necessary funds to small and medium-sized enterprises (SMEs), which are the backbone of the economy. These funds enable companies in the industrial, tourism, agriculture, and services sectors to access medium and long-term funding under more flexible and favorable conditions. Moreover, banks also support job creation for young people in BiH through initiatives that encourage companies to provide employment and vocational training to young people (*A Path Towards the SDGs Financing Ecosystem in Bosnia and Herzegovina | United Nations in Bosnia and Herzegovina*, n.d.).

Loan as conventional financial product can be used according to the ESG requirements. Also, there are other financial instruments that are already in use and can be modified for its role in same context and identify that as obvious channel trough which banks can play active role in BiH's sustainable future:

- Dedicated energy credit lines for energy efficiency and renewable projects (World Bank, 2010).
- Microcredits could be crucial for the development of financial inclusion in general (Wichterich, 2017).
- Bank credits in the form of long-term loans to infrastructure projects (Andika et al., 2021).
- A syndicated loan is financing offered by a group of banks to raise funds for a single borrower. The borrower could be a company, a big project, or the government. The loan can be a fixed amount of funds, a line of credit, or a combination of both (Mugasha, 2007).
- Sovereign bonds can be used to finance green, gender equality projects or other long-term projects (World Bank, 2022).
- Municipal bonds help municipalities to finance their infrastructure services such as public transport systems (Lajoux, 2021).
- Considering the difficulties of SMEs in accessing bank financing, leasing companies could emerge as competitive alternative (Wang & Yang, 2016).

Policy implications are clearly stated by proposing existing financial mechanisms and those that can be introduced in the short term. In each case, banks have their role.

Sustainability in the long term is closely tied to innovation in financial engineering. This involves the creation of new financial instruments, technologies, and methodologies that can help manage risk and generate returns. Banks, with their expertise in financial matters, are well-positioned to drive this innovation and have the potential to provide innovative opportunities that can contribute to sustainability. This could include the development of green bonds for environmentally friendly projects, impact investing for social enterprises, or microfinance schemes for underprivileged communities. There are many directions of financial innovation where there is potential for synergy between banks and stock markets. Banks should not just passively respond to the demands of the market but should take the initiative in promoting sustainability. This could involve setting up dedicated sustainability departments, providing

incentives for sustainable practices, or actively seeking out sustainable investment opportunities. Further, we recognize specific instruments that could play significant role in BiH's sustainable future.

Energy-saving insurance (ESI) instrument has an immense potential to contribute to the energy transition process in BiH and to ease the implementation of Energetic Efficiency Law in BiH. It's an innovative financial instrument that banks can leverage to drive sustainability and energy efficiency.

Decarbonization is a key component for sustainable growth and therefore energy production and consumption play a particularly vital role in that process. This process of energy transition in BiH could be coordinated through the implementation of relevant plans: the National Renewable Energy Action Plan (NREAP) in BiH and the National Energy Efficiency Plan (NEEAP). The ESI model can be applied to energy efficiency projects and distributed generation projects, especially photovoltaic solar energy (Gerarden et al., 2015; World Bank, 2010). For projects to comply with the ESI model, energy efficiency or energy savings from distributed generation projects must be guaranteed by an insurance policy for a sufficient period to recover or pay back the investment in energy savings. In this framework, the ESI model includes financial and non-financial elements to build trust and reputation among key players and reduce the risk of SMEs investing in energy efficiency. By addressing both the financial and non-financial risks, the ESI model encourages SMEs to invest in energy efficiency measures, thereby contributing to the overall goal of energy transition and decarbonization. This aligns well with the objectives of the NREAP and NEEAP in BiH, but the current shape of insurance market in BiH is a factor to consider in this case. Mandatory car insurance domines across insurance industry in BiH and that is clear indicator of poor shape of whole insurance sector.

Apex is a second-tier fund that directs public resources to multiple retail finance providers in a single country. This structure allows for the efficient distribution of funds and can stimulate economic activity by providing financial resources to a wide range of businesses and individuals through these retail finance providers. It's a model that can be particularly effective in supporting small and medium-sized enterprises (SMEs), which often struggle to secure funding. Apex provides loans in local currency, as well as loan guarantees, grants for equity investments and operational costs support, and technical assistance. Apexes use a wide variety of organizational forms, ranging from small divisions of government development banks to large standalone foundations. Apex facilities have become increasingly popular with host-country governments, as well as with development finance institutions (DFIs) and multilateral agencies, such as the European Commission (EC), the Inter-American Development Bank (IDB), the International Fund for Agricultural Development (IFAD), Germany's Kreditanstalt für Wiederaufbau (KfW), and the World Bank. Apexes' microfinance operations are overwhelmingly focused on MFIs' credit services.

There are some products that does not primarily financial by its essence but could be extremely beneficial for BiH's sustainable future. For example, in Bulgaria, a 20% tax was imposed on solar and wind power plant revenues, and the amount of energy that could be purchased with preferential FiT rates was reduced. The Serbian government has suspended the payment of renewable energy subsidies. This declining financial support from governments has led to zero subsidies for renewable energy projects and the search for market-oriented models. An alternative to government subsidy schemes is a **corporate energy purchase agreement** (Stanitsas & Kirytopoulos, 2023) .

Finaly, **Strategic Investment Funds' (SIF)** sources of funding may include balance-of-payment surpluses, official foreign currency operations, the proceeds of privatization, pension

reserve funds, receipts resulting from commodity exports, and contributions from IFIs and private sector actors. Partners that have a high credit rating or that borrow from IFIs can on-lend to a SIF at a low cost. In this case, the SIF can take advantage of the margin between low-cost loans and the expected risk-adjusted returns on its investments to enhance returns for private investors or de-risk their investments (*Strategic investment funds : opportunities and challenges*, n.d.) .

CONCLUSION

The transformation of the traditional banking model in the context of sustainable development is a critical endeavor. Comprehensive approach to a green West Balkan involves circular economy principles, climate resilience, and sustainable energy practices. But, when finance industry is included in perspective, single approach to whole region does not look like optimal solution.

Both stock market capitalization and banking sector capitalization are essential for financing sustainable growth. They provide the necessary capital for investment in sustainable development and drive change in business mindsets and investment strategies. However, the effectiveness of these two sectors in promoting sustainable growth can be influenced by various factors, including economic conditions, regulatory policies, and investor preferences.

But, in process of building sustainable future BiH should positioned realistically. Stock market clustering shows us that BiH is in the group with countries in which stock market utilization is on very low level. Therefore, any consideration in that regard should be based on previous steps of improvement of stock market.

When clustering is done by using CO2 emission per capita and bank deposits in percentage of GDP, BiH is not in the same group as countries of West and North Europe and United States of America. Implication is that financial innovations in function of reducing CO2 emissions used in those countries, maybe are not so suitable for BiH.

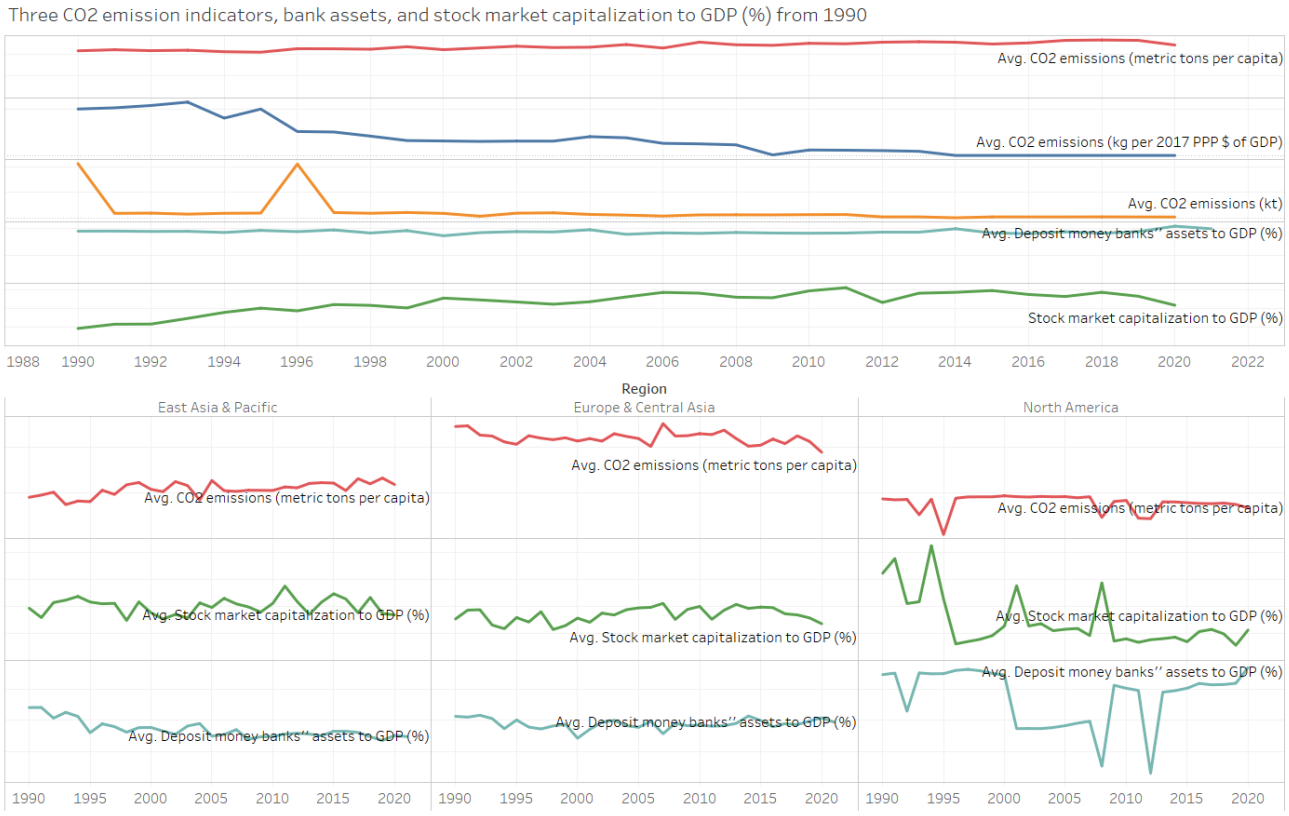
REFERENCES

1. Aali-Bujari, A., Venegas-Martínez, F., & Pérez-Lechuga, G. (2017). Impact of the stock market capitalization and the banking spread in growth and development in Latin American: A panel data estimation with System GMM. *Contaduría y Administración*, *62*(5), 1427–1441. https://doi.org/10.1016/j.cya.2017.09.005
2. Akel, V., & Torun, T. (2017). Stock market development and economic growth: the case of MSCI emerging market index countries. In Ü. Hacioğlu & H. Dinçer (Eds.), *Global financial crisis and its ramifications on capital markets* (pp. 323–336). Springer International Publishing. https://doi.org/10.1007/978-3-319-47021-4_23
3. Akıllı, A. (2023). Impact of Covid-19 on Greenhouse Gas Emission in OECD Countries: K-Mean Method. In E. Akıllı & B. Gunes (Eds.), *World Politics in the Age of Uncertainty: The Covid-19 Pandemic, Volume 2* (pp. 227–246). Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-39611-3_17
4. Alshubiri, F. (2021). The stock market capitalisation and financial growth nexus: an empirical study of western European countries. *Future Business Journal*, *7*(1), 46. https://doi.org/10.1186/s43093-021-00092-7
5. Andika, N., Abubakar, L., & Handayani, T. (2021). Implementation of principle for responsible investment in distribution of bank credits on infrastructure projects. *Legality : Jurnal Ilmiah Hukum*, *29*(1), 130–143. https://doi.org/10.22219/ljih.v29i1.15063

6. *A Path Towards the SDGs Financing Ecosystem in Bosnia and Herzegovina | United Nations in Bosnia and Herzegovina*. (n.d.). Retrieved March 19, 2024, from https://bosniaherzegovina.un.org/en/122244-path-towards-sdgs-financing-ecosystem-bosnia-and-herzegovina
7. Bako Sunday Samuel, B. S. S. (2013). Effects of Banking Sector Reforms on the Relationship between Banking Stocks and the Stock Market Capitalization Rate in Nigeria. *IOSR Journal of Business and Management*, *7*(6), 37–45. https://doi.org/10.9790/487X-0763745
8. Beck, T., & Levine, R. (2002). *Stock markets, banks, and growth: panel evidence*. National Bureau of Economic Research. https://doi.org/10.3386/w9082
9. Black, B. S., & Gilson, R. J. (1996). Venture capital and the structure of capital markets: banks versus stock markets. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.46909
10. Buchetti, B., & Santoni, A. (2022). Correction to: corporate governance in the banking sector. In *Corporate governance in the banking sector: theory, supervision, ESG and real banking failures* (pp. C1–C1). Springer International Publishing. https://doi.org/10.1007/978-3-030-97575-3_7
11. Cave, J., Chaudhuri, K., & Kumbhakar, S. C. (2019). Do banking sector and stock market development matter for economic growth? *Empirical Economics*, 1–23. https://doi.org/10.1007/s00181-019-01692-7
12. Effect of market capitalization on economic growth of east african community. (2021). *Journal of Economics and Sustainable Development*. https://doi.org/10.7176/JESD/12-10-05
13. Evan, O. (2023). Effect of stock market capitalization on economic growth in kenya. *International Journal of Financial Research*, *3*(4), 357–371. https://doi.org/10.47747/ijfr.v3i4.989
14. Gerarden, T., Newell, R. G., & Stavins, R. N. (2015). Deconstructing the Energy-Efficiency Gap: Conceptual Frameworks and Evidence. *American Economic Review*, *105*(5), 183–186. https://doi.org/10.1257/aer.p20151012
15. Habib, A., Khan, M. A., Haddad, H., & Al-Ramahi, N. M. (2024). Does sustainable banking facilitate reducing the SDG-10 in weak rule of law setting? *Heliyon*, *10*(2), e24128. https://doi.org/10.1016/j.heliyon.2024.e24128
16. He, H., Chen, J., Jin, H., & Chen, S.-H. (2007). Trading Strategies Based on K-means Clustering and Regression Models. In S.-H. Chen, P. P. Wang, & T.-W. Kuo (Eds.), *Computational intelligence in economics and finance* (pp. 123–134). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-540-72821-4_7
17. Kim Park, S. (2023). Sustainable finance in global capital markets. In I. Chiu & I. MacNeil (Eds.), *Research handbook on global capital markets law* (pp. 236–250). Edward Elgar Publishing. https://doi.org/10.4337/9781800379305.00024
18. Lajoux, A. R. (2021). Chapter 7 municipal green bonds. In *Empowering municipal sustainability: A guide for towns, cities, and citizens* (pp. 93–108). De Gruyter. https://doi.org/10.1515/9783110689860-007
19. Levine, R., & Beck, T. (1999). *Stock markets, banks, and growth: correlation or causality?* The World Bank. https://doi.org/10.1596/1813-9450-2670
20. Levine, R., & Zervos, S. (1999). *Stock markets, banks, and economic growth*. The World Bank. https://doi.org/10.1596/1813-9450-1690
21. Masoud, N., & Hardaker, G. (2012). The impact of financial development on economic growth. *Studies in Economics and Finance*, *29*(3), 148–173. https://doi.org/10.1108/10867371211246830
22. Mateev, M., Tariq, M. U., & Sahyouni, A. (2021). Competition, capital growth and risk-taking in emerging markets: Policy implications for banking sector stability during COVID-19 pandemic. *Plos One*, *16*(6), e0253803. https://doi.org/10.1371/journal.pone.0253803
23. Mélon, L., & Mercina, A. R. (2024). Commercial banks and competition concerns—sdg policy priorities. In M. Bodellini, G. Gimigliano, & D. Singh (Eds.), *Commercial Banking in Transition: A Cross-Country Analysis* (pp. 201–220). Springer International Publishing. https://doi.org/10.1007/978-3-031-45289-5_10
24. Mercadier, M., Tarazi, A., Armand, P., & Lardy, J.-P. (2021). Banks' Risk Clustering Using K-Means: A Method Based on Size and Individual & Systemic Risks. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3946293
25. Mugasha, A. (2007). The nature of credit facilities used in syndicated loans and secondary loan markets. In *The Law of Multi-Bank Financing: Syndicated Loans and the Secondary Loan*

Market (pp. 175–202). Oxford University PressOxford. https://doi.org/10.1093/oso/9780199289127.003.0004
26. Musah, M., Owusu-Akomeah, M., Nyeadi, J. D., Alfred, M., & Mensah, I. A. (2022). Financial development and environmental sustainability in West Africa: evidence from heterogeneous and cross-sectionally correlated models. *Environmental Science and Pollution Research International*, *29*(8), 12313–12335. https://doi.org/10.1007/s11356-021-16512-8
27. Podder, J., & Haque, T. H. (2016). The impact of capital buffers on future loan growth, interest income and tier 1 capital ratios. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2826347
28. Rousseau, P. L., & Xiao, S. (2007). Banks, stock markets, and China's 'great leap forward.' *Emerging Markets Review*, *8*(3), 206–217. https://doi.org/10.1016/j.ememar.2007.05.002
29. Stanitsas, M., & Kirytopoulos, K. (2023). Sustainable energy strategies for power purchase agreements (ppas). *Sustainability*, *15*(8), 6638. https://doi.org/10.3390/su15086638
30. *Strategic investment funds : opportunities and challenges*. (n.d.). Retrieved March 14, 2024, from http://documents.worldbank.org/curated/en/235311475681523659/Strategic-investment-funds-opportunities-and-challenges
31. United Nations Conference on Trade and Development. (2021). Capital markets and sustainable finance. In *World investment report 2021: investing in sustainable recovery* (pp. 205–237). United Nations. https://doi.org/10.18356/9789210054638c010
32. United Nations Conference on Trade and Development. (2023). Investing in sustainable energy for all. In *World investment report 2023: investing in sustainable energy for all* (pp. 139–189). United Nations. https://doi.org/10.18356/9789210027847c010
33. Wang, J. G., & Yang, J. (2016). An Alternative Link Connecting Industry with Finance—Financial Leasing. In *Financing without Bank Loans* (pp. 97–111). Springer Singapore. https://doi.org/10.1007/978-981-10-0901-3_8
34. Wichterich, C. (2017). Microcredits, returns and gender: of reliable poor women and financial inclusion in south asia. In V. Xaxa, D. Saha, & R. Singha (Eds.), *Work, institutions and sustainable livelihood* (pp. 275–301). Springer Singapore. https://doi.org/10.1007/978-981-10-5756-4_11
35. World Bank. (2010). *Energy Efficiency Finance*. The World Bank. https://doi.org/10.1596/978-0-8213-8450-3
36. World Bank. (2022). Spotlight 5.1: Greening capital markets: Sovereign sustainable bonds. In World development report 2022: finance for an equitable recovery (pp. 241–248). The World Bank. https://doi.org/10.1596/978-1-4648-1730-4

APPENDIX


Three CO2 emission indicators, bank assets, and stock market capitalization to GDP (%) from 1990
Avg. CO2 emissions (metric tons per capita)
Avg. CO2 emissions (kg per 2017 PPP $ of GDP)
Avg. CO2 emissions (kt)
Avg. Deposit money banks'' assets to GDP (%)
Stock market capitalization to GDP (%)
1988 1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022
Region
East Asia & Pacific
Europe & Central Asia
North America
Avg. CO2 emissions (metric tons per capita)
Avg. Stock market capitalization to GDP (%)
Avg. Deposit money banks'' assets to GDP (%)
1990 1995 2000 2005 2010 2015 2020

FISCAL CONSEQUENCES OF THE SUSPENSION OF FISCAL RULES IN THE EUROPEAN UNION

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Abstract

A specific feature of the European Economic and Monetary Union is centralized monetary policy under the competence of the European Central Bank and decentralized fiscal policy under the competence of the national authorities of the member states. In order to ensure the conduct of a sound fiscal policy by each member state, it was necessary to establish certain common rules for the conduct of fiscal policies at national levels, that is, to establish binding fiscal criteria, or more precisely fiscal limits, which are based on the principle of sustainable fiscal policy. However, the application of fiscal rules in the European Union was suspended in 2020 due to the crisis caused by the corona virus.

The main analysis and the aim of the research in this paper is the analysis of the impact of activation effects on the fiscal stability of the countries of the European Union. Descriptive and comparative analysis will determine the effects of the suspension of the fiscal rules of the European Union countries. The analysis shows the importance of the existence of fiscal rules for maintaining the fiscal stability of EU member states, which is one of the prerequisites for macroeconomic stability and economic growth.

Key words: Fiscal rules, GDP, deficit, public debt, fiscal consolidation.

Jel: JEL: E62, H62, F41

INTRODUCTION

"General escape clause" was defined by the reform of the Stability and Growth Pact of the European Union (EU) in 2011, as part of the so-called "Pack of 6 measures" and it was activated for the first time in March 2020, due to the Covid-19 crisis.

The EU Stability and Growth Pact was redefined in 2011 and contains two clauses that allow member states to implement appropriate budgetary measures in extraordinary circumstances, namely the "extraordinary events clause" and the "general escape clause". The clauses allow derogation from parts of the Stability and Growth Pact in the event of events beyond the control of one or more member states that have a major impact on the financial position of EU states.

Because the Covid-19 crisis is an event that was beyond the control of governments with a major impact on the financial position of EU countries, the EC noted the possibility of applying clauses on extraordinary events.

However, the size of the fiscal efforts that were necessary to protect against the effects of the pandemic and support the recovery of the economy after that, required significantly greater flexibility in terms of the "general escape clause" which, due to the crisis in Ukraine, was extended until the end of 2023.

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LITERATURE REVIEW

In EU member states, fiscal rules based on the Maastricht criteria were introduced more than 30 years ago. According to the criteria, the public debt must not exceed 60% of GDP, and the annual budget deficit must not exceed 3% of the country's GDP. In order to respect the set fiscal limits on debt and deficit, and to strengthen fiscal discipline, European leaders adopted the Pact on Stability and Growth in 1997, which began to be implemented in 1999 (Delivorias, A., 2021).

From the moment the EU's fiscal rules were established until today, there have been numerous challenges and crises caused by extraordinary circumstances. Among the crises of a larger scale than the determination of EU fiscal rules, the global financial crisis from 2008, the Covid-19 crisis from 2020 and the economic crisis caused by the war in Ukraine in 2022 stand out. The global financial crisis 2008 tested the effectiveness of the fiscal framework of the European Union. The fiscal framework that existed before the global financial crisis was useful for the coordination of fiscal policy, but it did not prevent the creation of fiscal imbalances, so the weaknesses of the reformed Pact came to the fore. The deepening of the crisis in 2008 led to a recession. The recession was characterized by a decrease in economic activity, a drop in consumption and an increase in unemployment with a decrease in public revenues. The consequence of such a situation is the budget imbalance, which manifested itself in the form of a structural budget deficit and the growth of public debt (Krajišnik, M., Gligorić, D. and Gojković, B., 2019).

The emergence of imbalances pointed to the weaknesses of the EU's fiscal frameworks, which set limits on deficits in "bad times", without setting concrete rules for savings in "good times" (Martin, P, 2021). Bad experiences have led to numerous measures aimed at strengthening fiscal restraint and management measures. Thus, the Pact was changed again in 2011, when the Six Pack was adopted. The package of six measures was adopted with the aim of limiting the further accumulation of public debts, which were one of the causes of the Eurozone crisis, and to contribute to better fiscal discipline of the member states.

The 2019 COVID pandemic at the beginning of 2020 showed how non-financial and non-economic factors can affect economic trends and the economy on a global scale and cause a recession (Gojković, 2022).

In March 2020, the general escape clause was activated. More precisely, the fiscal rules of the EU have been suspended by the activation of the derogation clause in extraordinary circumstances caused by the Covid 19 crisis. The general escape clause has been extended until the end of 2023 due to the continuation of the economic crisis caused by the war in Ukraine. At the beginning of 2023, the process of reforming the fiscal framework of the EU was launched, which was the basis for fiscal management in the EU from 2024.

The extraordinary circumstances caused by the crises in 2020 and 2022 confirmed the need to consider redefining, i.e. adapting the existing fiscal rules of the EU to the new "post-pandemic" circumstances (Davoodi H. R, et. al. 2022). There was a need to strengthen and redefine EU fiscal rules by adopting features that make them more flexible, operational and enforceable. Consequently, in April 2023, the EC presented its legislative proposals for the reform of fiscal management in the EU. The proposals were agreed upon in December 2023.

The originally defined limits of 3% of GDP for the general government budget deficit and 60% of GDP for public debt remain, but allow more flexibility in fiscal adjustment (Council of the European Union, 2023). The key innovation is reflected in the introduction of spending plans that respect the specifics of each individual country, and are based on an analysis of debt sustainability by the EC.

Regardless of the effectiveness of the application of fiscal rules in recent years, fiscal rules have become a common occurrence (Eyraud, L. et. al., 2018). Ensuring a stable fiscal policy is a priority for all countries. Based on the results of years of application of fiscal rules in EU countries and the impact of fiscal stability on economic growth, it can be concluded that the same fiscal rules and their implementation do not ensure the same level of fiscal stability and equal opportunities to overcome fiscal difficulties in EU member states with different level of development (Gojković, B., 2022). How many negative consequences the activation of the clause on deviating from the fiscal rules had will be clearer on results base.

In the previous literature, there was no research that specifically looked at the effects application of the activation of the "general escape clause", which provides an additional contribution to this research.

RESEARCH METHODOLOGY

This research analyzes the impact of the activation of the "general escape clause", i.e. the suspension of fiscal rules in extraordinary circumstances, on the fiscal stability of EU countries. The article is based on the collection and analysis of secondary data sources. The Desk Research method was used for data collection, since already existing external data were used to analyze the problem.

The data used for this research were taken from the Eurostat database. The basis is data on the public debt and fiscal deficit of the EU member states in the period before and after the activation of the "general escape clause". The time frame of the research refers to the period 2016-2023. years.

As a classic method of data processing and analysis, content analysis was used in the paper, which, based on the collected relevant literature, obtained the necessary data for the processing of the case and the realization of the research goal.

The methods of description and comparison were used to prepare the paper. The descriptive method is a research procedure with a focus on the description of processes and phenomena. Description is the process of simply describing or presenting facts, processes and objects. The method of description will be used to define basic concepts such as the concept of fiscal rules, budget deficit, public debt, "general escape clause", and the like. By applying the description method, the paper pointed out the importance of fiscal stability and the existence of fiscal rules in the EU member states.

A comparative analysis of the average level of debt and deficit (% of GDP in EU countries) for the period before and after the activation of the "general escape clause" determines whether and to what extent fiscal indicators have deteriorated. In the first step, the comparison is carried out by determining the common features of the investigated phenomenon, and then by determining the features by which these phenomena differ. In this way, comparison highlights what those phenomena have in common or what makes them different (Žugaj et al., 2006). The method of comparison is the procedure of comparing similar phenomena and facts, i.e. processes, and determining the intensity of similarities and differences between them. Therefore, comparison is the basic instrument of this analysis. It sharpens the researcher's "power of description and plays a central role in the formation of concepts, by bringing into consideration perceptible similarities and differences between cases" (Collier, 1993).

The synthesis method was used in the final research phase of this article. By connecting the facts, which were reached by applying the previous methods, into one logical whole, conclusions were made about the importance of the existence of fiscal rules in the EU countries.

This is very important for maintaining fiscal stability, which is one of the basic conditions for macroeconomic stability and economic growth in general.

RESULTS

A comparative analysis of the average level of the budget deficit and public debt before and after the activation of the "general escape" clause will determine whether and to what extent there has been a deterioration of fiscal indicators that are subject to fiscal rules. Based on that, the data of the average budget result and public debt for EU member states in the four-year period before the activation of the "general escape" clause, more precisely, the average for the period 2016-2019. year and the average for the indicated indicators in the period of validity clause, i.e. for the period 2020-2023. year.

Table 1: Net lending/net borrowing, percentage of GDP at current prices

Country	Average 2016-2019	Average 2020-2023	Difference of the average for the four-year period before and after the activation of escape clause	Difference 2023-2019
Austria	-0,4	-5,0	-4,6	-3,2
Belgium	-1,5	-5,7	-4,2	-2,9
Bulgaria	1,4	-3,4	-4,9	-5,1
Czechia	0,9	-4,5	-5,3	-4,1
Denmark	1,7	2,6	1,0	-1,5
Estonia	-0,4	-3,0	-2,6	-3,0
Finland	-1,1	-2,9	-1,9	-1,5
France	-3,0	-6,3	-3,3	-1,7
Greece	0,7	-5,4	-6,1	-3,2
Netherlands	1,2	-1,6	-2,8	-2,3
Croatia	-0,1	-2,5	-2,4	-0,3
Ireland	-0,1	-1,0	-0,9	0,4
Italy	-2,1	-7,9	-5,8	-3,8
Cyprus	-0,1	-0,7	-0,6	1,4
Latvia	-0,4	-4,9	-4,5	-2,7
Lithuania	0,4	-2,5	-2,9	-2,1
Luxembourg	2,1	-1,3	-3,4	-4,1
Hungary	-2,1	-6,7	-4,6	-3,8
Malta	1,7	-7,0	-8,7	-5,6
Germany	1,5	-3,2	-4,6	-3,7
Poland	-1,2	-4,6	-3,4	-5,1
Portugal	-1,3	-2,1	-0,8	0,7
Romania	-3,0	-7,3	-4,3	-2,0
Slovakia	-1,5	-4,6	-3,1	-4,5
Slovenia	-0,2	-4,7	-4,6	-4,4
Spain	-3,3	-6,4	-3,1	-1,0
Sweden	0,9	-0,5	-1,4	-0,7
European Union	**-0,8**	**-4,5**	**-3,7**	**-2,7**
Euro area	**-0,9**	**-4,8**	**-3,9**	**-2,6**

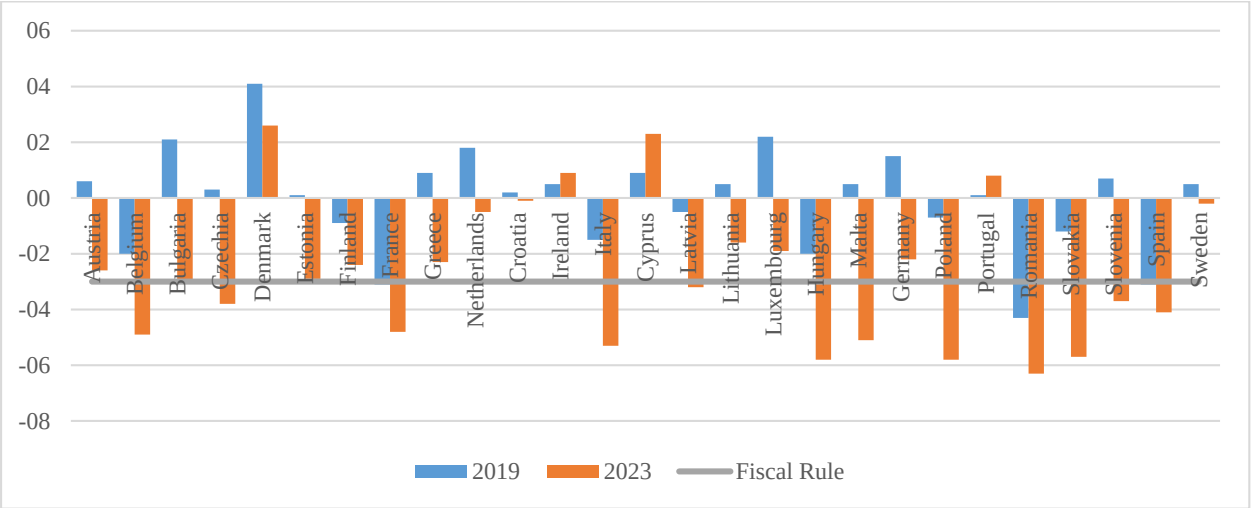
Source: Authors' calculation, based on Eurostat data.

Note: In 2nd and 3rd column (-) means budget deficit, (+) means budget suficit, while in 4th and 5th (-) means worsening budget balance (increase in the deficit or reducing suficit) while (+) means improvement of budget balance.

The analysis of the data from the previous table shows that due to the activation of the general escape clause in almost all EU countries, there was an increase in the level of deficit compared to the average level of deficit in the period before the activation of the clause. More precisely, all EU countries, except Denmark, during the period of application of the general escape clause recorded an increase in the budget deficit on average.

The following graph shows the level of the budget deficit as a percentage of GDP in the year before the activation of the clause, i.e. in 2019, and the level of the budget deficit as a percentage of GDP in 2023, in relation to the deficit level of 3% of GDP as is determined by the fiscal rule.

Graph 1: Net lending/net borrowing, % of GDP, in 2019 and 2023, by EU countries



Source: Authors' calculation, based on Eurostat data.

The analysis of the previous graph shows that in 2019, about 11% of the member states deviated from the fiscal rule related to the deficit level (France, Romania and Spain), and in 2023, 44% of the member states deviated from the fiscal rule (Belgium, the Czech Republic, France, Italy, Latvia, Hungary, Malta, Poland, Romania, Slovakia, Slovenia, Spain). More than half of the countries that deviate from the fiscal rule on the budget deficit are developed EU countries.

Analysis by individual EU countries shows that the deviation from the established deficit limit is significantly higher in 2023 compared to 2019. More precisely, the average deficit level for countries that deviate from the fiscal rules in 2019 is 3.5%, and in 2023 the average deficit for the 12 countries that deviate from the fiscal rules is 4.6%.

In 2023, Romania had a budget deficit of 6.3% of GDP, which is twice as much as the fiscal rule. The above confirms that due to the activation of the clause there was a deterioration of the budget result, i.e. an increase in the budget deficit for EU member states.

The impact of the suspension of the rules on the level of public debt of the EU member states was also analyzed. The following table shows the average public debt for EU member states in the four-year period before and after the activation of the general escape clause.

Table 2: Gross public debt, percentage of GDP at current prices

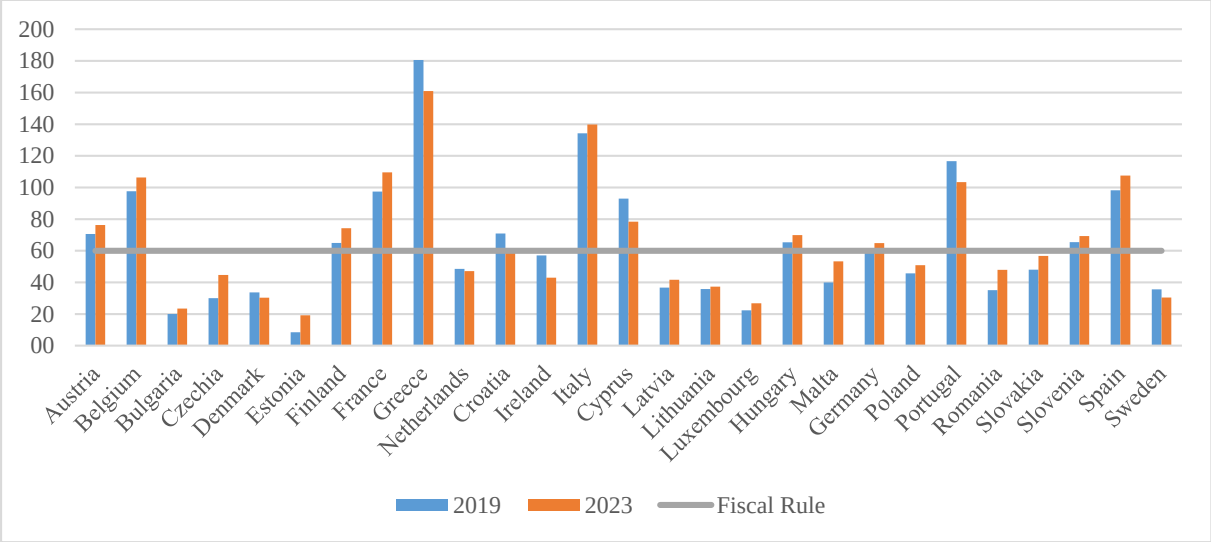
Country	Average 2016-2019	Average 2020-2023	Difference of the average for the four-year period before activation and after the activation of escape clause	Difference 2023-2019
Austria	76,5	80,1	3,5	5,7
Belgium	101,1	107,6	6,5	8,7
Bulgaria	24,1	23,7	-0,4	3,5
Czechia	33,2	42,2	8,9	14,7
Denmark	35,2	34,6	-0,6	-3,4
Estonia	9,0	18,5	9,6	10,7
Finland	65,9	73,7	7,8	9,4
France	97,8	112,2	14,4	12,2
Greece	181,8	183,9	2,1	-19,7
Netherlands	55,0	50,9	-4,1	-1,5
Croatia	75,0	73,5	-1,5	-10,1
Ireland	65,5	50,0	-15,5	-14,1
Italy	134,4	145,9	11,5	5,6
Cyprus	97,0	94,6	-2,4	-14,6
Latvia	38,2	42,2	4,0	5,0
Lithuania	37,1	41,3	4,2	1,5
Luxembourg	21,2	25,2	4,0	4,4
Hungary	70,4	75,0	4,6	4,6
Malta	46,5	53,0	6,5	13,3
Germany	63,9	67,2	3,3	5,2
Poland	49,9	52,8	2,8	5,2
Portugal	123,9	118,8	-5,1	-13,2
Romania	35,7	47,6	11,9	12,8
Slovakia	50,3	58,6	8,3	8,7
Slovenia	72,1	73,9	1,8	3,9
Spain	100,8	114,1	13,3	9,3
Sweden	39,7	34,9	-4,8	-5,2
European Union	**82,7**	**87,1**	**4,5**	**3,7**
Euro area	**89,2**	**94,8**	**5,5**	**4,6**

Source: Authors' calculation, based on Eurostat data

Note: In 4th and 5th (-) means reducing the level of indebtedness while (+) means rising the level od public debt.

The analysis of the data shown in the previous table shows that due to the activation of the general escape clause for a large number of EU countries, there was an increase in public debt as a percentage of GDP in relation to the average level of debt in the period before the activation of the clause. More precisely, in 70% of EU member states, the debt as a percentage of GDP is higher in the period of activation of the clause compared to the average of the same for the period 2016-2019. year.

Graph 2: Gross public debt, % of GDP, in 2019 and 2023, by EU countries



Source: Authors' calculation, based on Eurostat data.

The previous graph shows the level of public debt as a percentage of GDP in the year before the activation of the clause, i.e. in 2019, and the level of public debt as a percentage of GDP in 2023, in relation to 60% of GDP, which is the level defined by the fiscal rule public debt.

Analysis of debt data by individual EU member state shows that the same countries deviate from the fiscal rule on debt both before and after the activation of the general escape clause. More precisely, in 2019, 12 of them (Austria, Belgium, Finland, France, Greece, Croatia, Italy, Cyprus, Hungary, Portugal, Slovenia, Spain) deviate from the debt level established by the fiscal rule, while in 2023, the same 12 countries and Germany has a public debt above 60% of GDP. Of the countries that deviate from the fiscal rule related to public debt, 66% are developed EU countries.

Debt and deficit data clearly show that the suspension of the rules has led to a deterioration of the EU's fiscal stability. The analysis showed that the activation of the clause, that is, the suspension of the fiscal rules, had a greater negative impact on the deficit level than on the debt level. The fact that the general escape clause will be deactivated to a certain extent has prevented a greater growth of debt and deficit. In other words, the temporary suspension of fiscal rules indirectly influenced the growth of debt and deficit to a certain extent to be lower than it would have been if fiscal rules had not been established, which indicates the importance of the existence and application of fiscal rules. Based on the results, it is concluded that the existence and observance of fiscal rules is extremely important for preserving fiscal stability because sustainable and stable public finances are an important factor in economic growth.

The activation of the general escape clause, given the extraordinary circumstances that required state intervention, was justified. But the results show that the suspension of fiscal rules is unacceptable in the long run. The growth of debt and deficit due to the suspension of the rules indicates that it is necessary to restore their application as soon as the circumstances that were the reason for the activation of the suspension stabilize.

During the period of permitted deviation from the fiscal rules, consumption in the EU member states increased sharply, which supported economic activity. However, the long-term maintenance of a high budget deficit requires finding ways to finance it, which limits economic growth. It can be assumed that, if fiscal rules did not exist in the future, countries would continue to face budget deficits and high public debt, which would have a negative impact on

the liquidity of the economy, the size of investment activity and the overall dynamics of economic trends.

In the coming period, EU countries will face challenges that require constant and significant public investments, related to the green and digital transition and the strengthening of European security capacities. Also, it is certain that the financing conditions in the following fiscal years will not be favorable. This implies the possibility of public debt growth. In addition, the multi-year accumulation of the budget deficit had negative effects on the increase in public debt. This debt trend, especially for EU countries that currently have a high level of debt, is unfavorable for growth in the long term. This shows how important the importance of fiscal discipline and limits on state borrowing is. This type of restriction can be established by applying fiscal rules.

After deactivating the "general escape" clause, fiscal consolidation of the EU countries will follow. Fiscal consolidation after the crises represents a great challenge both for the EU as a whole and for its individual member states. Considering the importance of fiscal stability, especially in countries with a lower level of development, it is concluded that the introduction of differentiated fiscal rules can have greater effects on fiscal stability than their suspension. This is concluded because the results showed that the suspension of fiscal rules has an impact on the sharp growth of deficit and debt.

The price of preserving the stability of public finances at the price of lower but more stable economic growth is a cheaper and safer option compared to the short-term high economic growth at the cost of implementing fiscal consolidation. This is especially important because the problem of a high level of deficit is most often done by additional debt.

CONCLUSION

The reason for activating the general escape clause is to enable member states to finance the costs of the Covid 19 crisis and implement measures to preserve economic activity and employment. The 2022 crisis caused by the war in Ukraine caused the extension of the general escape clause. And then the EU countries continued to implement an expansive fiscal policy in order to preserve the living standards of the population and economic activity. That expansive fiscal policy was reflected in the increase in the budget deficit and public debt of the EU member states, which undermined fiscal stability and slowed down the countries' economic growth.

Effective management of public debt and budget deficit is of great importance for economic growth and its sustainability in the future. Credible and binding fiscal rules, as well as appropriate instruments for their application, are crucial for stable EU public finances.

Fiscal rules guide economic policies in the direction of stability and long-term sustainability of public finances. Also, the national responsibility of each member state is extremely important. Responsible fiscal behavior with the application of fiscal rules contributes to: greater budget discipline and transparency, rationalization of revenues and expenditures, more efficient use of budget funds, lower budget deficit and public debt.

LITERATURE

1. Collier, D. (1993). *The comparative method*. In A. W. Finifter (Ed.), *Political science: The state of the discipline* (pp. 105–119). American Political Science Association.
2. Council of the European Union. (2023). *Review of economic governance: Council agreed on reform of fiscal rules*. Retrieved from https://www.consilium.europa.eu/en/press/press-releases/2023/12/21/economic-governance-review-council-agrees-on-reform-of-fiscal-rules/

3. Davoodi, H. R., Elger, P., Fotiou, A., Garcia-Macia, D., Han, X., Lagerborg, A., Lam, W. R., & Medas, P. (2022). *Fiscal rules and fiscal councils: Recent trends and performance during the pandemic*. *IMF Working Paper No. 22/11*. International Monetary Fund.
4. Delivorias, A. (2021). The Maastricht Treaty, the Treaty on Stability, Coordination and Governance, and the Stability and Growth Pact. European Parliamentary Research Service.
5. European Commission. (2024). Retrieved from https://commission.europa.eu/index_en
6. European Parliamentary. (2020). The 'general escape clause' within the Stability and Growth Pact: Fiscal flexibility for severe economic shocks. Briefing 27-03-2020. Retrieved from https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2020)649351
7. Eurostat. (2024). Retrieved from https://ec.europa.eu/eurostat
8. Eyraud, L., Debrun, X., Hodge, A., Lledó, V., & Pattillo, C. (2018). *Second-generation fiscal rules: Balancing simplicity, flexibility, and enforceability*. *IMF Staff Discussion Note*. Retrieved from https://www.imf.org/external/datamapper/fiscalrules/sdn1804-on-second-generation-fiscal-rules.pdf
9. Gojković, B. (2021). Fiscal consolidation and economic growth in countries of different levels of development of the European Union. Acta Economica.
10. Gojković, B. (2022). The impact of the COVID-19 crisis on the fiscal stability of the Republic of Srpska. Economics, 10(1). https://doi.org/10.2478/eoik-2022-0006
11. Bruegel. (2024). *Unblock fiscal rule reform: EU should reinstate its excessive deficit procedure*. Retrieved from https://www.bruegel.org/first-glance/unblock-fiscal-rule-reform-eu-should-reinstate-its-excessive-deficit-procedure
12. Kopits, G., & Symansky, S. (1998). *Fiscal policy rules*. *International Monetary Fund*. Retrieved from https://www.elibrary.imf.org/display/book/9781557757043/C1.xml
13. Krajišnik, M., Gligorić, D., & Gojković, B. (2019). Effects of fiscal consolidation in Western Balkan countries. Proceedings of Rijeka School of Economics. https://doi.org/10.18045/zbefri.2019.2.527
14. Martin, P., & Ragot, X. (2021). When and how to deactivate the SGP general escape clause?. IPOL, In-depth analysis requested by the ECON committee.
15. European Commission. (2023). Regulation of the European Parliament and the Council on the effective coordination of economic policies and multilateral budgetary surveillance and repealing Council Regulation (EC) No 1466/97. Retrieved from https://economy-finance.ec.europa.eu/document/download/6d456c53-5267-4519-a958-8f4723f92f6a_en?filename=COM_2023_240_1_EN.pdf
16. Žugaj, M., Dumičić, K., & Dušak, V. (2006). *Temelji znanstvenoistraživačkog rada: metodologija i metodika* (2. dopunjeno i izmijenjeno izdanje). Sveučilište u Zagrebu, Fakultet.

IMPACT OF THE ECONOMIC CRISIS CAUSED BY THE COVID-19 PANDEMIC ON THE CONSUMPTION STRUCTURE OF THE POPULATION

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Abstract

COVID-19 has led to severe and acute losses in many economies around the world due to the disease and government social distancing directives. The impact and duration of the economic crisis on individual households and individual behaviors, which is a result of the pandemic, is difficult to predict as many factors influence the duration of the crisis. It is also difficult to predict the future movements of affected industries as well as post-crisis behaviors and recovery after the crisis. The coronavirus pandemic initiated the largest deterioration of the global economy in one year in recent economic history.

This paper aims to assess the correlation between consumer experiences with COVID-19 and changes in their food purchasing decisions in the short term (i.e., during lockdowns and the state of emergency that lasted in 2020 and 2021) and in the long term (i.e. after the state of emergency of the pandemic is over). The main goal of the authors is to assess whether changes in consumer behavior during restrictive measures disappeared with their conclusion or whether it can be expected that some effects will last over time. The main contribution of the paper is the research on the correlation between the consequences and the expected duration of changes in consumption patterns. The analysis considers factors associated with the impact of restrictive measures – such as attitudes towards the disease and fear of exposure to the risk of virus infection – and assesses the correlation with current (i.e., during quarantine) and planned (i.e., after the state of emergency is over) purchasing decisions. This approach allows us to test the hypothesis that the COVID-19 crisis will have a long-term impact on consumer attitudes towards purchasing products and the way of purchasing products. The work contributes to the rapidly growing literature on the impact of COVID-19 on food consumption. As many authors claim, COVID-19 is an "unprecedented episode in the last 100 years of human history," different from other unpredictable catastrophic events in terms of public health consequences and economic decline.

The purpose of this research paper is to examine the impact of the COVID-19 pandemic on consumer behavior, and to answer the question: Will consumers permanently change their consumption habits due to isolation and social protection distancing, or will they return to their old habits after the global crisis?

The hypothesis that the author tries to prove in the paper is that the COVID-19 crisis has had a short-term impact on the stockpiling of food and a long-term increase in the propensity for online shopping among consumers.

Keywords: COVID-19, consumption, consumer behaviour.

1. LITERATURE REVIEW

The basic task of consumer demand theory is to answer the question of how a consumer forms demand for individual products and services that make up their consumption, i.e., to answer how a consumer allocates their limited income to the purchase of individual products given the

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market constellation of prices of individual products and services, and given the structure of preferences. The theory of consumer demand has a developmental path of about 150 years (Buragdžić, 2019).

Historically, the first economists who developed elements that are the basis for all economic models of consumer behavior, which have been developed to this day, are Menger, Jevons, and Walras. They elaborated the concept of utility, which was later adopted by all significant economists who theoretically and practically studied consumer demand, i.e., personal consumption of the population.

In reviewing the literature, it is necessary to mention Marshall's model of demand, which demonstrates the law that with the increase in the price of a product (with other conditions unchanged), the demand for the observed product decreases.

Pareto's model of consumer demand, or the Slutsky-Hicks-Allen model, or sometimes called the model of consumer behavior based on the concept of ordinal utility, assumes that the demand for individual products is formed simultaneously taking into account the interconnection of products in the consumption process.

One of the most stable relationships in the field of economic science was established by Ernst Engel in 1857. Based on surveys of family budgets of 199 Belgian working households collected by Ducpetiaux and 36 European households based on a survey conducted by Le Play, Engel noticed an exceptionally strong relationship between the share of food expenditures in total household expenditures and household income.

The poorer the family, the higher the share of food expenditures in total expenditures. The share of food expenditures in total expenditures, under other unchanged circumstances, is the best measure of the population's standard of living (Engel, 1987). Engel (1895) argued that not all needs are of the same rank. At the top are those needs whose satisfaction is crucial for physical sustainability: food, clothing, housing, heating and lighting, and health. Second-order needs include intellectual and spiritual care, legal protection and public safety, public provisions, and assistance.

According to the opinion of a certain number of authors, Engel, based on his analysis, determined the existence of three regularities in the consumption behavior of households depending on the level of income (Tričković, 1971):

1) The percentage share of expenditures for food changes inversely with changes in income;
2) The share of expenditures for clothing, footwear, and housing is approximately constant for all income levels;
3) The higher the income, the greater the share of expenditures for health, cultural needs, recreation, etc.

Prais and Houthakker (1955) published a work that is considered a classic in this field. They analyzed family budgets with the goal of discovering consumer behavior patterns under different living conditions in the same period. They started with the assumption that two households initially have different income levels, then at the beginning of the next year, only the income of the first household changes, and the new consumption pattern of the first household must correspond to the behavior pattern of the second household in the base year. By "different conditions," the authors meant different income levels, number of household members, age structure of household members, gender structure, etc. Examining which form of functional dependency corresponds to individual groups of products and services, they concluded that the impact of income on expenditures for products and services that meet the basic needs of the household is best described by a semi-logarithmic form, while for luxury goods, the best form is double-logarithmic.

In our region, Tričković (1971) was the first author to conduct an extensive analysis of family budgets based on surveys of income, basic expenditure groups, and the basic structure of consumed food products, which were conducted in Yugoslavia. The survey material used consisted of 1) results of a monthly survey on income, basic expenditure groups, and the basic structure of consumed food products, conducted on a sample of 850 worker-official households for the years 1956, 1957, 1960, and 1961; 2) results of a monthly survey of about 2500 agricultural households conducted in 1957, 1959, 1960, and 1962; 3) results of an annual survey of budgets of 13,117 households conducted in 1963 with data on annual expenditures for 16 groups of products and services, with distributions for three basic socio-economic groups of households: agricultural, mixed, and worker, and distribution within these groups, by household size. His research focused on examining:

1) the stability of the impact of income on the consumption of worker and agricultural households over time;
2) the impact of the regional factor on the consumption of agricultural households;
3) similarities and differences in terms of the impact of income on the consumption of broad socio-professional groups of the population, and households of different sizes.

The results of Tričković's research showed a high degree of uniformity in the relationships between consumption and income, which may indicate the stability of consumer preferences. Regarding the impact of household size on differences in consumption levels, several types of relationships were observed:

1) a significant specific effect of the economy of scale in consumption with an increase in household size is uniformly expressed in all categories of households in the case of expenditures for housing, heating, and lighting;
2) the approximately equal specific and total effect of the economy of scale in consumption, in the case of expenditures for hygiene and health in all categories of households and expenditures for clothing and footwear in worker households;
3) in cases where the specific effect is smaller than the total, and consumption is elastic relative to changes in income, then the combined effect of household size acts in the direction of increasing expenditures with an increase in household size; this phenomenon was observed by him in expenditures for furniture, education, recreation, and leisure for all three categories of households;
4) in the case of expenditures for tobacco, the effect of the economy of consumption with an increase in household size is extremely pronounced.

Amory et al. (2020) analyzed the San Francisco area, and the impacts of closures were quantified based on data taken through the effects of Unemployment Insurance (UI) and the federal CARES Act stimulus. Over a three-month period, the poverty rate temporarily increased from 17.1% to 25.9% in the Bay Area in the absence of social protection, with those on the lowest incomes suffering the most. The severity of the economic impact is spatially heterogeneous, with certain communities being affected more than average, and recovery could take more than a year. Overall, this model is a first step in quantifying the impact of COVID-19 at the household level on a regional scale. They believed that their research could be expanded to explore the impact of indirect macroeconomic effects, the role of uncertainty in household decision-making, and the potential effect of simultaneous exogenous shocks (e.g., natural disasters).

The unemployment rate in most countries, despite a significant drop in economic activity, experienced a small or moderate increase in 2020, due to the cyclical lag of changes in the labor market, but also due to strong government support for businesses through fiscal and monetary stimuli (Arsić, 2021).

Personal consumption (or simply consumption) represents the total value of spending (i.e., expenditures) on consumer goods and services undertaken by households of a national economy, and personal consumption includes all household expenditures on food and non-alcoholic beverages, alcoholic beverages and tobacco, clothing and footwear, housing, and energy consumption, and all other goods and services that serve to meet the living needs of the members of that household.

Personal consumption consists of three components (Blanchard, 2005):

- Durable consumer goods;
- Non-durable consumer goods;
- Services.

Durable consumer goods are goods that can be stored and whose average lifespan is at least three years (e.g., cars, air conditioners, refrigerators, etc.). Non-durable goods include goods that can be stored, but unlike durable goods, their average lifespan is less than three years. Services are goods that cannot be stored; consumers consume them simultaneously with the purchase and at the place of purchase (Blanchard, 2005).

Although consumption and consumer behavior are usual and not subject to changes, they also depend on and change depending on certain events and characteristics. Consumer habits are important, and there are four main areas that control or hinder consumer habits. The first is the change in social life due to such life events as marriage, having children, and moving from one city to another. Social life includes the workplace, community, neighbors, and friends.

The second important factor is technology. As technologies penetrate, new habits emerge and old habits are disrupted. The penetration of modern technology in recent years, such as smartphones, the internet, and e-commerce, has dramatically influenced the way we purchase products and services.

A third crucial factor affecting consumer habits are the rules and regulations that specifically relate to public and communal spaces; the consumption of unhealthy products such as smoking, alcohol, or firearms is regulated according to location. Of course, public policy can also encourage the consumption of certain products and services such as solar energy, electric cars, and mandatory car insurance.

The fourth and least predictable factor are ad hoc natural disasters such as earthquakes, hurricanes, and global pandemics, including the COVID-19 pandemic we are experiencing today. Similarly, there are regional conflicts, civil wars, and genuine global wars such as World War II, the Cold War, and the Great Depression of the late twenties and the Great Recession of 2008–2009. All these events have significantly impacted consumption as well as production and supply chains.

Worldwide, scientists are beginning to explore how the COVID-19 pandemic has affected consumer behavior in food consumption. Specifically, some authors have focused their studies on consumers' dietary habits. For example, Romeo-Arroyo and others (2020), through hierarchical cluster analysis (HCA), explored the behavior of the Spanish population regarding food during the COVID-19 isolation period. Their findings indicate the existence of three consumer segments (reduced cooking engagement, health concerns, and health neglect) with different dietary habits (i.e., the health-neglected group was characterized by unhealthy attitudes, possibly related to a lower emotional mood of respondents belonging to this cluster). In Poland, Sidor & Rzymowski (2020) found that a significant percentage of individuals could experience a modification of dietary habits during the pandemic-related isolation, manifested by increased eating and snacking. Di Renzo and others (2020) in Italy investigated the relationship between dietary habits, mental, and emotional mood during the COVID-19

isolation period, finding that a high percentage of respondents experienced depressive moods, anxiety, hypochondria, and insomnia. Nearly half of those interviewed consumed comfort food and were prone to increasing food intake to feel better. Similar results were found by Ammar and others (2020) and Skarmocino and Vizioli (2020). Focusing on a sample of adolescents from various countries (Spain, Italy, Brazil, Colombia, and Chile) aged between 10 and 19 years, Ruiz-Roso et al. (2020) discovered that the COVID-19 pandemic modified their dietary trends, increasing their consumption of sweet food likely due to boredom and stress caused by the lockdown. On the other hand, they also found that families have more time for cooking and improving dietary habits, although this has not increased the overall quality of the adolescents' diet.

1.1. Consumer Perspective During the COVID-19 Crisis

As previously mentioned, the COVID-19 crisis has impacted consumer behavior. Some consumers have turned to online shopping to avoid exposure to the virus in stores, leading to a significant increase in sales through online channels. Other consumers have focused on purchasing basic necessities and products that help maintain hygiene and health, while others have reduced their consumption due to fear of job loss or reduced income.

The pandemic has prompted consumers to change their consumption habits, from buying locally produced food and goods to purchasing brands that advocate for sustainability and social responsibility. Additionally, it is evident that customers have become much more sensitive to cleanliness and safety in stores, restaurants, and other public places, leading to significant changes in the way many companies operate.

Consumer behavior during the COVID-19 crisis can be summarized through the following characteristics:

- Consumers have become sensitive in the new situation and seek strong and transparent information about how companies are addressing the health and safety of their employees and customers;
- Consumers have switched to online shopping to avoid entering stores and minimize their contact with other people;
- Consumers are looking for products that help protect their health and immunity, such as masks, disinfectants, and vitamins;
- Consumers have become very conscious of spending and are inclined to buy only what they need, no more than that;
- Consumers are extremely concerned about supply disruptions and product shortages and are willing to pay more for what they need;
- During the COVID-19 crisis, consumers have relied on social media more than ever before to find information about products and services;
- Consumers are increasingly turning to local and independent stores to help support their community during the pandemic.

1.2. Manufacturer's Perspective During the COVID-19 Crisis

The COVID-19 pandemic has significantly impacted the behavior of manufacturers worldwide. Many manufacturers faced disruptions in supply chains, labor shortages, low demand, and other challenges brought about by the pandemic.

To remain competitive and profitable, many manufacturers had to reevaluate their business models and strategies. Some companies turned to producing products that were in high demand during the pandemic, such as medical equipment, disinfectants, and other cleaning agents.

Many manufacturers also accelerated the process of digitalization and introduced new technologies to improve production efficiency and reduce costs.

Like consumers, the pandemic also prompted manufacturers to consider issues of sustainability and social responsibility. Many manufacturers committed to producing sustainable products or donated resources to aid in the pandemic.

Additionally, the pandemic highlighted the importance of flexibility and adaptability in business. Many manufacturers quickly adapted to new conditions and market demands, including changes in demand and methods of product delivery.

Overall, the COVID-19 pandemic presented many challenges for manufacturers, but it also provided opportunities for change and innovation in business. Manufacturers who were flexible, quick, and able to adapt to new conditions managed to stay competitive and profitable during and after the pandemic. If we try to summarize the basic characteristics of successful manufacturers during the coronavirus crisis, they are:

- Flexibility
- Social responsibility
- Digitalization
- Sustainability
- Adaptability to new conditions

1.3. Impact of Competition on Consumer Behavior During the Corona Crisis

Competition can have a significant impact on consumer behavior during the COVID-19 pandemic. As many manufacturers and retailers had to adjust their operations and product offerings during the pandemic, competition among them increased.

Consumers had a greater choice of products and sellers, leading to increased sensitivity to prices and product quality. Consumers also increasingly turned to online shopping and other digital channels, which allowed for better comparison of products and prices among different sellers.

Large e-commerce platforms like Amazon and Alibaba experienced significant sales growth, and many smaller retailers also turned to online sales to adapt to the new business conditions. To remain competitive in this environment, many retailers focused on providing quality customer service, offering competitive prices, fast delivery, and a simple online purchasing process. They also focused on offering products that were popular during the pandemic, such as medical supplies and home entertainment products.

In summary, competition had a significant impact on consumer behavior during the COVID-19 pandemic, encouraging retailers to provide better customer service and adapt to new business conditions to stay competitive and profitable.

In developing countries, competition among traders can manifest in different ways, depending on the specifics of those markets. An example of a characteristic situation in developing countries during the COVID-19 pandemic is the situation in Kenya. Kenya faced challenges in procuring fresh produce during the pandemic due to travel restrictions and reduced transportation volume. In such conditions, small traders had difficulty obtaining fresh products for their customers. However, at that time, local farmers organized themselves and began delivering their fresh produce directly to small shops, bypassing traditional wholesale chains. This created a new distribution channel that allowed local farmers to increase their income and ensured fresh products for local stores. This example illustrates how competition among traders can change during a pandemic, even in developing countries, and how new approaches to

distribution can bring new business opportunities and improve conditions for small traders and local producers.

1.4. Impact of Public Response on Consumer Behavior During the COVID-19 Crisis

Governments and the public had a significant impact on consumer behavior during the COVID-19 pandemic. The way governments managed the crisis, as well as media reporting on the crisis, played a crucial role in shaping consumers' perceptions and psychological attitudes.

Governments implemented various measures to limit the spread of the virus, including closing stores and restricting the movement of citizens. These measures significantly influenced how consumers purchase products and services, affecting the behavior of companies and their ability to remain competitive and profitable.

The media also played an important role in shaping consumers' perceptions of the pandemic. Information about the number of infected and deceased individuals, the measures taken by governments, and how the disease is transmitted all influenced consumers' psychological attitudes and their perception of risk.

During the pandemic, the government in Serbia implemented very strict measures to limit the spread of the virus. This included restricting the movement of citizens, closing stores, and limiting working hours. These restrictions affected consumer habits and buying behavior in Serbia.

Additionally, media reporting in Serbia focused on the number of infected and deceased individuals, which influenced the perception of risk and consumers' psychological attitudes. This impacted consumer behavior, including the way they purchased food and other necessities. For example, in Serbia, there was an increase in bulk food purchases, which affected food prices and the supply chain.

2. RESEARCH METHODOLOGY

The study utilized a comparative analysis of the sales defense of a group of products before, during, and after the onset of the COVID-19 pandemic, as well as a comparative analysis of the share of income generated from online sales in the total revenues of the company. The research question, which was the basis of the study, is how much the COVID-19 pandemic has influenced the structure and manner of population consumption.

The aim of the research was to compare the sales of certain groceries before, during, and after the onset of COVID-19 and to analyze their total sales, as well as to see how the COVID-19 pandemic has affected the increase in online sales. A group of products was selected which was considered significant for consumers and which was known to have been affected by the pandemic, while in the case of the analysis of online shopping, the share of total revenues generated through online platforms in the total revenues of the company in three observed periods was examined.

In the study, we defined three time periods – the period before the pandemic, the period during the pandemic, and the period after the pandemic, which allowed us to track data on the observed products and revenues achieved through online platforms. Data were then collected from a retail chain in the city of Banja Luka about products before, during, and after the onset of the pandemic. The data were collected from internal sources. For each period, the number of goods sold was quantitatively researched, and thereafter an analysis of the goods sold before and after COVID-19 was performed. While the data for the observed products are expressed in absolute sizes, data about revenues are compared.

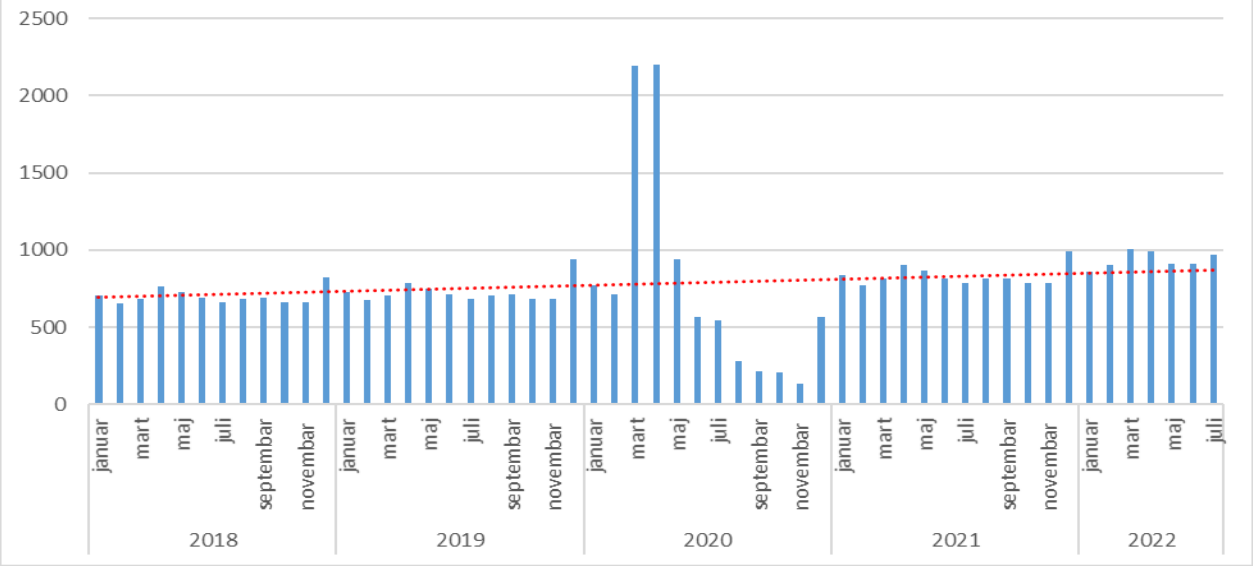
By comparing the periods before and after COVID-19, it was possible to assess how the pandemic affected the sales of selected products.

3. RESEARCH RESULTS

The authors used data obtained from a retail chain in the city of Banja Luka that deals with the sale of general consumer goods during the research. The study included data from the years before the coronavirus, 2018 and 2019, data during state restrictions in 2020 and 2021, and data from 2022.

In his research, the author focused on observing the sales of general consumer goods (flour and oil) and the percentage of online sales in the total sales of the retail chain.

Chart 1. Sales of edible oil in hectoliters from 2018 to 2022.



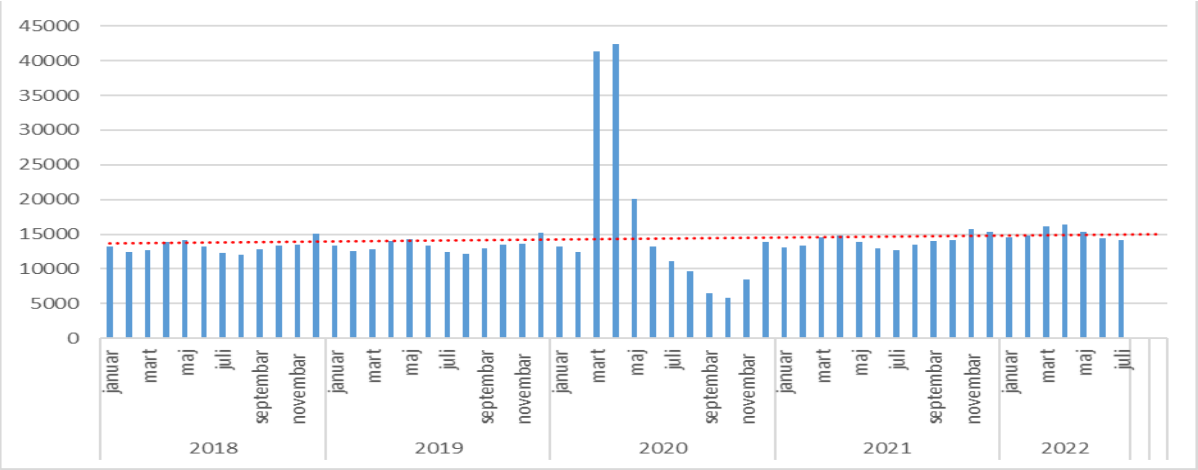
Source: Research and calculations by the authors

As we can see from the previous chart, the consequences of the coronavirus and the measures taken by the government of the Republic of Srpska led to a significant increase in the months when COVID-19 first appeared in Banja Luka (March 2020). This increase can be attributed to a stampede effect that occurred as a result of the introduction of restrictive measures both in the Republic of Srpska and across Europe during that period.

After a large spike at the onset of COVID-19, and a sudden increase in demand in March and April, and a rise, though not as significant, in May, the demand for edible oil tended to decline by the end of 2020, which we explain as a consequence of stockpiling.

After the stabilization of the situation at the global level, demand also stabilized, with a noticeable slight long-term increase in demand.

Chart 2. Sales of flour in tons from 2018 to 2022.

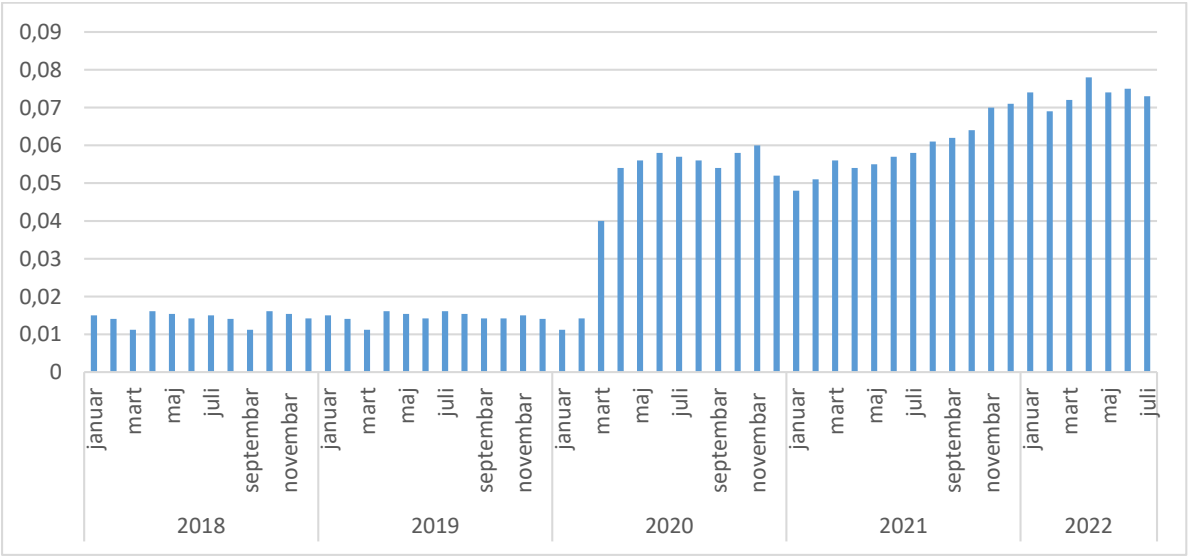


Source: Research and calculations by the authors

When we analyze the data on flour sales, we come to the same conclusions as when analyzing the data on edible oil sales. The demand was stable in the months, but we saw a significant increase in the months (March, April, and May) when the crisis broke out, after which demand significantly decreased, influenced by stockpiling.

In the long term, the demand for flour, as well as for oil, has increased.

Chart 3. Percentage of online sales in total sales (expressed in revenue).



Source: Research and calculations by the authors

As we can see from the previous chart, when movement restrictions and other restrictive measures were introduced, there was a significant increase in the percentage of online sales in total sales.

The participation of online sales was observed in a specific sample of products, and in the same sample, it maintained its trend even after the restrictive measures were lifted. The author researched data up to mid-2022, and in the given basket of products, online sales took an increasingly larger share.

Based on data about sales volumes and average prices of general consumer goods (data taken from the Statistical Office of the Republic of Srpska), the author obtained the total revenue achieved based on general consumer goods in the observed period by months. Based on data about the age structure of online consumers, we obtained data on total online revenue by month for the following groups:

consumers up to 35 years of age – Group I

consumers from 35 to 50 years of age – Group II

consumers over 50 years of age – Group III

Once we established how much online revenue was attributed to each group for each observed month, regression equations were calculated for each of the groups, and a trend line was created for each of the observed groups because, in this case, the independent variable is time.

Group I

SUMMARY OUTPUT

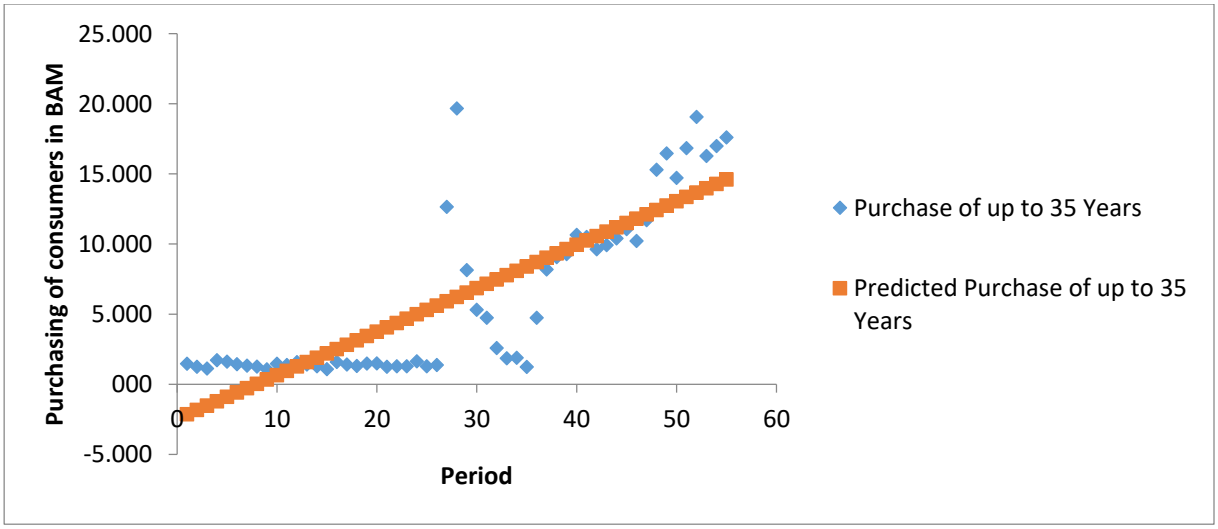
Regression Statistics	
Multiple R	0,821725701
R Square	0,675233127
Adjusted R Square	0,66910545
Standard Error	3477,121165
Observations	55

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1332286218	1,33E+09	110,194	1,49953E-14
Residual	53	640789694,4	12090372		
Total	54	1973075913			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	6229,899264	468,8549222	13,28748	1,67E-18	5289,495382	7170,303	5289,495	7170,303
Period	310,0395891	29,53508393	10,49733	1,5E-14	250,7997128	369,2795	250,7997	369,2795

Chart 4. The trend line of online sales revenue for consumers up to 35 years of age.



The regression model for consumers up to 35 years old, which predicts future revenue from the sale of general consumer goods, is y = 6229.89 + 310.03x. For Group I, or consumers up to 35 years old, 67.52% of the variability is explained by the passage of time, i.e., our independent variable

Group II

SUMMARY OUTPUT

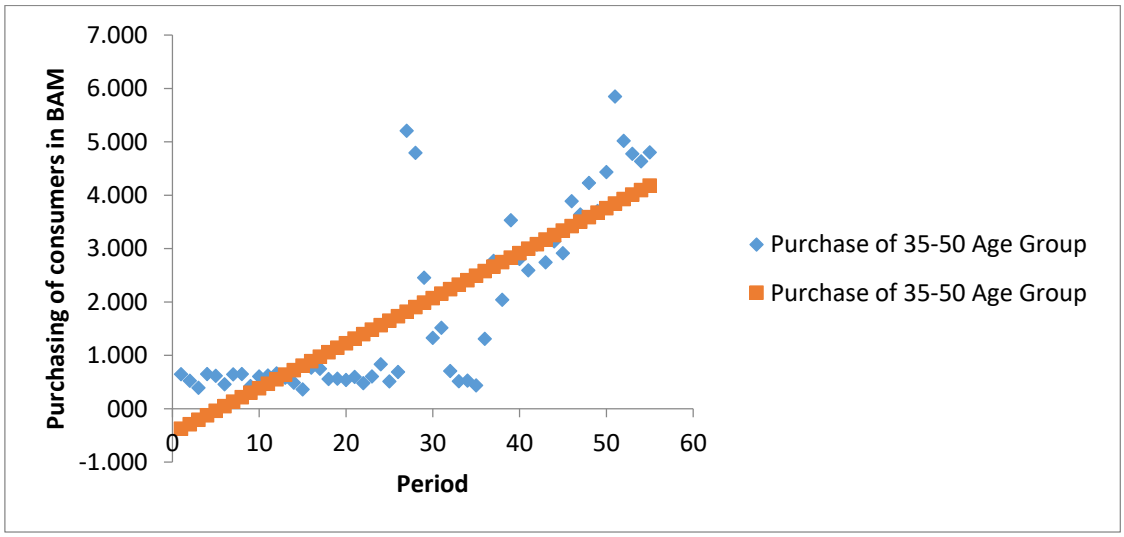
Regression Statistics	
Multiple R	0,800201
R Square	0,640322
Adjusted R Square	0,633536
Standard Error	1022,334
Observations	55

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	98615868	98615868	94,35416	2,3E-13
Residual	53	55393861	1045167		
Total	54	1,54E+08			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	1901,425	137,8515	13,79328	3,56E-19	1624,93	2177,92	1624,93	2177,92
Period	84,3513	8,683829	9,713607	2,3E-13	66,93375	101,7689	66,93375	101,7689

Chart 5. The trend line of online sales revenue for consumers aged 35 to 50 years



The regression model for consumers aged 35 to 50 years is y = 1901.42 + 84.35x. For Group II, or consumers aged 35 to 50 years, 64.03% of the variability is explained by the passage of time.

Group III

SUMMARY OUTPUT

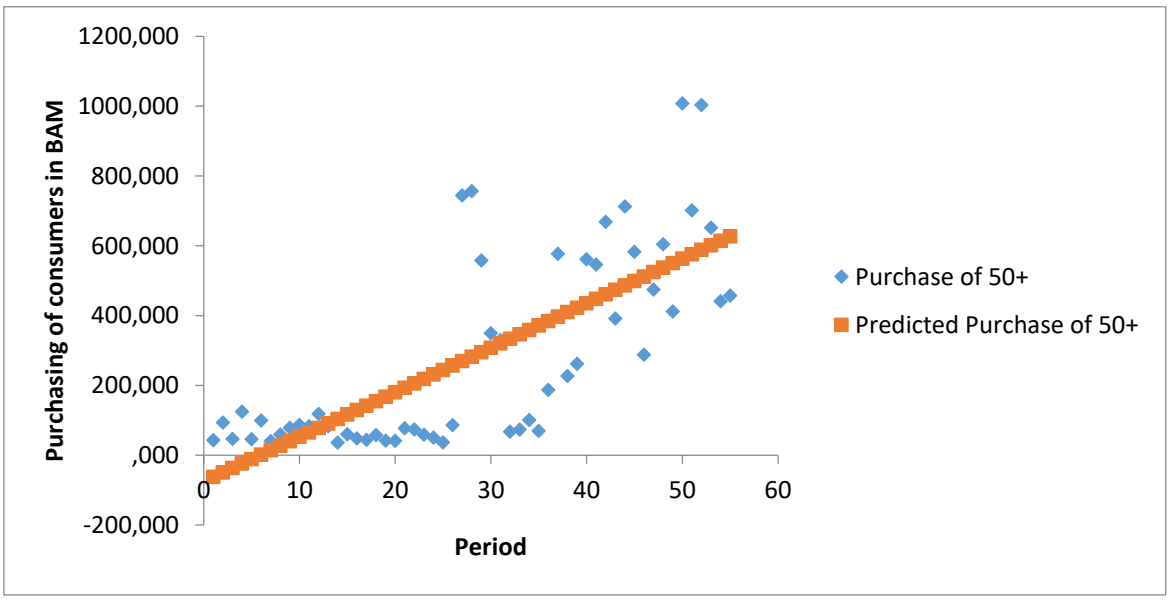
Regression Statistics	
Multiple R	0,734938
R Square	0,540134
Adjusted R Square	0,531458
Standard Error	190,3747
Observations	55

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2256137	2256137	62,25107	1,68E-10
Residual	53	1920855	36242,54		
Total	54	4176992			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	282,1383	25,67013	10,99092	2,79E-15	230,6506	333,6261	230,6506	333,6261
Period	12,75854	1,617066	7,889935	1,68E-10	9,515121	16,00197	9,515121	16,00197

Chart 6. The trend line of online purchase revenue for consumers over 50 years of age



The regression model for consumers over 50 years of age is y = 282.13 + 12.75x. For Group III or consumers over 50 years of age, 54.01% of the variability is explained by the passage of time.

In further analysis, the author analyzed the trend of online purchase revenue before and after the coronavirus.

The Period Before COVID-19

SUMMARY OUTPUT

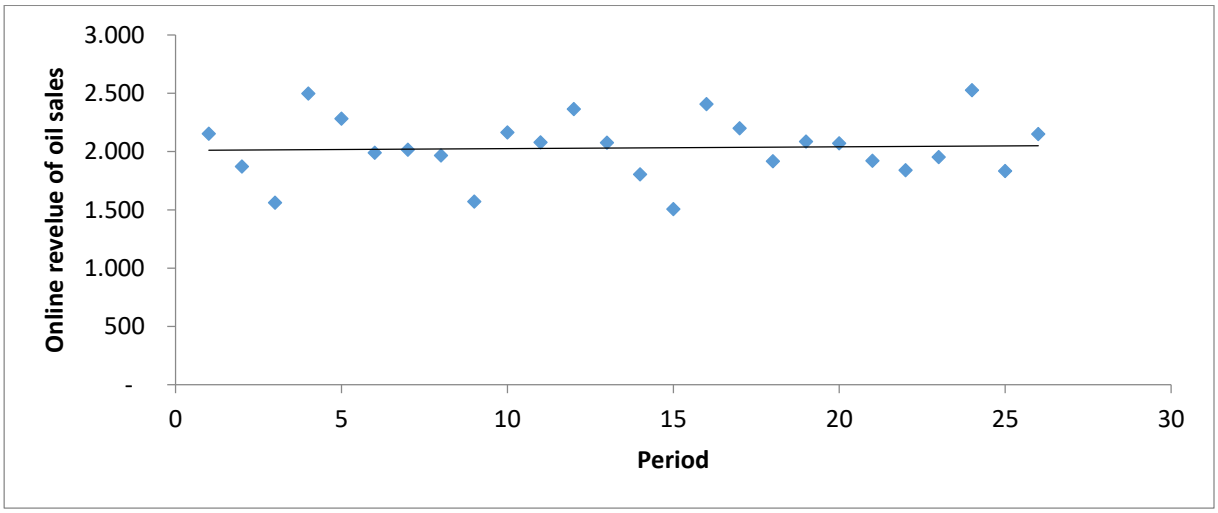
Regression Statistics	
Multiple R	0,044922846
R Square	0,002018062
Adjusted R Square	-0,039564519
Standard Error	270,4513972
Observations	26

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	3549,780921	3549,780921	0,048531	0,827501894
Residual	24	1755454,999	73143,95827		
Total	25	1759004,779			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	2030,838761	53,03988277	38,28889988	4,95E-23	1921,369823	2140,307699	1921,37	2140,308
Period	1,55794757	7,071984369	0,220298503	0,827502	-13,0379108	16,15380594	-13,0379	16,15381

Chart 7. The trend line of online sales revenue for all groups before the onset of the coronavirus pandemic.



s can be seen in the presented data and charts, in the period before the coronavirus, the observed phenomenon (online sales revenue) does not exhibit a linear trend. The total variability of the dependent variable is explained by only 0.2% by the independent variable. We can conclude that the independent variable does not explain the movement of the dependent variable in the observed period.

Period during and after the coronavirus

SUMMARY OUTPUT

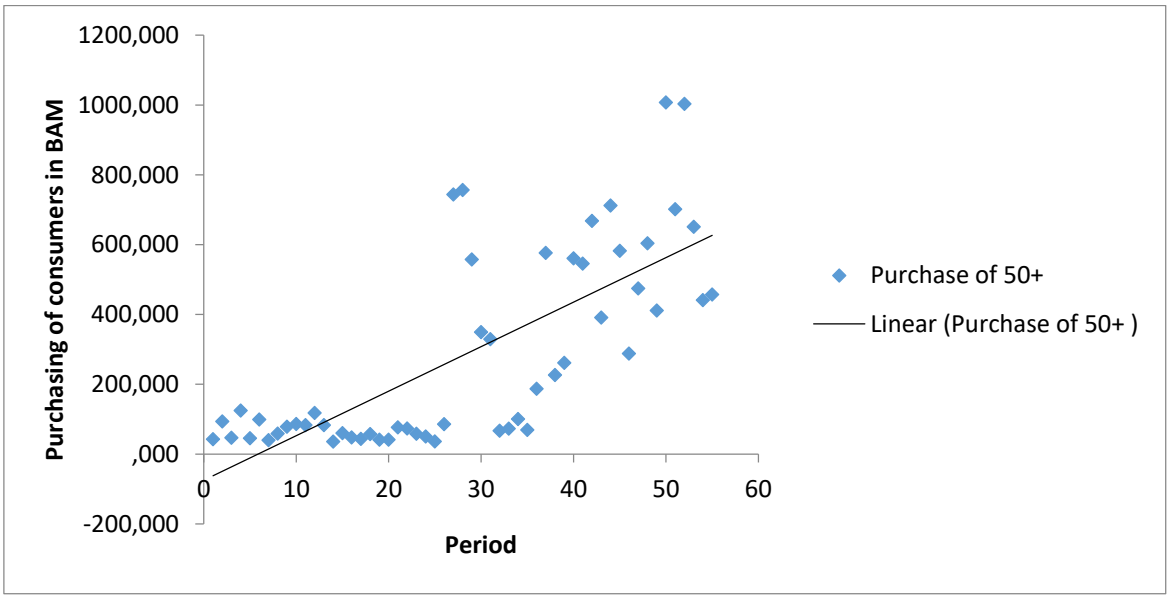
Regression Statistics	
Multiple R	0,638991526
R Square	0,40831017
Adjusted R Square	0,386395732
Standard Error	5539,024284
Observations	29

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	571644981,5	571644981,5	18,63201636	0,000191
Residual	27	828381330,5	30680790,02		
Total	28	1400026312			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	14135,81431	1028,570988	13,7431587	1,04913E-13	12025,36	16246,26765	12025,36097	16246,27
Period	530,6585654	122,9377471	4,316481942	0,000190719	278,4111	782,9059865	278,4111443	782,906

Chart 8. The trend line of online sales revenue for all groups during the coronavirus pandemic and after the pandemic.



Unlike the period before the outbreak of the pandemic, after the outbreak of the coronavirus pandemic, the coefficient of the independent variable is 530.65, which tells us that each subsequent period increases the total revenue from online sales by 530.65, and in the period after the pandemic, we get a gradually increasing trend line. The independent variable is explained by 40.83% of the dependent variable.

4. DISCUSSION AND CONCLUSION

The COVID-19 pandemic caused a massive economic shock worldwide due to business interruptions and social distancing measures. To assess the socio-economic impact of COVID-19 on individuals, many authors have tried to develop a microeconomic model to estimate the direct impact of distancing on household incomes, savings, consumption, and poverty. The model assumes two periods: a crisis period during which some individuals experience a drop in income and may use their savings to maintain consumption and a recovery period when households save to replenish their depleted savings to the pre-crisis level.

Other studies have investigated whether COVID-19 restrictions have influenced consumer behavior in food purchasing and demand. For example, Long and Hui Khoi (2020) and Khan (2020) adopted the Theory of Planned Behavior (TPB) in combination with the consumer risk perception theory to understand the factors influencing food hoarding among consumers in Vietnam and Bangladesh during the COVID-19 pandemic. The results of these studies indicate that the perception of risk from the COVID-19 pandemic positively influenced consumer attitudes towards hoarding food. Similarly, Li and others (2020) provided early empirical insights into changes in consumer food purchasing in China. Their findings highlighted significant levels of hoarding among consumers, with local small independent retailers being the most resistant in terms of retaining customers. In Canada, Cranfield (2020) provided an early assessment of factors related to COVID-19 that could affect consumer demand for food. These factors include preference structures in the context of the pandemic, income and time constraints, and price effects. Similarly, focusing on New Zealand as a case study, Martin-Neuninger and Rubi (2020) assessed the likely consequences of lockdowns on consumer behavior in purchasing groceries, reporting that consumers will likely increase their total food consumption in new conditions due to impulse buying and time pressure, reducing consumption in other areas. In short, the authors suggested that, given the limitation of availability of some food products, consumers may buy unknown brands, changing their habits. Finally, Laato et al. (2020) tested how online information sources affect the change in financial consumer behavior during the COVID-19 pandemic by adapting the stimulus-organism-response (S-O-R) framework by adding unusual purchase variables and voluntary self-isolation. The results showed a strong link between the intention to self-isolate and the intention to make unusual purchases. In short, the results revealed that exposure to online information sources increased health anxiety, and thus the intention for unusual purchases and voluntary self-isolation.

Sheth (2021) detected eight things that immediately had an impact on consumer behavior upon the outbreak.

Making reserves. Consumers daily make reserves of basic consumer goods resulting in temporary reserves and shortages. This includes toilet paper, bread, water, meat, disinfectants, and cleaning products.

Improvization. Consumers learn to improvise when there are limitations. In this process, existing habits are discarded, and new ways to consume are invented.

Stopped demand. In times of crisis and uncertainty, the general tendency is to postpone purchasing and consumption of discretionary products or services.

Acceptance of digital technology. From pure necessity, consumers adopted several new technologies.

Home delivery. Online shopping and home delivery are the obligations of every larger retailer.

Blurring the boundaries between work and life. Consumers are confined to their homes with limited space and too many discretionary activities such as work, learning, shopping, and socializing.

Reconnecting with friends and family. One of the biggest impacts of the coronavirus is that it has allowed contact with distant friends and family, partly to reassure them that they are okay, but partially to share stories and experiences.

Discovering talents. With more flexible time at home, consumers have experimented with recipes, exercised their talents, and performed creative and new ways of sharing music, learning, and shopping on the web.

Ruso et al. (2022) suggest that psychological pressure and consumer characteristics must be taken into account in designing marketing strategies that deal with changes in demand following the COVID-19 crisis. Companies targeting younger consumers may expect short-term behavior changes. Instead, it is more likely that older consumers will adopt changes over a longer period.

There is a multitude of ongoing research studies on estimating the economic impact of COVID-19, both in developing and developed countries. Due to the widespread closure of businesses, especially in the population with lower incomes, it is expected that national economies will shrink, leading to a dramatic increase in unemployment and poverty rates. The World Bank report estimates that 11 million people could fall into poverty across Southeast Asia and the Pacific (World Bank 2020). Analyzing the impact of the pandemic on poor communities across four continents, (Buheji and others 2020) estimates that 49 million individuals will be pushed into extreme poverty in 2020 (living with less than 1.90 USD per day).

Every company depends on the effectiveness of its marketing efforts to improve its operations, so marketing efforts can be adapted to situations where there is a crisis or disaster. This is because marketing is recognized as an important part of crisis communication, especially during the long-term recovery phase of a crisis or disaster.

In crises, it is crucial to establish a strong marketing response to prevent a tsunami of public dissatisfaction during crises. If this is not done, the relationship between service or product providers and consumers, which is always important in interactions with services, can be broken.

Very significantly, any organization that seems unable to quickly convince its numerous internal and external stakeholders in a crisis can suffer serious damage to its reputation, its key relationships, and its current business.

Companies therefore need to prepare to proactively engage with their stakeholders to ensure that they quickly and appropriately respond and aim to do "the right thing" when faced with problems. Marketing, in this way, enables a company to recover after a crisis. As Rubel and others (2011) point out, all brands are susceptible to crises.

The results of the study conducted by Di Costa and others (2021) highlighted that the COVID-19 pandemic had a significant impact on consumer behavior. In the observed sample, the impact of COVID-19 resulted in an increase in consumption levels followed by an increase in the psychological need for shopping and non-essential products. Furthermore, the results showed that several psychological factors predict these changes in consumer behavior.

The results the authors obtained in their research show that some consumer habits were of a short-term nature, especially concerning making reserves of basic life necessities (flour and oil). Habits that individual consumers acquire during restrictive measures will have a much larger impact on their consumer behavior in the long run. Also, the author obtained results in

their research that the younger population, up to 35 years of age, quickly adapted to new shopping methods and continuously turned to online sales.

For marketing professionals, it is crucial to understand what is happening not only in their industry but also in the broader environment in which they operate. One of the best ways to identify possible threats or vulnerabilities is to observe what is happening around them and to know how to deal with the challenges that arise. If retailers only look at their isolated world and not at the cultural context in which they fit, their communication would appear insensitive. Crisis communication and marketing are important in providing information to key audiences.

Some habits acquired during the coronavirus crisis become lost while others become a permanent part of consumers' lives. As mentioned above, consumers coming to stores is not the same as stores going to consumers.

Consumers will return to their old habits unless the technology they learn to use, such as Zoom video services and online ordering, brings significant changes to their lives. Experience in the virtual world, as well as after-purchase service (customer support), will be strategic investments.

The COVID-19 pandemic dramatically changed consumer behavior and created many uncertainties about how consumption will recover in the future. Many consumers have become more cautious in their spending habits and this will likely continue even after the pandemic. As such, companies will need to adapt their operations to meet these changes and ensure they meet the changed needs and expectations of consumers.

Shutdown and social distancing to fight against the virus Covid-19 have caused significant disruptions in consumer behavior. All consumption is limited by time and location. With time flexibility but location rigidity, consumers have learned to improvise in creative and innovative ways. The boundaries between work and life are now blurred, for example, people who work from home, study from home, and relax at home. When a consumer cannot go to the store, the store must come to the consumer.

REFERENCES

1. Ammar, A. (2020). Effects of COVID-19 home confinement on eating behaviour and physical activity: Results of the ECLB COVID-19 international online survey. doi: 10.1007/s41885-020-00070-3
2. Amory, M., Markhvida, M., Hallegatte, S., & Walsh, B. (2020). Socio-economic impacts of COVID-19 on household consumption and poverty. *Economics of Disasters and Climate Change, 4*. doi: 10.1007/s41885-020-00070-3
3. Arsić, M. (2021). Globalne ekonomske posledice pandemije COVID-19. *Jahorinski poslovni forum 2021*.
4. Bugarčić, M. (2018). Istraživanje uticaja dohotka na tražnju za potrošnim dobrima (Doktorska disertacija). Univerzitet Union - Fakultet za bankarstvo, osiguranje i finansije.
5. Cranfield, J. A. L. (2020). Framing consumer food demand responses in a viral pandemic. *Canadian Agricultural Economics Society, 68*(2), 151–156. doi: 10.1111/cjag.12234
6. Di Costa, A., et al. (2021). Psychological factors and consumer behavior during the COVID-19 pandemic. *PLOS ONE*. https://doi.org/10.1371/journal.pone.0256095
7. Di Renzo, L., et al. (2020). Psychological aspects and eating habits during COVID-19 home confinement: Results of EHLC-COVID-19 Italian online survey. DOI: 10.3390/nu12072152
8. Engel, E. (1857). Die Produktions und Consumtionsverhältnisse des Königreichs Sachsen. *Zeitschrift des Statistischen Büreaus des Königlich Sächischen Ministeriums des Innern, 8 & 9*.
9. Engel, E. (1895). Die Lebenskosten belgischer Arbeiterfamilien früher und jetzt. *Appendix I*.

10. Khan, M. (2020). Intention to reserve food during COVID-19 pandemic among Bangladeshi internet users: Based on Theory of Planned Behaviour. https://doi.org/10.30935/ejmets/8299
11. Laato, S., Najmul Islam, A. K. M., Farooq, A., & Dhir, A. (2020). Unusual purchasing behavior during the early stages of the COVID-19 pandemic: The stimulus-organism-response approach. *Journal of Retailing and Consumer Services, 57*, 10224. http://dx.doi.org/10.1016/j.jretconser.2020.102224
12. Li, J., Hallsworth, A. G., & Coca-Stefaniak, J. A. (2020). The changing grocery shopping behavior of Chinese consumers at the outset of the COVID-19 outbreak. *Tijdschrift voor Economische en Sociale Geografie, 111*(3), 574–583. doi: 10.1111/tesg.12420
13. Long, N. N., & Huy Khoi, B. H. (2020). An empirical study about the intention to hoard food during COVID-19 pandemic. *Eurasia Journal of Mathematics, Science and Technology Education, 16*(7). https://doi.org/10.29333/ejmste/8207
14. Martin-Neuninger, R., & Ruby, M. B. (2020). What does food retail research tell us about the implications of Coronavirus (COVID-19) for grocery purchasing habits? *Frontiers in Psychology, 11*, 1448. https://doi.org/10.3389/fpsyg.2020.01448
15. Prais, S. J., & Houthakker, H. S. (1955). The analysis of family budgets (Vol. 4). *CUP Archive*.
16. Romeo-Arroyo, E., Mora, M., & Vázquez-Araújo, L. (2020). Consumer behavior in confinement times: Food choice and cooking attitudes in Spain. *International Journal of Gastronomy and Food Science*. DOI: 10.1016/j.ijgfs.2020.100226
17. Rubel, O., Naik, P. A., & Srinivasan, S. (2011). Optimal advertising when envisioning a product-harm crisis. *Marketing Science*. http://dx.doi.org/10.2139/ssrn.1888451
18. Ruiz-Roso, M. B. (2020). COVID-19 confinement and changes in adolescents' dietary trends in Italy, Spain, Chile, Colombia, and Brazil.
19. Scarmozzino, F., & Visioli, F. (2020). COVID-19 and the subsequent lockdown modified dietary habits of almost half the population in an Italian sample. *Foods, 9*, 675.
20. Sheth, J. (2020). Impact of COVID-19 on consumer behavior: Will the old habits return or die? *Journal of Business Research*.
21. Sidor, A., & Rzymski, P. (2020). Dietary choices and habits during COVID-19 lockdown: Experience from Poland. *Nutrients, 9*, 1657. DOI: 10.3390/nu12061657
22. Tričković, V. (1971). Proučavanje potrošačke tražnje sa posebnim osvrtom na analizu porodičnih budžeta. *Institut društvenih nauka - Centar za ekonomska istraživanja*.
23. World Bank. (2020). La enfermedad por coronavirus pone de relieve la necesidad de fortalecer los sistemas de salud. Retrieved from https://blogs.worldbank.org/es/voces/el-coronavirus-resalta-la-necesidad-de-fortalecer-los-sistemas-de-salud

DEVELOPING SUSTAINABLE SUPPLIER EVALUATION FRAMEWORK – THE 10 CS OF SUPPLIER EVALUATION

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Abstract

The purpose of this paper is to provide theoretically uniform, methodologically adherent and practically applicable framework for supplier evaluation, based on the principles of TBL sustainability. In order to identify a theoretically uniform sustainable supplier evaluation model, a comprehensive literature review was conducted. The outcome was the development of the new sustainable supplier evaluation approach, coupled with AHP methodology. The proposed model was empirically tested in paper wholesaling industry setting. The final outcome of the model's testing was the provision of suppliers' assessments and rankings. The paper also discusses implications regarding theoretical uniformity, methodological adherence and practical applicability of the developed model, and provides ideas for future research avenues.

Key words: supplier evaluation, sustainability, sustainable supplier evaluation, AHP methodology

INTRODUCTION

One of the key strategic challenges in supply chain management is choosing the right supplier. Suppliers have a vital role in contributing to company's capability to deliver value to its customers. To understand and manage a supply chain, data on suppliers` performances has to be adequately and comprehensively monitored, assessed, interpreted, and acted upon. Part of the supply chain management process, tasked with assessing suppliers' performances, is supplier evaluation (Gimenez & Sierra, 2013).

We are witnessing ever growing complexity and volatility of modern supply chains, permeated with rising ethical, environmental, and social challenges, conjoined as sustainability issues. This has been the driving force for establishing supply chain management practices, which incorporate sustainability aspect, embodied in the triple bottom line (TBL) principle (Elkington, 2004). The occurring shift from supplier evaluation process to sustainable supplier evaluation (SSE) process implies that supplier performance should be evaluated in all three domains of their business responsibility: economic, environmental, and social. Nevertheless, contemporary literature is often single-directional, focusing on the specific aspect of sustainability, neglecting the inter-dimensional relations, synergetic interactions and economic soundness of the remaining aspects (Morali & Searcy, 2013). Therefore, it is a common occurrence to see partial SSE models, such as green supplier evaluation models (Govindan et al., 2015). Similar situation occurs when only social aspect is taken into account ((Xu et al., 2013). To this day, the literature does not provide a universally accepted SSE framework, nor a dominant approach to modelling supplier KPIs.

This paper was inspired by the strategic potential that SSE possesses in modern business decision-making process, and driven by observed inconsistencies in theoretical considerations and research approaches to this topic. The main research aim of this paper is to identify a theoretically uniform SSE model, which overcomes afore mentioned knowledge gaps. To test

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the applicability of the model, AHP methodology is used, as one of the most common modelling techniques in SSE literature.

The outline of the paper is based around the research aim. In the next section a literature analysis of SSE literature is performed, in order to identify the theoretical foundation for SSE framework. Next, implemented methodology for model testing is explained, followed by empirical results. The discussion part interprets the findings and critically analyses operational and strategic implications of the proposed SSE model. The paper ends with concluding remarks and overview of future research avenues.

LITERATURE REVIEW

The origins of supplier evaluation can be traced to 1960s when it was referred to as vendor selection and evaluation. In the beginning cycle time and responsiveness were dominant assessment criteria. More recent supplier evaluation acknowledge the importance of supplier flexibility, as well as product and service quality (Chan & Chan, 2010). Contemporary literature has transitioned from assessing suppliers' performance through only economic criteria by recognizing the importance of many ecological and social business aspects (Brandenburg & Rebs, 2015). This shift towards triple-bottom line sustainability in business gave rise to sustainable supply chain management (C. R. Carter & Rogers, 2008), and consequently sustainable supplier evaluation.

Early papers on sustainable supplier evaluation are oftentimes single-directional, focusing on the specific aspect of sustainability, neglecting the inter-dimensional relations, synergetic interactions and economic soundness of the other remaining aspects (C. R. Carter & Liane Easton, 2011; Seuring & Müller, 2008). Therefore, green supplier evaluation models were a common occurrence (Akman, 2015; Banaeian et al., 2015; Boutkhoum et al., 2016). These models focus on evaluating the environmental aspects of supplier activities, but in doing so, neglect or underestimate social, and only sporadically cover the economic aspect of the evaluation process. Proposed solutions are usually not economically sound, and thus unacceptable for the majority of companies.

Similar problem occurs when only environmental aspect is taken into account (Kannan et al., 2014; Qin et al., 2017), or a combination of just social and economic assessment criteria (Winter & Lasch, 2016; Xu et al., 2013). However, the majority of contemporary papers on the topic embraces the triple-bottom line business logic and evaluates suppliers' performance through all three sustainability dimensions simultaneously (Ahmadi et al., 2020; Keskin, 2022; Zhang et al., 2021).

Although predominantly based on TBL philosophy, contemporary literature fails to provide a single, theoretically uniform sustainable supplier evaluation framework. This is reflected by evaluation criteria used in existing studies, which are either too broadly defined, with vague, often overlapping classification boundaries, such as delivery, quality, cost, service, technology, environmental performance and environmental impacts (Akman, 2015; Azadnia et al., 2012; Banaeian et al., 2015; Govindan et al., 2016; Wang Chen et al., 2016; Yazdani et al., 2017), or too specific, problem-orientated criteria, without broader inter-industrial applicability (Boutkhoum et al., 2016; Kannan et al., 2014; Kusi-Sarpong et al., 2016; Qin et al., 2017). Additionally, criteria used to evaluate suppliers are oftentimes adapted to best adhere to the implemented analytical methodology (Petković et al., 2020). This limits the effectiveness and accuracy of derived results.

The majority of existing SSE frameworks are orientated at solving individual problems, related to specific companies, countries or industries. Building upon this research gap, the aim of this paper is to develop a TBL-based supplier evaluation framework which can be applied regardless of the business context, as well as be compatible with the majority of modelling techniques, rather than be the "best fit" to a specific one.

Similarly to the famous 4P marketing concept, in 1995 Ray Carter developed a supplier evaluation framework, which will later become known as *The seven Cs of supplier evaluation* (R. Carter, 1995). These criteria were: *Capacity* (ability to meet present and future demands); *Cash* (contractor's financial stability); *Commitment* (contractor's possession of quality policy, and commitment to its success); *Competency* (ability of the contractor to perform the contract); *Consistency* (contractor's ability to provide consistent levels of quality and services); *Control* (contractor's ability to manage key business processes); *Cost* (analysis of key financial indicators).

These seven key elements formed the rigid backbone for every supplier performance effort, regardless of the contextual business elements (Mishra, 2009). This original set of criteria was later expanded by Carter and DPSS Consultants, and incorporated three additional criteria: *Clean* (contractors and their products/services should satisfy legislative and other environmental requirements); *Communication* (means, efficiency and effectiveness of communication with the contractors); *Culture* (contractors and client should share similar values) (R. Carter et al., 2012; R. J. Carter & Kirby, 2006). Continuous improvement and innovation has also been mentioned as a potential criteria.

Carter's model provides a general evaluation framework, with intuitive and balanced criteria, derived from main business performance aspects of every company (R. Carter et al., 2012). Evaluation criteria can be used as top-tier categories in a weighted point rating system, balanced scorecard, or a similar strategic assessment tool, or as primary criteria in a more complex, methodological analysis (Mishra, 2009). However, Carter`s model is exclusively economically orientated and lacks TBL sustainability consideration. Building upon the findings from the literature review, this paper proposes a set of ten modified supplier evaluation primary criteria, based on Carter's 10 Cs model.

Contribution – Suppliers' capacity to fulfil present and future demands in short- and long-term;

Capital – Supplier's influence on buyer's finances, goodwill, brand equity, market perception, as well as internal and external structures (social, green and human capital);

Credibility – Displayed, as well as certified, commitment to TBL excellence;

Character – Supplier's specificities which contribute to value creation within the supply chain through unique value proposition;

Continuity – Capacity for long-term business relationships, viewed as suppliers' capacity to deliver desired product and service quality, over a longer period of time;

Clarity –Transparency level reflected in open access to important data, understandable and standardized measurement and assessment procedures which allows for a wider, easier, and more constructive external and internal audit'

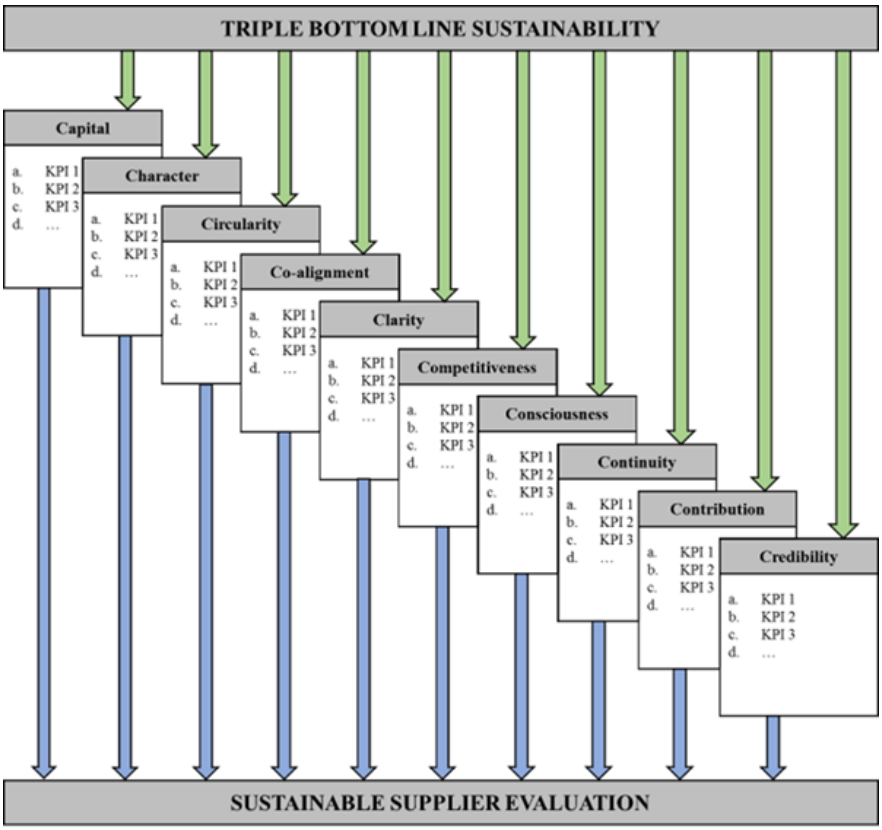
Competitiveness –Competitive position of a supplier is determined by a synergetic set of strategic value propositions, aimed at communicating the best customer solutions conveniently, at the lowest costs for customers;

Consciousness – Supplier's ability and willingness to notice, understand, analyze and tackle sustainability challenges, both internally and externally, through proactive approach to innovation;

Circularity – Long-term synchronization with the suppliers regarding all supply chain flows, and establishment of a productive feedback system (recycling, reverse logistics, joint employee training programs, joint community service and product development based on design for environment);

Co-alignment –Similarity of corporate cultures, as well as long-term goal alignment potential for creating lasting, value adding, win-win situation.

Figure 1. Graphical presentation of the modified 10 Cs model



These ten criteria form the main evaluation level of the proposed SSE model. Flexibility of the model is assured by choosing the appropriate key performance indicators (KPIs) for each of the ten defined supplier performance dimensions (**Figure 1**). These KPIs, which can be both qualitative and quantitative, are determined by the companies implementing the evaluation model, and depend on the company's capacity to determine, measure, control and interpret certain internal or external procurement activities.

A significant portion of contemporary studies used AHP methodology for modelling sustainable supplier evaluation solutions (Bruno et al., 2013; Luthra et al., 2017; Rajesh & Malliga, 2013; Secundo et al., 2017). AHP has several advantages in comparison to other MCDA techniques, in the context of SSE. AHP is clearly related to the research goal, capable of managing large number of criteria, combining both qualitative and quantitative data intuitive to users (Chan & Chan, 2010). AHP is also easier to use than more complicated methods, such as TOPSIS and VIKOR (Opricovic & Tzeng, 2004). For these reasons, the proposed 10Cs framework was tested using AHP methodology.

METHODOLOGY

AHP, which stands for analytic hierarchy process, was developed by Thomas Saaty in 1977 (Żak, 2015). This is a multi-criteria decision making tool, which is used for presenting, assessing, evaluating, and comparing differences in importance of multi-level criteria, relative to the research goal (Govindan et al., 2015). In this paper, a procedure by Xu et al. (2013) is used.

The AHP model is depicted by criteria ($C_{1...}$ C_n) and corresponding sub criteria ($S_{1...}$ S_n), which are used for deriving scores and ranking order of observed alternatives ($A_{1...}$ A_n). The relative importance of every primary criterion, and corresponding sub criteria, is determined through pairwise comparison technique. Quantification of assessment judgements is formulated in accordance to Saaty's 1-9 scale (T. L. Saaty, 2004), presented in **Table 1**.

Table 1. Pairwise comparison scale

Relative importance in numerical variable	Relative importance in linguistic variable
1	Equal importance
3	Moderate importance
5	Strong importance
7	Very strong importance
9	Extreme importance
2, 4, 6, 8	Intermediate values

Source: Saaty (2004)

After conducting the pairwise comparison, the comparison values for every criterion element are inserted into a matrix. By establishing comparison matrices, local weights of criteria can be calculated. Local weights are derived by the normalization of all limit weights, within the comparison cluster.

For every comparison matrix inconsistency must be calculated in order to assess consistency and precision of the research (R. W. Saaty, 2003). Consistency ratio (C.R) is calculated using consistency index (C.I) and random index (R.I) value (Mawuntu, 2014), which is a function of the number of compared elements within a cluster, and is determined from the Table of Random Indices (**Table 2**).

Table 2. Random indices (R.I), relative to the number of criteria constituting the analyzed matrix

n	1	2	3	4	5	6	7	8	9	10
Random Index	0	0	0.52	0.89	1.11	1.25	1.35	1.40	1.45	1.49

Source: Saaty (2004)

If C.R $\leq$ 0.1 the comparison is considered consistent, and no additional improvement actions are required. If C.R $\geq$ 0.1 the comparison is considered inconsistent and data revision is needed.

Final weights of analyzed alternatives represent their overall weighted scores for observed assessment criteria. Alternatives' priorities are derived through comparison matrix, which consists of alternatives' normalized weights, relative to every corresponding comparison sub criterion.

EMPIRICAL FINDINGS

Primary data were gathered using in-depth interviews (Morita & Yamaoka, 2012). Company that was analyzed is one of the biggest paper wholesaling companies in Serbia, as well as in Europe. Paper wholesaling industry has a long tradition of high market concentration, leading to the introduction of comprehensive supply-chain management practices, including key supplier management, which covers certain environmental and social aspects, making it a good context for testing the proposed model.

In total, three interviews were conducted with the Business unit director of paper & print for the entire Group, co-owner and CEO of the Serbian division, and sales director of the Serbian division. All interviews were conducted separately, so that the interviewees would not be influenced by the answers of their colleagues. First, the AHP model was finished, by inputting the KPIs, which were determined by the interviewees. After that, relevance judgments were inputted for every comparison cluster, using afore mentioned Saaty's scale. Finally, after inputting the relevance judgements, preliminary data consistency analysis was performed. SuperDecisions 2.8.0 software was used for calculations.

Comparison starts with the highest level of the model, and continues downwards. After establishing intra-hierarchical relations between three sustainability dimensions, the next hierarchical level, containing modified 10 Cs criteria is analyzed.

Eigenvectors for first two hierarchical levels were determined, according to Saaty & Vargas (2012) The eigenvectors for analyzed 10 Cs criteria, with respect to three sustainability dimensions, were also calculated and joined together, in order to derive a combined Eigen matrix. Multiplying combined Eigen matrix with eigenvector sustainability dimension weights, we derive the eigenvector, containing weighted priorities of 10 Cs criteria.

Next, each of the ten Cs criteria were analyzed individually, using pairwise comparison of corresponding KPIs. The final summary of this calculation step is provided in **Table 3**, where 10 Cs criteria are depicted together with corresponding KPIs, and their calculated priorities.

Table 3. Summary of evaluated 10 Cs criteria, with corresponding KPIs and their priorities

10 Cs criteria	Weighted criteria weights	KPIs	Local sub criteria weights	Global sub criteria weights	Limited sub criteria weights
Capital	0.2076				
		▪ Data from the central	0.6667	0.1384	0.0346
		▪ Financial reports	0.3333	0.0692	0.0173
Character	0.0894				
		▪ Exclusivity of business conduct	0.5000	0.0447	0.0112
		▪ Possibility of PL brand registration	0.5000	0.0447	0.0112
Circularity	0.0568				
		▪ Communication flows	0.5396	0.0306	0.0077
		▪ Reclamation	0.2970	0.0169	0.0042
		▪ Recycling efforts	0.1635	0.0093	0.0023

10 Cs criteria	Weighted criteria weights	KPIs	Local sub criteria weights	Global sub criteria weights	Limited sub criteria weights
Clarity	0.0585				
		▪ Long term information	0.2000	0.0117	0.0029
		▪ Predictability	0.2000	0.0117	0.0029
		▪ Project cooperation	0.6000	0.0351	0.0088
Co-alignment	0.0778				
		▪ Joint market performance	0.3333	0.0259	0.0065
		▪ Long term goal orientation	0.6667	0.0519	0.0130
Competitiveness	0.1488				
		▪ Discounts	0.2493	0.0371	0.0093
		▪ Prices	0.5936	0.0883	0.0221
		▪ Quality	0.1571	0.0234	0.0058
Consciousness	0.0834				
		▪ CO2 footprint	0.5000	0.0417	0.0104
		▪ Recycling effort	0.5000	0.0417	0.0104
Continuity	0.0479				
		▪ Improved organizational efforts	0.2500	0.0120	0.0030
		▪ New product features	0.7500	0.0359	0.0090
Contribution	0.0407				
		▪ Increased competitiveness	0.3333	0.0136	0.0034
		▪ Value through cooperation	0.6667	0.0271	0.0068
Credibility	0.1891				
		▪ Certificates ISO 9001, 14001, 16001, FSC, PFSC	0.2500	0.0473	0.0118
		▪ Recommendations from others	0.7500	0.1418	0.0355

After calculating criteria priorities, the next step is consistency check of conducted comparisons. This calculation procedure is conducted for every comparison matrix, and follows the hierarchical levels of the assessed SSE model. Calculated consistency levels for all hierarchical levels were below 0.1, indicating no need for further model modifications.

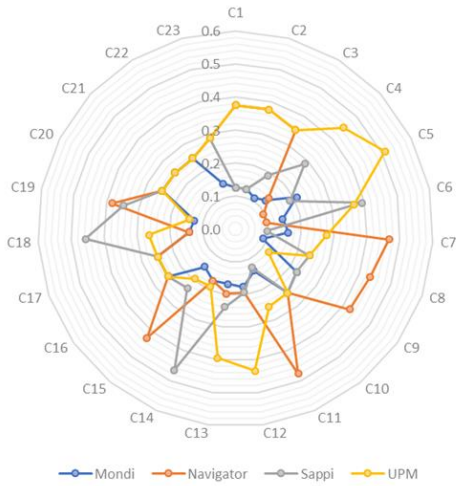
The final step in AHP model implementation is the calculation of alternatives' priorities. Here, priorities of the alternatives are calculated by multiplying the comparison matrix, which consists of alternatives' normalized weights relative to every KPI, with the eigenvector containing KPI weights, resulting in eigenvector depicting importance weights of four evaluated suppliers. Calculated values are normalized, and show the relative importance of each supplier alternative, within the evaluation process (**Table 4**).

Table 4. Overview of ranked supplier alternatives, with corresponding priorities

	Priorities			
Alternatives	**Ideal**	**Normalized**	**Limited**	**Rank**
Mondi	0.5401	0.1662	0.0416	**IV**
Navigator	0.9132	0.2811	0.0703	**II**
Sappi	0.7956	0.2449	0.0612	**III**
UPM	1.0000	0.3078	0.0769	**I**

Calculated suppliers' weights can be analyzed in more detail graphically, by determining the contribution of each KPI score to the final supplier priority rank (**Figure 2**).

Figure 2. Graphical depiction of every KPI contribution to suppliers' final priority scores



Normalized priorities of four analyzed suppliers are disseminated into corresponding KPIs' contributions, regarding alternatives' final weights. Every supplier's weight, depicted by a single line, consist of 23 KPI points, graphically marking the contribution of each KPI.

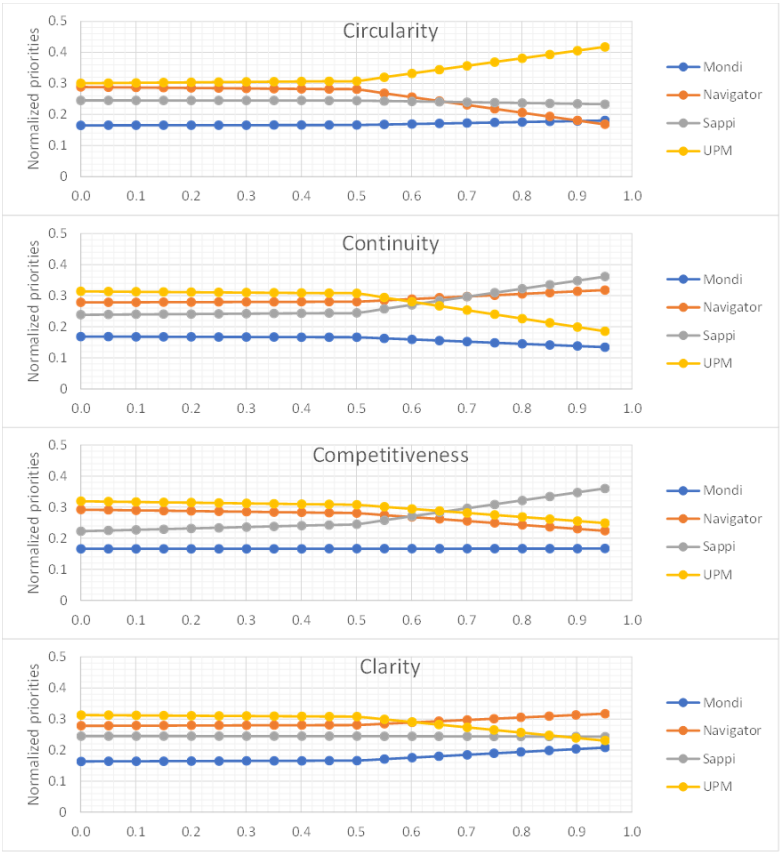
DISCUSSION

The proposed 10 Cs model provided a theoretically uniform framework when tested using AHP methodology. The model also demonstrated contextual flexibility through changeable lower hierarchical comparison levels. Flexible KPIs allow for model's modification, depending on specific industry's challenges, national market specifics, as well as reflections of certain internal organizational tendencies. This is especially apparent in situations where close competitors have different market strategies, in which one focuses on product price as a main indicator, whereas the other focuses more on the overall "package" value.

Proposed SSE framework has both operational and strategic merit. Developed model can be used as a supplier performance measuring tool. However, neglecting the long-term aspect of SSE is a serious strategic error. In modern markets, things change on a daily basis. A business must monitor and control all internal and external changes, affecting its current and future performances. In this sense, being able to continuously reevaluate suppliers' performance plays a key role in attaining and maintaining significant competitive market advantage. Use of the 10 Cs framework allows for a proactive approach to determining and modifying relevant KPIs, and developing a sustainable procurement strategy.

To depict how market changes can influence supplier short- and long-term performance, a sensitivity analysis was conducted (**Figure 3**). Horizontal axes depict the values of the observed criterion, whereas the vertical axis depicts normalized priority values of evaluated supplier alternatives. The 0.5 value marks the calculated (realized) scenario. Values lower than 0.5 depict decreasing relevance of the criterion, whereas values higher than 0.5 depict increasing criterion significance.

Figure 3. Graphical depiction of selected criteria sensitivity analysis



By analyzing the ten SSE dimensions, four stood out as the ones mostly affected by the changing weight relevance. These criteria are related to suppliers' circularity, continuity, competitiveness and clarity. For these criteria, an increase in criteria weight causes significant changes in supplier ranking. This means that these criteria represent opportunities for suppliers with highest potential for creating competitive advantage. These aspects should be in the short-term and long-term focus of the suppliers, in order to significantly improve their customer's perception of the overall offer quality. Furthermore, sensitivity analysis highlights procurement aspects which, if their market importance increases, should trigger a reevaluation of chosen suppliers.

However, prolonged use of the presented framework could potentially lead to contamination of supplier alternatives' priorities, a phenomenon known as rank reversal (T. L. Saaty & Vargas, 2012). To avoid this, Saaty (2005) proposes the use of ideal alternatives' priorities rather than the normalized ones for the purposes of comparison, ranking, and future computations. Another approach is by Wang & Elhag (2006) which states that adaptation of criteria weights' normalization approach prevents rank reversal occurrence. The issue of rank reversal is important because in business situation companies can change their supplier evaluation criteria almost on a daily basis. Therefore, any alterations of the previously explained evaluation model

require either the adoption of rank reversal prevention techniques, or reevaluation of new evaluation criteria priorities.

CONCLUSION

The aim of this paper was to identify a theoretically uniform model for sustainable supplier evaluation. The conducted literature review showed that sustainability principles are present in many contemporary studies, albeit in a narrow, contextual manner. A wide diapason of used evaluation criteria, as well as different approaches to sustainability dimensions dilute theoretical uniformity of SSE literature. Therefore, this paper explored the existing 10 Cs model by Carter, further modifying it to encompass the triple-bottom line sustainability principles. Innovated evaluation criteria reflect ten key segments in supplier-procurer interactions, incorporating the findings derived from the literature review. The proposed SSE framework was tested using AHP methodology, one of the most common methodologies used in supplier evaluation literature.

The analysis showed that the developed SSE model possesses theoretical uniformity, providing a solid evaluation framework. Also, the model was well suited to AHP methodology, providing a very accurate, easily quantifiable set of evaluation criteria, with high results' benchmarking potential. The model also showed that it can respond to various modern business challenges, such as differences in companies' size, international market specificities and specific industry-related challenges. This was achieved by providing a flexible, lower hierarchical structure of the model, with changeable KPIs, reflecting specific requirements of the company implementing the model. Finally, performed sensitivity analysis showed that it can be used as a tool for developing strategic responses within the procurement process.

This paper could provide a theoretical point for future research in the area. Proposed 10 Cs model could be further studied in a different capacity, either in a different industry, thus expanding the use of different KPIs in SSE process, or using different modelling techniques, such as MCDA methodology. In the latter regard, implementation of fuzzy logic or methodologies such as TOPSIS, DEA, DRSA, etc. could provide new research directions.

REFERENCES

1. Ahmadi, H. B., Lo, H.-W., Gupta, H., Kusi-Sarpong, S., & Liou, J. J. H. (2020). An integrated model for selecting suppliers on the basis of sustainability innovation. *Journal of Cleaner Production*, *277*, 123261. https://doi.org/10.1016/j.jclepro.2020.123261
2. Akman, G. (2015). Evaluating suppliers to include green supplier development programs via fuzzy c-means and VIKOR methods. *Computers & Industrial Engineering*, *86*, 69–82. https://doi.org/10.1016/j.cie.2014.10.013
3. Azadnia, A. H., Saman, M. Z. M., Wong, K. Y., Ghadimi, P., & Zakuan, N. (2012). Sustainable Supplier Selection based on Self-organizing Map Neural Network and Multi Criteria Decision Making Approaches. *Procedia - Social and Behavioral Sciences*, *65*, 879–884. https://doi.org/10.1016/j.sbspro.2012.11.214
4. Banaeian, N., Mobli, H., Nielsen, I. E., & Omid, M. (2015). A Methodology for Green Supplier Selection in Food Industries. In P. Golińska & A. Kawa (Eds.), *Technology Management for Sustainable Production and Logistics* (pp. 3–23). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-33935-6_1
5. Boutkhoum, O., Hanine, M., Boukhriss, H., Agouti, T., & Tikniouine, A. (2016). Multi-criteria decision support framework for sustainable implementation of effective green supply chain management practices. *SpringerPlus*, *5*(1), 1–24. https://doi.org/10.1186/s40064-016-2233-2

6. Brandenburg, M., & Rebs, T. (2015). Sustainable supply chain management: A modeling perspective. *Annals of Operations Research*, *229*(1), 213–252. https://doi.org/10.1007/s10479-015-1853-1
7. Bruno, G., Esposito, E., Genovese, A., Longobardo, R. R., & Passaro, R. (2013). Hybrid Supplier Selection Methodologies: Problems and Perspectives. *IFAC Proceedings Volumes*, *46*(9), 881–886. https://doi.org/10.3182/20130619-3-RU-3018.00589
8. Carter, C. R., & Liane Easton, P. (2011). Sustainable supply chain management: Evolution and future directions. *International Journal of Physical Distribution & Logistics Management*, *41*(1), 46–62. https://doi.org/10.1108/09600031111101420
9. Carter, C. R., & Rogers, D. S. (2008). A framework of sustainable supply chain management: Moving toward new theory. *International Journal of Physical Distribution & Logistics Management*, *38*(5), 360–387. https://doi.org/10.1108/09600030810882816
10. Carter, R. (1995). The seven Cs of effective supplier evaluation. *Purchasing and Supply Management : Journal of the Institute of Purchasing and Supply*, 44–45. https://doi.org/ZDB-ID 83080x
11. Carter, R. J., & Kirby, S. (2006). *Practical Procurement*. Liverpool Academic Press.
12. Carter, R., Kirby, S., & Oxenbury, A. (2012). *Practical Contract Management*. Cambridge Media Group.
13. Chan, F. T. S., & Chan, H. K. (2010). An AHP model for selection of suppliers in the fast changing fashion market. *The International Journal of Advanced Manufacturing Technology*, *51*(9–12), 1195–1207. https://doi.org/10.1007/s00170-010-2683-6
14. Elkington, J. (2004). Enter the triple bottom line. *The Triple Bottom Line: Does It All Add Up*, *11*(12), 1–16.
15. Gimenez, C., & Sierra, V. (2013). Sustainable Supply Chains: Governance Mechanisms to Greening Suppliers. *Journal of Business Ethics*, *116*(1), 189–203. https://doi.org/10.1007/s10551-012-1458-4
16. Govindan, K., Kadziński, M., & Sivakumar, R. (2016). Application of a novel PROMETHEE-based method for construction of a group compromise ranking to prioritization of green suppliers in food supply chain. *Omega*. https://doi.org/10.1016/j.omega.2016.10.004
17. Govindan, K., Rajendran, S., Sarkis, J., & Murugesan, P. (2015). Multi criteria decision making approaches for green supplier evaluation and selection: A literature review. *Journal of Cleaner Production*, *98*, 66–83. https://doi.org/10.1016/j.jclepro.2013.06.046
18. Kannan, D., Jabbour, A. B. L. de S., & Jabbour, C. J. C. (2014). Selecting green suppliers based on GSCM practices: Using fuzzy TOPSIS applied to a Brazilian electronics company. *European Journal of Operational Research*, *233*(2), 432–447. https://doi.org/10.1016/j.ejor.2013.07.023
19. Keskin, G. A. (2022). A Novel Perspective to Sustainable Supplier Performance Evaluation Problem: A Case Study Based on Determining the Optimum Number of Clusters. *International Journal of Information Technology & Decision Making*, *21*(04), 1349–1379. https://doi.org/10.1142/S0219622022500195
20. Kusi-Sarpong, S., Sarkis, J., & Wang, X. (2016). Assessing green supply chain practices in the Ghanaian mining industry: A framework and evaluation. *International Journal of Production Economics*, *181*, 325–341. https://doi.org/10.1016/j.ijpe.2016.04.002
21. Luthra, S., Govindan, K., Kannan, D., Mangla, S. K., & Garg, C. P. (2017). An integrated framework for sustainable supplier selection and evaluation in supply chains. *Journal of Cleaner Production*, *140*, 1686–1698. https://doi.org/10.1016/j.jclepro.2016.09.078
22. Mawuntu, S. F. J. (2014). MEASURING SERVICE QUALITY USING ANALYTICAL HIERARCHY PROCESS (AHP) IN THE LIFE INSURANCE INDUSTRY IN MANADO. *JURNAL RISET EKONOMI, MANAJEMEN, BISNIS DAN AKUNTANSI*, *2*(4). http://ejournal.unsrat.ac.id/index.php/emba/article/view/6264
23. Mishra, R. (2009). *Materials Management*. Excel Books India.
24. Morali, O., & Searcy, C. (2013). A Review of Sustainable Supply Chain Management Practices in Canada. *Journal of Business Ethics*, *117*(3), 635–658. https://doi.org/10.1007/s10551-012-1539-4

25. Morita, Y., & Yamaoka, T. (2012). `*A guide to constructing an interview* (Y. C. Shih, S. F. M. Liang, Y. H. Huang, Y. C. Lin, & C. L. Lin, Eds.). Crc Press-Taylor & Francis Group.
26. Opricovic, S., & Tzeng, G.-H. (2004). Compromise solution by MCDM methods: A comparative analysis of VIKOR and TOPSIS. *European Journal of Operational Research*, *156*(2), 445–455. https://doi.org/10.1016/S0377-2217(03)00020-1
27. Petković, G., Bogetić, Z., Stojković, D., & Dokić, A. (2020). Sustainable supplier evaluation: From a theoretical concept to a strategic and operational asset in sustainable supply chain management. *Ekonomika Preduzeca*, *68*(3–4), 180–200. https://doi.org/10.5937/EKOPRE2004180P
28. Qin, J., Liu, X., & Pedrycz, W. (2017). An extended TODIM multi-criteria group decision making method for green supplier selection in interval type-2 fuzzy environment. *European Journal of Operational Research*, *258*(2), 626–638.
29. Rajesh, G., & Malliga, P. (2013). Supplier Selection based on AHP QFD Methodology. *Procedia Engineering*, *64*, 1283–1292. https://doi.org/10.1016/j.proeng.2013.09.209
30. Saaty, R. W. (2003). Decision making in complex environments. *Super Decisions*.
31. Saaty, T. L. (2004). Decision making—The analytic hierarchy and network processes (AHP/ANP). *Journal of Systems Science and Systems Engineering*, *13*(1), 1–35.
32. Saaty, T. L. (2005). Making and validating complex decisions with the AHP/ANP. *Journal of Systems Science and Systems Engineering*, *14*(1), 1–36.
33. Saaty, T. L., & Vargas, L. G. (2012). The Seven Pillars of the Analytic Hierarchy Process. In T. L. Saaty & L. G. Vargas, *Models, Methods, Concepts & Applications of the Analytic Hierarchy Process* (Vol. 175, pp. 23–40). Springer US. https://doi.org/10.1007/978-1-4614-3597-6_2
34. Secundo, G., Magarielli, D., Esposito, E., & Passiante, G. (2017). Supporting decision-making in service supplier selection using a hybrid fuzzy extended AHP approach: A case study. *Business Process Management Journal*, *23*(1), 196–222. https://doi.org/10.1108/BPMJ-01-2016-0013
35. Seuring, S., & Müller, M. (2008). From a literature review to a conceptual framework for sustainable supply chain management. *Journal of Cleaner Production*, *16*(15), 1699–1710. https://doi.org/10.1016/j.jclepro.2008.04.020
36. Wang Chen, H. M., Chou, S.-Y., Luu, Q. D., & Yu, T. H.-K. (2016). A Fuzzy MCDM Approach for Green Supplier Selection from the Economic and Environmental Aspects. *Mathematical Problems in Engineering*, *2016*, 1–10. https://doi.org/10.1155/2016/8097386
37. Wang, Y.-M., & Elhag, T. M. S. (2006). An approach to avoiding rank reversal in AHP. *Decision Support Systems*, *42*(3), 1474–1480. https://doi.org/10.1016/j.dss.2005.12.002
38. Winter, S., & Lasch, R. (2016). Environmental and social criteria in supplier evaluation – Lessons from the fashion and apparel industry. *Journal of Cleaner Production*, *139*, 175–190. https://doi.org/10.1016/j.jclepro.2016.07.201
39. Xu, L., Kumar, D. T., Shankar, K. M., Kannan, D., & Chen, G. (2013). Analyzing criteria and sub-criteria for the corporate social responsibility-based supplier selection process using AHP. *The International Journal of Advanced Manufacturing Technology*, *68*(1–4), 907–916. https://doi.org/10.1007/s00170-013-4952-7
40. Yazdani, M., Chatterjee, P., Zavadskas, E. K., & Hashemkhani Zolfani, S. (2017). Integrated QFD-MCDM framework for green supplier selection. *Journal of Cleaner Production*, *142*, 3728–3740. https://doi.org/10.1016/j.jclepro.2016.10.095
41. Żak, J. (2015). Comparative Analysis of Multiple Criteria Evaluations of Suppliers in Different Industries. *Transportation Research Procedia*, *10*, 809–819. https://doi.org/10.1016/j.trpro.2015.09.034
42. Zhang, J., Yang, D., Li, Q., Lev, B., & Ma, Y. (2021). Research on Sustainable Supplier Selection Based on the Rough DEMATEL and FVIKOR Methods. *Sustainability*, *13*(1), 88. https://doi.org/10.3390/su13010088

CORPORATE SOCIAL RESPONSIBILITY AND GREEN MARKETING: THE INFLUENCE OF ECO- LABELLING AND ETHICAL CERTIFICATIONS ON CONSUMER BEHAVIOR AND THEIR IMPACT ONSUSTAINABLE ECONOMICAL DEVELOPMENT

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Abstract

In an era where environmental consciousness is shaping consumer decisions, eco-labelling is emerging asa lighthouse to steer consumers towards more sustainable consumption. This paper analyzes the relationship between eco-labels and consumers, disclosing the far-reaching influence such eco-aware symbols play in sculpting purchasing decisions. As we sail into an era defined by sustainability andethical choices, understanding how eco-labels are resonating with, educating and motivating consumersis not just an academic pursuit; it is a key to unlocking a greener future for the planet and businesses alike. Through an extensive literature review, data analysis and a survey, the study aims to identify the most important factors that shape consumer attitudes and purchasing decisions towards environmentally and socially responsible products. The findings suggest that there is a need for better alignment and synergy between product group criteria development processes, for synchronising eco-design and eco- labelling requirements so they can evolve together, and to enhance coherence between product policy instruments and help decision-making. The paper concludes with practical recommendations for companies, policymakers, and consumers on how to enhance sustainable economic development through CSR and green marketing practices.

Keywords: Corporate social responsibility, consumer behavior, eco-labeling, ethical certifications, greenmarketing, sustainable economic development.

INTRODUCTION

The production, consumption, and disposal of products have a significant impact on both people and the environment. Despite their desire to buy sustainable products, consumers typically struggle to identify them and assess their impact on the environment and society. Various techniques, such as green taxes, property rights, restrictions, and laws, have been used to encourage sustainability and ecologically beneficial activities. Eco-labeling is one method that is gaining popularity. Eco-labeling is intended to educate customers on the environmental effect of products and services throughout their lifespan, with the objective of encouraging ecologically friendly consumption habits and better environmental standards.

In today's culture, a growing number of customers are worried about the environmental effect of their shopping decisions. These environmentally sensitive customers want to make environmentally conscious decisions and learn about the green elements of items. Ecolabels play an important role in green marketing and promotion by informing customers about the environmental features of items. They are used to validate green claims and to assist customers in making educated decisions.

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To address this gap, this paper aims to explore the importance of ecolabeling and clear information in the context of green marketing. It will examine the role of research in establishingthe credibility of ecolabels and the significance of transparent communication in empowering consumers. Furthermore, the paper will discuss the need for standardized frameworks and guidelines in ecolabeling practices and the importance of consumer awareness in making sustainable choices. In order to find this out, the paper will analyse the statistics available at the current time and will examine the results of a questionnaire addressed to Romanian consumers on how they perceive eco labels in relation to the social responsibility of companies.

Literature review

The link between corporate social responsibility (CSR), green marketing, eco labeling, and economic development has received substantial attention in academic study, reflecting the increased interest in sustainable company practices. The purpose of this literature review is to investigate the current body of research and shed light on the meanings and links between CSR, green marketing, eco labeling, and their influence on economic growth.

CSR refers to firms' voluntary initiatives that go beyond legal responsibilities to address social and environmental challenges. It includes charity, employee welfare, and environmental sustainability among other things. Scholars contend that CSR improves a company's reputation, brand equity, and financial success (Brammer, Jackson, & Matten, 2012). Organizations that embrace CSR may produce shared value and contribute to long-term economic development (Porter & Kramer, 2011).

Environmental factors are included into marketing plans and activities through green marketing. It includes the creation, marketing, and distribution of environmentally friendly products and services. Green marketing strategies can result in greater market share, enhanced client loyalty, and a competitive edge. Research suggests *that consumers are willing to pay a premium for green products and are more likely to support companies engaged in sustainable practices* (Gadenne, Mia, & Sands, 2009).

Eco labels, also known as environmental labels or certifications, are indications of the environmental features of a product. They educate customers about a product's compliance with particular environmental standards or requirements. Eco labels can impact customer behavior by enhancing trust in the environmental claims of the labeled items. They promote informed decision-making and the adoption of sustainable purchasing habits.

Sustainable business strategies encourage resource efficiency, decrease environmental impact, and foster innovation and technical improvements. They also open up new green markets, attract investment, and generate jobs in sustainable industries (Parris & Kates, 2003). As a result, connecting CSR, green marketing, and eco labeling with economic development goals can leadto a more wealthy and sustainable society.

Figure 1. Bibliometric Analysis of Eco-Labels Research, Source: VOSviewer

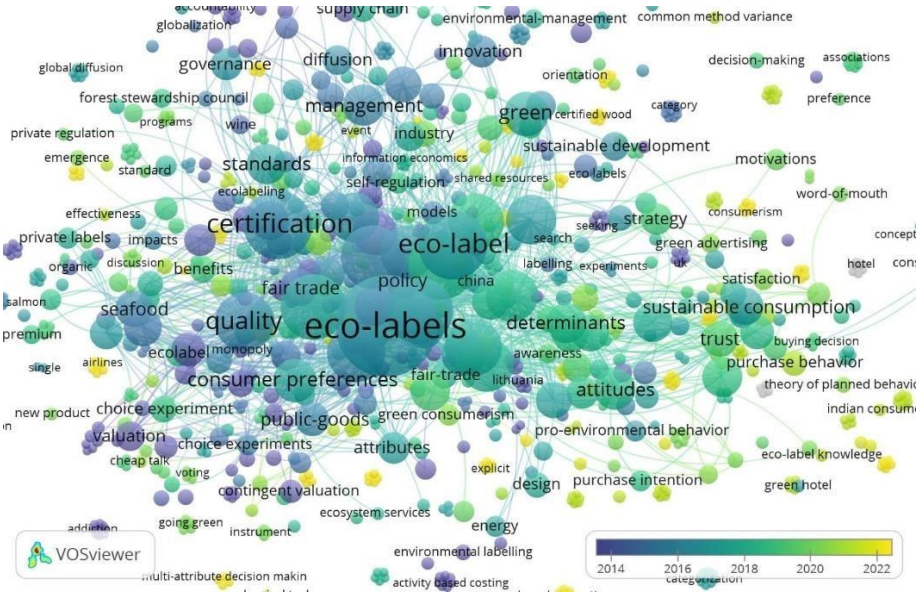


Figure 1 depicts the findings of a bibliometric study performed with VOSViewer, concentrating on the research landscape surrounding the core term "eco-labels" and its relationships to over 30 other keywords. The bibliometric study demonstrates the ongoing and rising interest in eco-label research, implying its importance as a research subject. The analysis spans the years 2014 through 2022. The graph depicts the temporal distribution of scientific articles linked to eco-labels and the keywords associated with them.

From 2016 to 2018, the graph shows a significant and continuous interest in the issue of eco-labels and their relationship to various keywords, with a large rise in research output. This tendency extends through 2018, demonstrating a continuing and persistent interest in the topic. The increase in research production reported from 2016 to 2018 might be attributed to a greater awareness and acknowledgement of eco-labeling as a key subject within the disciplines ofsustainability, consumer behavior, and environmental management.

The findings emphasize the significance of eco-labeling in a variety of sectors, such as certification, quality, standards, management, green practices, consumer preferences, sustainable consumption, fair trade, policy, innovative governance, and design.

Environmental standards

Environmental claims, sometimes known as "green claims," are assertions made bybusinesses regarding the environmental benefits of their products and services. Environmental claims can appear on a product's (good or service's) label, packaging, associated literature or advertising material, promotional and point-of-sale material, and other kinds of marketing. Words, symbols, emblems, logos, images, colors, and product brand names are all examples of claims. They can be disseminated by written media such as newspapers and magazines, electronic media such as television and digital media. As part of the ISO 14000 series ofenvironmental standards, the International Organization for Standardisation (ISO) has developed a set of guidelines controlling environmental labeling. (The Committee on Consumer Policy, 2010)

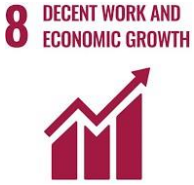
The ISO 14020 family covers three types of labelling and declaration schemes:

- Type I (ISO 14024) is a label developed by a third party, either a governmental (e.g. European Flower) or private organisation (e.g. Forest Stewardship Council). This type of label is supposed to be an easy aid for the consumers.

- Type II (ISO 14021) is a label developed by the producer or a self-declared environmental or “green claim”. In the case of this type of label, the risk of greenwashing is expected to be high.
- Type III (ISO 14025) declarations are based on quantified life cycle product information. A qualified third party creates reporting parameters, after which the data produced by firms employing the guidelines is independently validated. This sort of label is commonly used in business-to-business transactions or on long-lasting items. (The Committee on Consumer Policy, 2010)

The link between CSR, eco-labels and achieving the SDGs

The 2030 Agenda is a worldwide framework approved by the United Nations in 2015, consistingof 17 Sustainable Development Goals (SDGs) and 169 objectives aiming at tackling social, economic, and environmental concerns in order to achieve sustainable development by 2030. Several SDGs are closely related to the subjects discussed above:



1. Goal 8: Decent Work and Economic Growth: This goal emphasizes the promotion of sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all. CSR practices, such as fair labor standards, employee welfare, and responsible business conduct, contributeto achieving this goal.

2. Goal 12: Responsible Consumption and Production: This goal focuses on ensuring sustainable consumption and production patterns. Green marketing, ethical certifications and eco labels play a crucial role in promoting sustainable products, informing consumers about environmental attributes, and encouraging responsible consumption choices.

3. Goal 13: Climate Action: This goal addresses the urgent need to combat climate change and its impacts. CSR practices that reduce greenhouse gas emissions, promote renewable energy, and adopt sustainable business operations align with this goal. Green marketing and eco labels also contribute by promoting environmentally friendly products and services that support climate mitigation and adaptation.

4. Goal 17: Partnerships for the Goals: This goal emphasizes the importance of collaborative efforts and multi-stakeholder partnerships to achieve sustainable development. CSR initiatives often involve partnerships between businesses, governments, civil society organizations, and other stakeholders to address social and environmental challenges and contribute to economic development.

Organizations may contribute to the attainment of different SDGs mentioned in the 2030 Agendaby incorporating CSR, green marketing, and eco labeling into their business processes. These practices support the wider concept of sustainable development by fostering ethical corporate practices, sustainable consumption and production, climate action, and stakeholder engagement. Companies and consumers both have a role to play in upholding and adhering to EU legislation on CSR and ecolabeling. In turn, consumers should understand the importance of ecolabels and actively support products and services that bear legitimate and recognized labels.

Figure 2. Romania's progress towards SDG targets 2020, Source: Eurostat

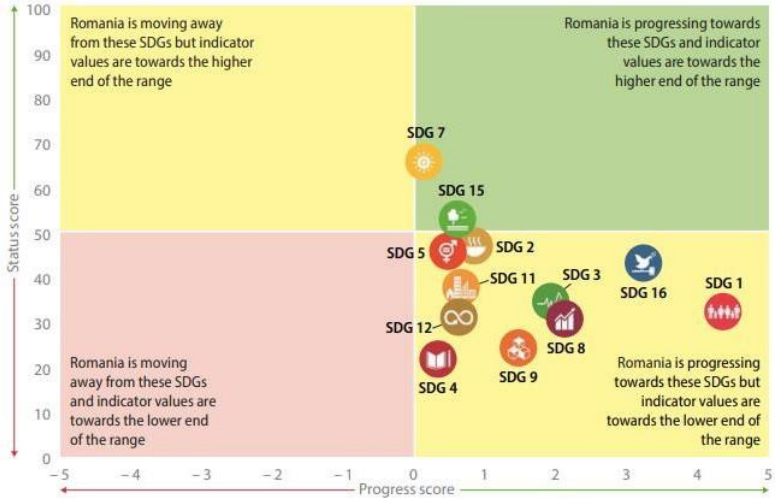
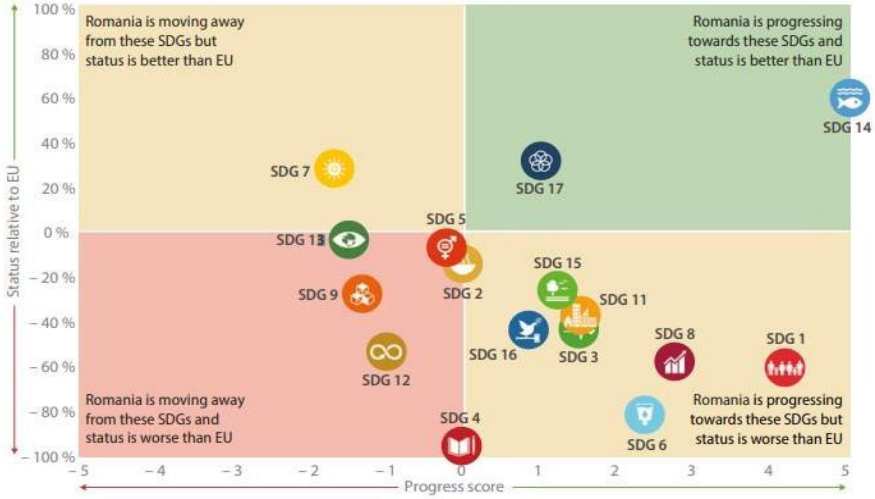


Figure 3. Romania's progress towards SDG targets 2023, Source: Eurostat



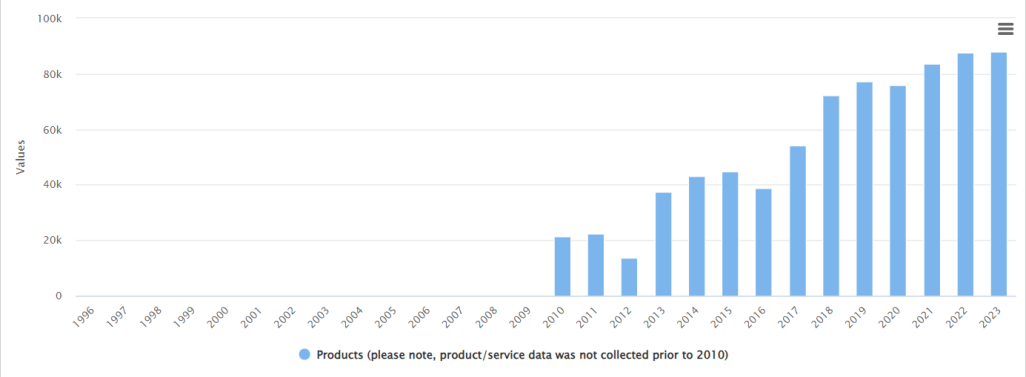
However, in the case of Romania, progress towards these SDGs is slow, at the current stage. Figures 1 and 2 show Romania's progress towards achieving the SDG targets. As can be seen, compared to 2020, in 2023 the data shows a regressive change in achieving the SDG targets, among which the most visibly affected are SDGs with numbers 7, 13 (climate action), 9, 12 (responsible consumption and production) and 4, which are in the area of ,,moving away from these SDGs and status is worse than EU", followed by 5, 2, 15, 16, 8 (decent work and economic growth) and the rest, which are in the area of ,,progressing towards these SDGs, but status is worse than EU". It can be noted that the only indicator that is in the area of progress and corresponds to one of those addressed in this paper is 17 - partnerships for the goals. As for the other three goals, all of them, which are intended to contribute to a sustainable economic growth through sustainable practices in the field of Romanian companies (eco-labelling, ethical certifications, CSR), are in the area "moving away from these SDGs and status is worse than EU", with the exception of 8, which is in progress, as shown in figure 2. Following this brief analysis and the visualization of Romania's path towards these objectives, it is clear that more rigorous regulation in the area of sustainability and the reduction of social, financial and environmental asymmetries is important. Government involvement is crucial in this whole process.

Starting from a narrow sense, in which we talked about green labels and their role in CSRand sustainable economic growth, we proceeded with the sustainable development goals up to 2030 to which implementation can contribute and we will continue with the mention of a useful source of research, the Sustainability Map. This tool is part of Standards Map free toolkit, where can be found trusted and neutral information about voluntary sustainability standards (VSS), codes of conduct, audit protocols, reporting frameworks and company programs on sustainability. According to this map (figure 4), there are 28 sustainably certified companies in Romania, and the most common certifications are ICS - Initiative for Compliance and Sustainability, World Fair Trade Organization (WFTO) and Global Organic Textile Standard - GOTS.

Figure 4. Sustainability Map, Source: Standards Map

According to the map, 27 sustainably certified companies are found in Romania, and themost common certifications are ICS - Initiative for Compliance and Sustainability, World Fair Trade Organization (WFTO) and Global Organic Textile Standard - GOTS. As can be seen, countries such as Germany and its surroundings (336), Portugal (285), Italy (170), France (103), lead in terms of sustainable certifications on the sustainability map.

Figure 5. Evolution of the number of EU products 2023, Source: European Comission



Since September 2022, the total number of given licences and goods has increased, with the great majority of EU Ecolabel product groupings seeing a growth in both the number of

awarded licences and items. This demonstrates that corporations, individuals, and merchants continue to be interested in green products.

In comparison to September 2022 data, there has been a:

- Increase in the total number of awarded products (**+560 products** = **+0.6%**)
- Increase in the total number of awarded licences (**+97 licences** = **+4%**)

As of March 2023, in Romania are awarded 99 EU Ecolabel licences, compared with 16.160 in Spain, 13.243 in Italy, 5.949 in Portugal or 4057 in Greece. This data emphasizes the significance of growing knowledge of and promoting the EU Ecolabel program in Romania in order to inspire more firms to embrace sustainable practices and get certification. It also emphasizes Romania's potential to learn from the experiences and tactics of nations with a larger number of EU Ecolabel licenses in order to strengthen its own sustainability efforts and market competitiveness.

DATA AND METHODOLOGY

A total of 61 Romanians took part in the survey aimed to collect demographic information and attitudes towards the significance of eco-labeling and ethical certifications in purchasing decisions, the impact of green marketing techniques, and the value of corporate social responsibility. The findings add to a better understanding of consumer choices and have implications for firms seeking to fulfill Romanian consumers' increasing expectations of environmental and social responsibility.

The questionnaire is divided into parts that address various areas of customer behavior andviews. The sample included respondents of all ages, the bulk of whom were from Iasi, Romania, with 30% falling in the 25-35 age range. The gender breakdown was fairly equal, with 55% female and 45% male participants. 50% of the participants have at least a Bachelor's degree and they indicated a medium income level (around 600-800 EUR). Respondents' occupations varied, with a sizable number being students and office employees, 60% of them all being employed.

1. Attitudes Towards Eco-Labeling: more than 40% of respondents thought that eco-labeling is an essential component in purchasing decisions. Similarly, when asked if they were prepared to pay more for items with eco-labels, 35% agreed, 25% strongly agreed, 20% were neutral and a considerable percent, of 18% said they diagree. Nevertheless, participants also agreed that eco-labels make it easier to identify ecologically friendly items and help to reduce environmental effect. The respondents rated the trustworthiness and dependability of eco-labels favourably, with a percentage of 45%.
2. Attitudes Towards Ethical Certifications: According to the data, only 20% of Romanian customers strongly agreed that ethical certifications are important when making purchase decisions, 25% strongly agreed and an important percentage, of 35%, remained neutral. On the other side, 18% disagree and 2% strongly disagreed. Participants stated that ethical certificates assist in identifying socially responsible items and contribute to improve working conditions and human rights, with a large percentage of 49% believing that trustworthiness and dependability were also key elements.

3. Green Marketing Strategies: Half of the respondents reported not purchasing a product based only on its green marketing promises, indicating a lack of confidence in marketing tactics; which may also explain the result for "Attitude towards ethical certifications", where 35% were neutral on the importance of ethical certifications and 18% disagreed. Even so, the green marketing statements on product packaging were rated important (18%) by a large number of participants and extremely important (23%). Advertising and social media efforts promoting a company's environmental actions were also regarded significant, with approximately 30% of respondents finding it very important, 20% very important, and 24% preffered to remain neutral.
4. Corporate Social Responsibility: In their purchasing decisions, 40% of respondents rated corporate social responsibility as very important, while 45% rated it as important. So, in this regard, 85% of respondents agreed that CSR in a company is an important practice,an indicator for companies to maintain and develop the company's management plan in line with this objective. Transparency in processes (32%), employee treatment (30%), environmental effect (23%), ethical sourcing and community participation were highlighted as major elements when evaluating a company's social and environmental responsibilities, in descending order. While a significant number of 20% said they had boycotted a firm because of its social and environmental concerns, the vast majority of 80% said they had not.

RESULTS AND RECOMMENDATIONS:

1. The findings imply that there is a need to boost consumer awareness and knowledge regarding eco-labeling. Many respondents were unfamiliar with eco-labels, emphasizing the significance of education and information distribution to improve consumer comprehension. To address this situation, some proposals would be to develop informative websites that are promoted and tailored to the needs of each community or region, containing educational content, easy-to-understand explanations of the different types of eco-labels, what they mean and how they can help in decision-making. Promoting sustainability experts online and creating social media engagement, means visibility for the company, for the experts and for new sustainability terms and information. At the same time, all companies nowadays should consider adopting eco-friendly packaging that contributes as much as possible to consumer education.
2. The findings show that eco-labeling is a very important aspect to customers when makingpurchase decisions. This indicates an increasing demand for sustainable products as well as a desire to support enterprises that implement responsible environmental procedures, which will undoubtedly contribute to economic growth. On the other hand, the main reason why a considerable percent of the consumers have dismissed the idea of sustainable products or making a purchase based on marketing practices stems from a lack of trust in these practices.
   Companies that have already addressed sustainable practices might consider how to strengthen their competitive advantage by: positioning informative displays in retail locations showcasing eco-labelled goods and their environmental and social impacts, or embedding QR codes on product packaging that provide a comprehensive reference to eco-label and sustainability information. These practices would help consumers become aware of the importance of green labels and build trust.
3. The study found that trust and credibility are important factors in customer views of eco- labels. To create customer trust in eco-labels, businesses should stress openness, adhere to clear and uniform standards, and give trustworthy information. When evaluating firms, consumers place a premium on CSR and ethical behaviors. The

findings highlight the need of businesses adopting and promoting responsible practices such as environmental initiatives, fair trade, and ethical sourcing. This has the potential to favorably impact consumer perceptions, loyalty, and purchase decisions. To this end, companies should consider creating loyalty programs for consumers who choose eco-labelled products, offering discounts, „early bird" access to eco-friendly products, or invitations to various sustainability related conferences or communities. Neverthless, companies should seriously consider publishing annual reports outlining practices in terms of ethics and environmental impact, thus reinforcing their transparency.

4. Creating a sustainable future necessitates collaboration among consumers, businesses, and regulatory organizations - governments and organizations should collaborate to provide clear rules, enforce legislation, and fund programs that promote sustainability, transparency, and ethical behavior. This can be achieved by joining sustainable business alliances, public and private sector funding for research and development, offering tax benefits or grants for sustainable projects, working closely with the SDGs, verifying eco- labeling accuracy and ethical practices in businesses, ensuring that the sustainability certifications meet rigorous criteria and are recognized and trusted by consumers.

CONCLUSIONS

The study's findings underline the need of increasing consumer awareness and education about eco-labeling. Education and information dissemination are crucial in enhancing consumer understanding of eco-labels. The survey also found that eco-labeling had a substantial impact on customer purchasing decisions, indicating a growing demand for sustainable products and support for ecologically responsible enterprises.

An effective sustainability label should prioritize informing consumers about concrete sustainability benefits, clearly identify the responsible organization, involve relevant stakeholders and experts in developing clear criteria based on scientific methods and the product's life cycle, and ensure that the phrasing, assessment, and awarding of the label are checked by an independent organization. By adhering to these principles, sustainability labelscan play a significant role in guiding consumers towards more sustainable choices while fostering transparency, credibility, and accountability within the industry.

There is a need for better alignment and synergy between criteria development processes for product groups. The future vision is to make the EU Ecolabel a benchmark with mandatory criteria for the entire market, following a staged approach. The goal is to synchronize ecodesign and ecolabel criteria so that they evolve together, with ecodesign reflecting past ecolabel criteria and the ecolabel criteria being strengthened to guide the market. This approach aims to enhance consistency between product policy instruments and streamline decision-making by updating all related policy instruments for a specific product category during investigation studies.

The incorporation of appropriate policy frameworks is a crucial driver of real sustainability and the creation of a more educated and environmentally conscientious marketplace. We can pave theroad for a more sustainable future while protecting the interests of consumers and the environment via proactive policy measures.

BIBLIOGRAPHY

1. European Parliament. (2023). *2022/0095(COD) - Ecodesign for Sustainable Products Regulation*. European Union. Retrieved from https://oeil.secure.europarl.europa.eu/oeil/popups/summary.do?id=1699079&t=e&l=en
2. ACM. (2023). *Guidelines sustainability claims*. ACM.nl. Retrieved from https://www.acm.nl/en/publications/guidelines-sustainability-claims
3. Autoriteit Consument & Markt. (2020). *Better certification labels are necessary for making sustainable choices easier* [Press release]. Retrieved from https://www.acm.nl/sites/default/files/documents/2020-07/acm-insight-2020.pdf
4. Brammer, S., Jackson, G., & Matten, D. (2012). *Corporate social responsibility and institutional theory: New perspectives on private governance*. *Socio-Economic Review, 10*(1), 3–28.
5. European Commission. (n.d.). *Ecolabel facts and figures*. Retrieved from https://environment.ec.europa.eu/topics/circular-economy/eu-ecolabel-home/business/ecolabel-facts-and-figures_en
6. European Environmental Bureau. (2023, February 13). *Protecting consumers against unfair commercial practices and greenwashing* [Press release]. Retrieved from https://eeb.org/wp-content/uploads/2023/02/GW-Open-Letter.pdf
7. Gadenne, D. L., Mia, L., & Sands, J. (2009). *Sustainable development in Australia: Exploring the role of lifestyle advertising and consumption*. *Journal of Advertising, 38*(1), 37–48.
8. Kotler, P., & Lee, N. (2005). *Corporate social responsibility: Doing the most good for your company and your cause*. Wiley.
9. Parris, T. M., & Kates, R. W. (2003). *Characterizing and measuring sustainable development*. *Annual Review of Environment and Resources, 28*(1), 559–586.
10. Sustainability Map. (n.d.). *Sustainability Map*. Retrieved from https://www.sustainabilitymap.org/network
11. Ecologic Institute. (2022). *Sustainable development in the European Union – 2020*. https://doi.org/10.2785/555257
12. Eurostat. (2023). *Sustainable development in the European Union – Monitoring report on progress towards the SDGs in an EU context – 2023 edition*. Retrieved from https://ec.europa.eu/eurostat/web/products-flagship-publications/w/ks-04-23-184
13. The Committee on Consumer Policy. (2010). *Environmental claims: Findings and conclusions of the OECD Committee on Consumer Policy*. *OECD, 2*. Retrieved from https://www.oecd.org/sti/consumer/48127506.pdf

CRITICAL SUCCESS FACTORS ANALYSIS FOR GREENWASHING GOVERNANCE WITH BLOCKCHAIN TECHNOLOGY

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Abstract

The concept of greenwash refers to the practice of a company spending more time and moneyon marketing itself as environmentally friendly than on minimizing its impact on the environment. This is a misleading marketing strategy intended to mislead environmentally conscious consumers. Providing a technical solution, blockchain offers a new way of addressing the trust issue and reducing greenwash. The purpose of this study is to evaluate critical success factors that affect greenwash behavior using the DEMATEL-AISM methodology. Additionally, we examine the factors that contribute to the success of the blockchain implementation in the greenwash governance process. A review of the driving forces behind greenwash governance is presented in this study, with recommendations for using blockchain technology to address the issue.

Keywords: Blockchain implementation, Greenwash governance, Critical success factors

JEL Classification: M140, O33, O35

1. INTRODUCTION

As environmental sustainability becomes increasingly important, companies are being forced to adopt environmentally friendly practices. Nevertheless, some companies engage in greenwash, which involves making misleading or exaggerated environmental claims to conceal unsustainable practices (1)(2)(3). There are limitations to greenwash governance, and a more trustworthy system is required. The use of blockchain technology can contribute to the prevention of greenwashing by enhancing the trustworthiness, security, transparency, and traceability of data, as well as reducing costs and increasing efficiency. The Deutsche Bank uses blockchain to make environmental and social responsibility data transparent for its customers (4), while the IBM Food Trust tracks food supply chains to avoid greenwash (5). In this study, DEMATEL-AISM (6) is used to identify the key factors and their interdependencies that influence greenwash behavior. Based on this knowledge, governments can develop targeted strategies for preventing andmitigating greenwash behavior, as well as promoting sustainable and environmentally responsible practices. By integrating the strengths of the DEMATEL-AISM method, the study provides comprehensive and accurate causal relationships and hierarchical structure analysis results (7). These results are intended to guide companiesthat are interested in using blockchain technology to improve the efficiency and effectiveness of greenwash governance.

2. LITERATURE REVIEW

Blockchain technology has received significant attention. The potential applications of blockchain technology have been explored in various areas such as supply chain management,

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banking, and digital currencies (8)(9) and the use of blockchain technology in equity crowdfunding via the Internet (10)(11). Furthermore, blockchain technology might open up the opportunity to contribute to greenwashing governance. This could lead to better enforcement of regulations and more accurate compliance with existing standards. It could also reduce the risk of greenwashing fraud and increase customer protection. There has been a growing concern about greenwashing, which refers to the deceptive practices used by organizations to present themselves as environmentally friendly when they are not. In response, scholars have called for better governance mechanisms to address this issue. Several studies have examined the role of regulationin preventing greenwashing. (12)(13) Overall, the literature suggests that effective greenwashing governance requires a combination of regulatory measures, certification schemes, and technological solutions to promote transparency and accountability in organizations' environmental claims.

3. DATA AND METHODOLOGY

3.1 Factor Identification

This study conducted a literature review to identify 20 influencing factors from 80 relevant articles to select critical success factors for greenwash governing blockchain technology (14). Additionally, six interviews were conducted with experts from ESG departments, CEOs of interior design companies, and blockchain specialists. The 10 factorswith the lowest rankings among the 25 factors originally identified were removed to facilitate the construction of the subsequent model, thus eliminating factors with aweak influence on regulating greenwash using blockchain technology. 15 major influencing factors were identified and categorized according to their nature into four categories. A description of the Success Factor system for the blockchain-enabled Greenwash Governmentis provided in **Table 1**.

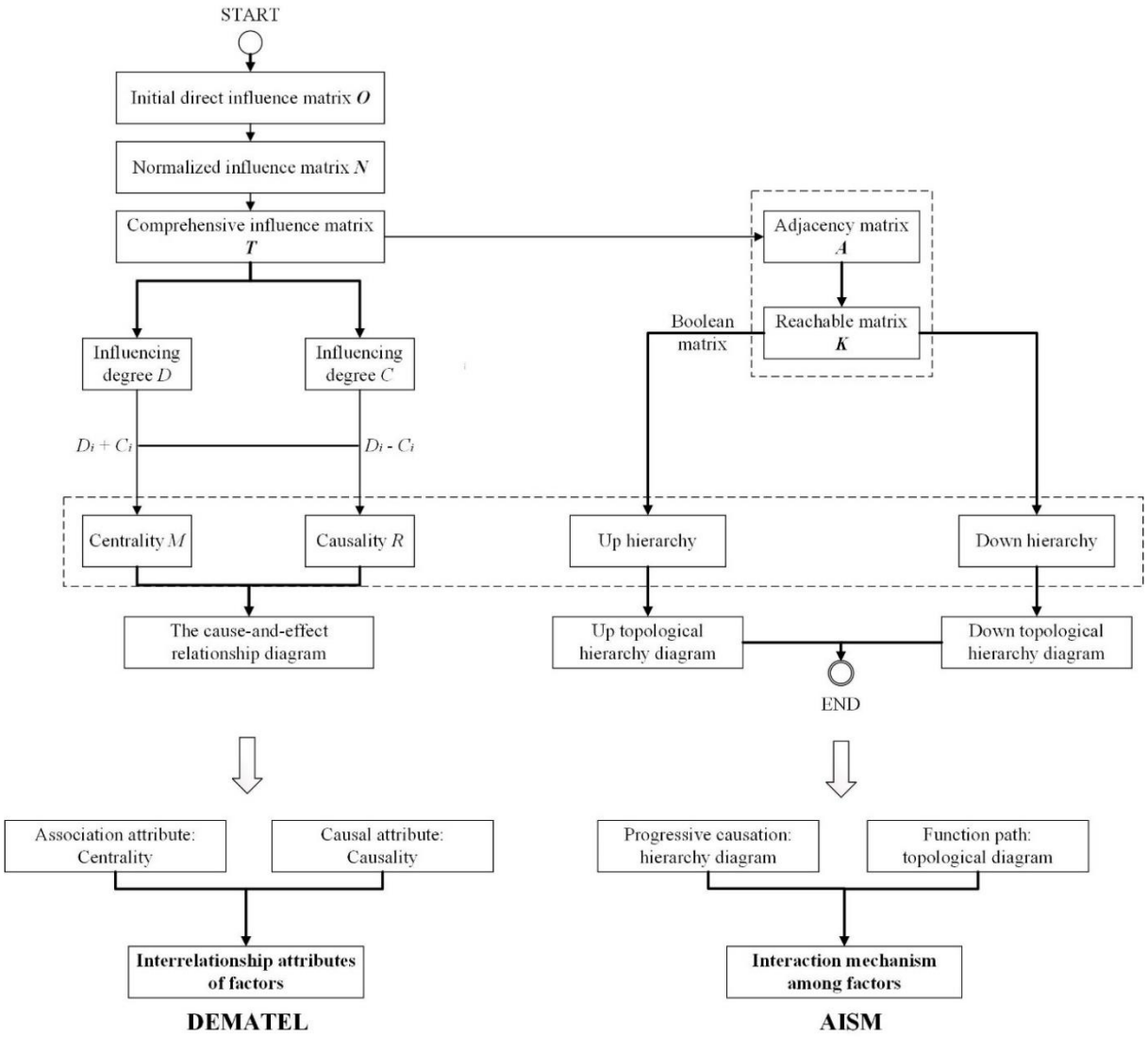
Table 1: Success Factor System for Blockchain-Enabled Greenwash Governance

Criteria	Code	Sub-criteria	Explanation
Transparency	A1	Supply chain traceability	Traceability of all stages of the supply chain Availability
	A2	Process info availability	of information on the production process and materials used
	A3	Consumers accessibility	Easy accessibility of data to consumers
Accountability	B1	Smart contract implementation	Implementation of smart contracts for accurate data recording and accountability
	B2	Identification	Identification of all parties involved in the supply chain
	B3	Punishment	Adequate punishment for non-compliance
Credibility	C1	Data storage	Use of blockchain technology for immutable data storage and verification
	C2	Trustworthiness	Trustworthiness of blockchain service providers
	C3	Environmental claims verification	Verification of environmental impact claims
Consistency	D1	Data standardized	Use of standardized data collection and reporting methods
	D2	Data promptitude	Regular updates to data and reporting systems
	D3	Sustainable implementation	Implementation of sustainable practices in all stages of the supply chain
	D4	Consumer engagement	Engagement with consumers to promote awareness of greenwashing and blockchain technology
	D5	Participation	Encouraging participation in blockchain systems from all parties involved
	D6	Feedback	Implementation of feedback mechanisms to improve the system over time

3.2 Factor analysis based on DEMATEL-AISM

The DEMATEL (Decision-making Trial and Evaluation Laboratory) method (15) is usedto determine causal relationships and the degree of impact among indicators influencing blockchain governance. This method does not provide a classification of the structural hierarchy. AISM (Adversarial Interpretive Structure Modeling Method) uses adversarial-directed topological hierarchical graphs to identify active factors (16). By integrating the DEMATEL-AISM model, fundamental elements within complex systems can be identified and assessed (16). **Figure 1** depicts the model framework.

Figure 1: The Structure of DEMATEL-AISM Model



3.2.1 Factor analysis based on DEMATEL

To assess the strength of relationships between influencing factors in blockchain governance for greenwash, six experts and scholars were invited. A direct influence matrix *O* was obtained as a first step. The initial direct influence matrix *O* was normalized to obtain the normalized influence matrix *N*.

$$N = \frac{O}{\max\left(\sum_{j=1}^{n} o_{ij}\right)} \tag{1}$$

Deriving the Comprehensive Influence Matrix T from the Normalized Influence Matrix N.

$$T=(N+N^2+N^3+\cdots+N^k)=\sum_{k=1}^{\infty}N^k=N(1-N)^{-1} \tag{2}$$

The influence degrees and affected degrees C_i of each influencing factor are calculatedbased on equations (3) and (4). The influence degree D_i represents the row sum of the corresponding factor.

$$D_i=\sum_{j=1}^{n}t_{ij},(i=1,2,3,\cdots,n) \tag{3}$$

The influence degree C_i is defined as the column sum of the corresponding factor.

$$C_i=\sum_{j=1}^{n}t_{ji},(i=1,2,3,\cdots,n) \tag{4}$$

Based on equations (5) and (6), the centrality degree M_i and causality degree R_i of each influencing factor are calculated. The centrality degree M_i is the sum of the influence degree D_i and the influenced degree C_i .

$$M_i=D_i+C_i \tag{5}$$

The cause degree R_i is defined as the difference between the influence degree D_i and the influenced degree C_i.

$$R_i=D_i-C_i \tag{6}$$

Based on the principle that factors with cause degrees greater than 0 are considered causefactors, and those with cause degrees less than 0 are considered result factors, the causalattributes of each factor were assessed and ranked accordingly.

3.2.2 Factor analysis based on AISM

To simplify the system structure, we introduce a threshold λ based on the comprehensive influence matrix T, where $\lambda=\bar{x}+\sigma$, x is the average value of each factor in matrix T,and σ is the standard deviation of each factor in matrix T. We obtain the relationship matrix A based on the comprehensive influence matrix T.

$$\begin{cases} a_{ij}=1,t_{ij}\geq\lambda \\ a_{ij}=0,t_{ij}<\lambda \end{cases} \tag{7}$$

$A_1=A_0+I$, which I is the identity matrix. The reachability matrix K is obtained by performing successive Boolean algebra operations on matrix A_1 , and the reachability matrix K is determined by the discriminant function (8).

$$K=(A_1)^1\neq(A_1)^2\neq(A_1)^3\neq\cdots\neq(A_1)^r=(A_1)r+1 \tag{8}$$

Based on the reachable matrix K, it is observed that $\{A_1,A_2\},\{C_2,C_3\},\{D_2,D_3,D_4\}$ certain factors are strongly connected. By reducing these factors, a reduced matrix K' is obtained by arranging the elements with "1" in each row in ascending order. By utilizing equations (9) and

(10), we determine the reachable set R_i, prior set Q_i of the matrix based on element S_i according to the matrix.

$$R(S_i) = \{S_j | m_{ij} = 1\} j = 1, 2, \cdots, n \quad (9)$$

$$Q(S_j) = \{S_j | m_{ji} = 1\} j = 1, 2, \cdots, n \quad (10)$$

The hierarchical classification contained an Up Hierarchy and a Down Hierarchy. According to (11), UP-type hierarchical classification results in a hierarchy of results. From top to bottom, the extracted features are arranged in order of extraction. The DOWN type hierarchical, the hierarchy of reasons is extracted first, and the extraction rule is (12). In order from bottom to top, each extracted feature is arranged below.

$$A(S_i) = \{S_i \in S | R(S_i) \cap Q(S_i) = R(S_i)\} \quad (11)$$

$$A(S_i) = \{S_i \in S | R(S_i) \cap Q(S_i) = Q(S_i)\} \quad (12)$$

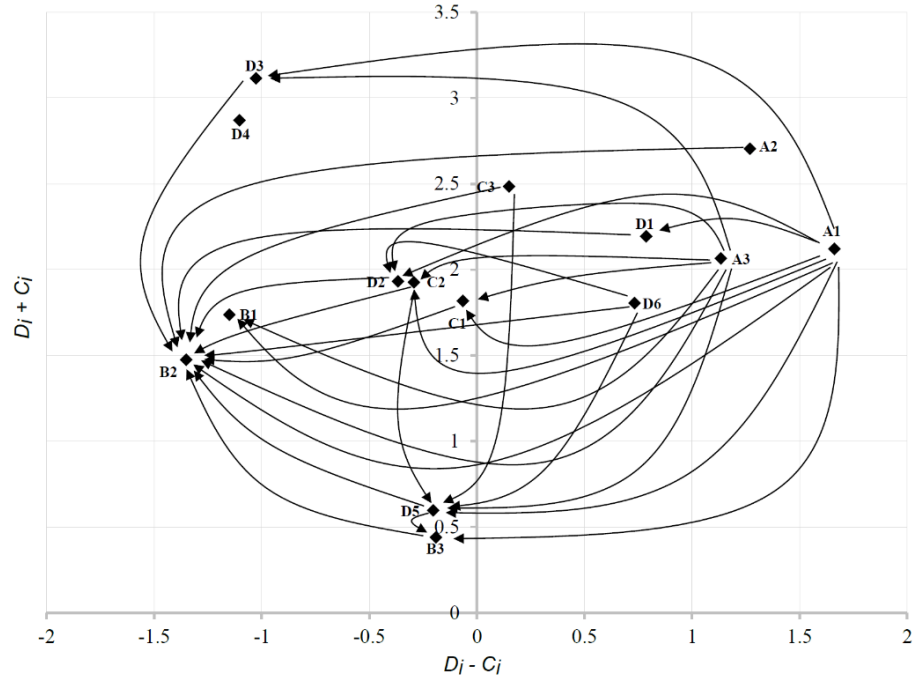
We obtained hierarchical and simplified topological diagrams by applying the opposite hierarchy extraction rules.

4. RESULTS AND DISCUSSION

4.1 Result analysis based on DEMATEL

As outlined in Subsection 3.2.1, we assessed the causal interaction between criteria andsuccess factors related to Blockchain adoption in greenwash. To illustrate the cause and centrality degrees of the success factors in **Figure 2**, a causal diagram was created fromthe datasets $(D_i + R_i, D_i + R_i)$.

Figure 2: DEMATEL success factors relationship



In terms of macro-level factors, punishments for greenwash violations and identificationof supply chain stakeholders had the least impact on blockchain development (16). D_3 (Sustainable implementation) showed the highest cause degree, indicating the importanceof implementing sustainable practices throughout the supply chain. A_1 (Traceability of the supply chain) had the highest centrality degree, emphasizing the importance of enhancingtraceability throughout the chain. In terms of overall causal interaction among the factorsand blockchain adoption, A_2 (Process info availability) demonstrated the highest sum ofcause and centrality degrees.

4.2 Result analysis based on AISM

Hierarchical diagrams of UP-type and DOWN-type systems are illustrated in **Figure 3**. Factors marked in dark colors are active factors in the entire system (16). Active systemsalso have inconsistent causal series. A lower-level influencing factor is more fundamental, while a higher-level influencing factor is more direct.

In an adversarial hierarchical topology diagram, a bidirectional arrow between factors indicates a strong causal relationship between them. There are three loops in the system $\{A_1, A_2\},\{C_2, C_3\},\{D_2, D_3, D_4\}$ .These three groups of factors are strongly connected and have a mutual causal relationship. Strong interactions and tight interconnections result in consistent effects on blockchain technology implementation in greenwashing governance. They can be viewed independently. Implementing blockchain technology for greenwash management requires an integrated management approach to control these three looped factor groups.

The existing hierarchical relationships classify the system into the root layer (L_6), intermediate layers ($L_2 - L_5$), and result layer (L_1).

Despite influencing other factors, root factors (L_6) are not influenced by them. The root layer represents the fundamental reasons at the lowest level. The topological diagram shows only directed line segments. It is important to note that each of these three types of factors can influence other factors in the system directly or indirectly and can play a dominant role in forming a Pareto inferior set $\{A_{1,} A_2\} \cup \{D_1, A_1, A_2\} = \{D_1, A_1, A_2\}$ Greenwash has the greatest impact on blockchain governance. A_1, A_2, and D_1 should bethe focus of blockchain governance in greenwash.

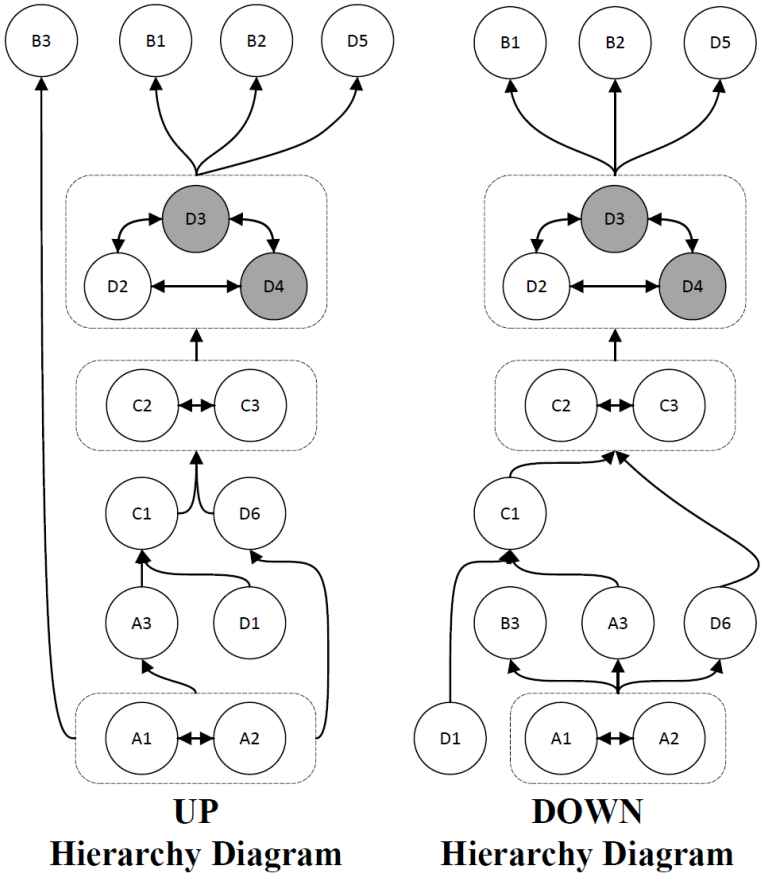
Results Layer (L_1) factors are only influenced by other factors and are not influencedby other factors, making them the most direct factors affecting blockchain technology implementation in greenwashing governance. According to the topological graph, they emit no directed edges. It is the unionof the factors in the results layer that represents Pareto optimality set $\{B_3, B_1, B_2, D5\} \cup \{B_1, B_2, D_5\} = \{B_3, B_1, B_2, D_5\}$.

There are four categories of factors that directly influence blockchain technology implementation in greenwashing governance, serving as causal factors that directly influence its effectiveness. To achieve fast and effective blockchain governance greening regulation, it is important to pay attention to the factors in the results layer. For direct management of blockchain governance greening, B_3 (Punishment), B_1 (Smart contract implementation), B_2 (Identification), and D_5 (Participation).

Factors in the Intermediate Layer ($L_2 - L_5$) influence and are influenced by others. They receive and emit directed edges based on the topological graph. There are three intermediate layers,

A_3, C_1, C_2, C_3, D_2 , D_3 ,D_4 and D_6. These eight categories occupy a middle position in the hierarchical structure of blockchain governance greening. As a hub for information transmission, these layers are influenced by the root layer. The results layer can be managed indirectly by governing the intermediate layer factors with a high degree of centralization. This study indicates that direct management of B_1 (Smart contract implementation), B_2 (Identification), and D_5 (Participation) may not be feasible. By managing D_3 (Sustainable implementation), indirect management can be achieved.

Figure 3: AISM success factors relationships



4.3 Result Discussion between DEMATEL and AISM

This study combines DEMATEL and AISM methods. Factors are hierarchically related based on their cause degree ($D_i + R_i$) and result degree ($D_i - R_i$). By solving centrality andcause degree, influence degree (D) and influenced degree (R) are attenuated. Through adversarial hierarchical extraction rules, AISM incorporates the adversarial thinking of generative adversarial networks (GANs). In complex systems, DEMATEL may have limitations despite its ability to quantify mutual influence. While AISM can partition factors into hierarchical levels, it may not be able to accurately assess how factors interact. DEMATEL-AISM methods can provide more comprehensive causal relationships and hierarchical structure analysis results. Both causal relationships and mutual influences are considered, as well as hierarchical structures and pathways of influence propagation.

5. CONCLUSION

The intricate mechanisms by which critical factors affect the governance of greenwashing using blockchain technology still require further study despite great efforts to combat it. In this study, DEMATEL-AISM method was used to identify and analyze the key influencing factors for greenwashing governance with blockchain technology. Through literature review and expert interviews, we identified 15 major influencing factors. Among the factors that impact blockchain governance against greenwash are "Implementation of sustainable practices in all stages of the supply chain", "Tracery of all stages of the supply chain", and "Access to information about the production process and materials used".

In this study, causal relationships, and the degree of impact among the indicators are analyzed, along with their structural hierarchy. Success factors and their correlations are identified. This study clarifies the mechanism of critical factors, contributing to a better understanding of blockchain governance. Furthermore, it provides practical guidance for reducing corporate greenwashing behavior by describing factors and their impact as well as their relationships to assist customers and government agencies. Both contributions are valuable.

Governing greenwash with blockchain technology. The DEMATEL-AISM method has limitations, including the need for enough and representative experts, which may lead to subjectivity. Furthermore, large-scale, and complex factors may complicate the method. Future research is required to validate our approach and refine the analysis framework. Machine learning algorithms may enhance the analysis of large-scale data sets in the future.

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6. REFERENCES

1. Laufer, W. S. (2003). Social accountability and corporate greenwashing. Journal of business ethics, 43, 253-261.
2. Mitchell, L., Ramey, W. (2011). Look how green I am! An individual-level explanation for greenwashing. Journal of Applied Business and Economics, 12(6), 40-45.
3. Delmas, M. A., Burbano, V. C. (2011). The drivers of greenwashing. California management review,54(1), 64-87.
4. Peter, H., Moser, A. (2017). Blockchain-applications in banking payment transactions: Results of a survey. European financial systems, 141, 141.
5. Kawaguchi, N. (2019). Application of blockchain to supply chain: Flexible blockchain technology. Procedia Computer Science, 164, 143-148.
6. Lan, Z., Pau, K., Mohd Yusof, H., Huang, X. (2022). Hierarchical topological model of the factors influencing adolescents' non-suicidal self-injury behavior based on the DEMATEL-TAISM method.Scientific reports, 12(1), 17238.
7. Li, H., Han, Z., Zhang, J., Philbin, S. P., Liu, D., Ke, Y. (2022). Systematic identification of the influencing factors for the digital transformation of the construction industry based on LDA-DEMATEL-ANP. Buildings, 12(9), 1409.
8. Queiroz, M. M., Telles, R., Bonilla, S. H. (2020). Blockchain and supply chain management integration: a systematic review of the literature. Supply chain management: An international journal,25(2), 241-254.
9. Guo, Y., Liang, C. (2016). Blockchain application and outlook in the banking industry. Financial innovation, 2, 1-12.

10. Truby, J. (2018). Decarbonizing Bitcoin: Law and policy choices for reducing the energy consumption of Blockchain technologies and digital currencies. Energy research social science, 44,399-410.
11. Zhu, H., Zhou, Z. Z. (2016). Analysis and outlook of applications of blockchain technology to equity crowdfunding in China. Financial innovation, 2(1), 1-11.
12. Sun, Z., Zhang, W. (2019). Do government regulations prevent greenwashing? An evolutionary game analysis of heterogeneous enterprises. Journal of Cleaner Production, 231, 1489-1502.
13. He, Q., Wang, Z., Wang, G., Zuo, J., Wu, G., Liu, B. (2020). To be green or not to be: How environmental regulations shape contractor greenwashing behaviors in construction projects. Sustainable Cities and Society, 63, 102462.
14. Huang, L., Zhen, L., Wang, J., Zhang, X. (2022). Blockchain implementation for circular supply chain management: Evaluating critical success factors. Industrial Marketing Management, 102, 451-464.
15. Farooque, M., Jain, V., Zhang, A., Li, Z. (2020). Fuzzy DEMATEL analysis of barriers to Blockchain-based life cycle assessment in China. Computers Industrial Engineering, 147, 106684.
16. Zhang, Y., Huang, Y., Zhao, X., Li, J., Yin, F., Wang, L. (2021). Research on the influencing factors of kite culture inheritance based on an adversarial interpretive structure modeling method. Ieee Access, 9, 42140-42150.

ESG TRANSFORMATION IN FUCTION OF CHANGE MANAGEMENT FOR SUSTAINABILITY

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Abstract

In methodological and empirical meaning, usually arises the challenge of the reasons for the increased importance of the ESG, particularly for advanced and change-oriented businesses ESG is sometimes referred to as sustainable investing, which involves conducting business that provides long-term value without producing any negative effects on the environment or society.

A good ESG strategy includes sustainability factors – such as a company's efforts toward reducing its carbon footprint, going green, encouraging diversity or introducing employee wellness programs. As such, an ESG strategy paves the way for a company to gain investor confidence, earn customer loyalty, reduce operating costs and improve both asset management and financial performance.

ESG should be a transformational, change management effort that touches every part of the business. Otherwise, managers will experience confusion over their role in implementing an ESG strategy, teams will continue to operate business as usual and ESG commitments will go unfulfilled. But leaders who commit to reworking norms, cultivating new behaviors and building new processes will create an environment in which ESG becomes part of the culture and a north star that helps orient all decisions. This, in turn, will position their organizations to lead on ESG and take a meaningful role in addressing the biggest environmental and social issues of our time. Companies need to take an active role in the community, beyond just making a profit. The positive benefits of this strategy include the company's expansion and durability of its success.

Sustainable development is a core principle of the Treaty on European Union and a priority objective for the EU's internal and external policies. The United Nations 2030 Agenda includes 17 Sustainable Development Goals (SDGs). ESG sustainability is crucial for businesses as it enhances reputation, attracts socially conscious investors, reduces risks, fosters innovation, and aligns with evolving consumer preferences, driving long-term profitability while contributing to a more sustainable and equitable world.

The goal of this research paper is to examine the influence of ESG towards the overall competitiveness and sustainable development of businesses.

Keywords: change management, ESG strategy, sustainability

JEL Classification: M1, M14, M16, Q01

1. INTRODUCTION

In recent years, investors have become more aware of the importance of ESG criteria in their investment decisions. As a result, many businesses have begun to integrate ESG into their operations and business strategies. ESG can be considered a subset of sustainability, which is defined by the UN World Commission on Environment and Development as *'meeting the needs of present generations without compromising the ability of future generations to meet their own needs'*.

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Sustainable practices support ecological, human, and economic health, and operate under long-term priorities with an assumption that resources are limited. ESG encompasses three pillars of responsibility:

- *Environmental:* refers to a firm's impact on the environment, such as the company's energy usage, pollution/waste, use of natural resources, and/or positive improvements like switching to renewable energy;
- *Social:* correlates to a firm's impact on society and company stakeholders – this can include factors such as product safety, employee treatment and diversity, charitable initiatives, supply chain relationships, impact on local communities, etc.;
- *Governance:* refers to the company's internal governance structure. Metrics for governance might include board diversity, accounting policies, executive pay and compensation, ownership structure, and ethical behavior within the higher management chain.

The term **ESG**, was coined by the Global Compact in 2004. However, the notion of incorporating all non-financial factors in business has been around for much longer, some might point to 2001 as the beginning of mainstream ESG with the launch of FTSE4Good indices. ESG influence has grown rapidly in recent years. But sustainable investing and responsible impact in business are not new and has been gaining more widespread acceptance in the past few decades.

It is important to note that investors and companies interact with ESG criteria somewhat differently, investors usually focus on integration of ESG criteria into their investment decision, and companies have an added responsibility of integrating ESG criteria, and disclosing ESG data to stakeholders, particularly investors.

2. LITERATURE REVIEW

Environmental, Social, and Governance (ESG) goals have become increasingly important for businesses and investors in recent years. These goals reflect a growing awareness of the need to prioritize sustainability, ethical practices, and responsible management to create long-term value and mitigate risks associated with environmental and social issues. As companies worldwide strive to integrate ESG principles into their operations, they face various challenges that must be navigated to make meaningful progress.

The following list outlines nine key challenges organizations encounter when pursuing ESG goals: (Wastebits, 2023)

1. **Defining clear and consistent criteria:** If you are considering expanding your portfolio to include sustainable investment, you should have a detailed understanding of the ESG criteria and be able to categorize them within the spectrum of green investment forms.
2. **Data availability and quality:** The need for consistent, reliable and comparable ESG data across companies and industries makes it challenging to measure progress and ensure transparency in achieving ESG goals.
3. **Short – termism:** Companies often prioritize short – term financial gains over long – term sustainability, making it difficult to focus on ESG goals that require long – term commitment and investment. ESG investments may be minimized or cut entirely to hit short-term earnings goals, possibly undermining shareholder rights as a result.
4. **Integration with business strategy:** Isolated ESG action plans don't work. Incorporating ESG goals into a company's core business strategy can be challenging, as it often requires a fundamental shift at every level of an organization from mission and

vision, to values, strategy and planning. This integration lays the foundation for creating more sustainable, long-term business value.

5. **Regulatory uncertainty:** The evolving regulatory landscape and varying requirements across jurisdictions challenge companies trying to implement ESG initiatives and comply with global standards.
6. **Investor expectations:** ESG engagement offers a unique opportunity to understand and clarify investor ESG expectations. Aligning ESG goals with the diverse expectations of investors can be challenging, as some may prioritize financial performance over sustainability. In contrast, others may prioritize certain ESG factors over others.
7. **Greenwashing:** Companies may engage in greenwashing or make misleading claims about their ESG performance, which can undermine the credibility of ESG initiatives and make it easier for stakeholders to distinguish genuine progress from mere marketing.
8. **Limited resources:** Implementing ESG initiatives often require significant investments in time, money, and human capital, which can be challenging for companies with limited resources.
9. **Supply chain complexities**: Ensuring compliance with ESG goals throughout complex and global supply chains can be difficult, as companies may need more visibility and control over the practices of their suppliers and subcontractors.

In conclusion, pursuing ESG goals is a multifaceted and complex endeavor that requires companies to overcome numerous challenges. Despite these obstacles, the importance of ESG initiatives in fostering sustainable business practices and long-term value creation cannot be overstated. By addressing the challenges identified in this list, organizations can develop more effective strategies and build more robust ESG frameworks that contribute to a better, more responsible business environment.

ESG regulation in the EU

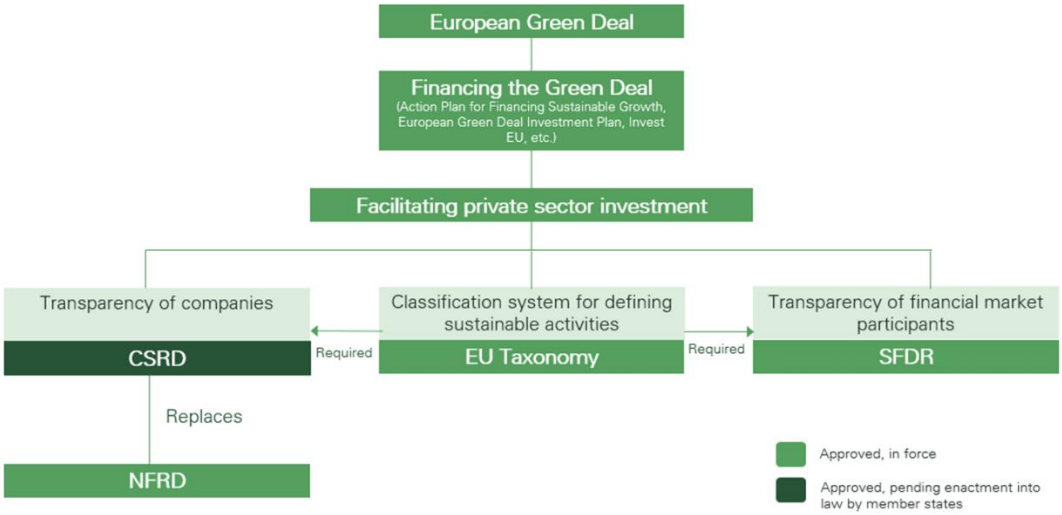
The CSRD (Corporate Sustainability Reporting Directive) is part of the European Green Deal, a set of policies and initiatives focused on shifting the EU to a more sustainable, responsible, and digital economy. To help fund the Green Deal, the EU launched the Action Plan for Financing Sustainable Growth that outlines reforms in three areas:

- **Moving capital flows toward sustainable investment, in order to achieve sustainable and inclusive growth:**
  - Establishing an EU classification system for sustainability activities;
  - Creating standards and labels for green financial products;
  - Fostering investment in sustainable projects;
  - Incorporating sustainability when providing investment advice;
  - Developing sustainability benchmarks.
- **Mainstreaming sustainability into risk management:**
  - Better integrating sustainability in ratings and research;
  - Clarifying institutional investors and asset managers' duties;
  - Incorporating sustainability in prudential requirements.
- **Fostering transparency and long-termism in financial and economic activity:**
  - Strengthening sustainability disclosure and accounting rule-making;
  - Fostering sustainable corporate governance and attenuating short-termism in capital markets.

The CSRD is a key supporting element of this plan. By requiring companies to disclose finance-grade information on their ESG performance in their annual reports, it will improve the transparency, credibility, and comparability of this data. This will help investors and other stakeholders make informed decisions about the companies they engage with, funneling more capital toward sustainable businesses and investments. It also facilitates greater corporate accountability by encouraging companies to integrate ESG considerations into their business practices. (Trust, 2023)

Figure 2.1 shows all key policies supporting the European Green Deal and EU Action Plan for Financing Sustainable Growth. They aim to improve private sector transparency and accountability around ESG impacts and risks to promote sustainable economic growth and investment in the EU.

Figure 2.1 How does the CSRD relate?



Source: https://www.onetrust.com/blog/ultimate-guide-to-eu-csrd-esg-regulation-for-businesses/, Accessed 21 June 2023.

The SFDR ESG regulation focuses on the transparency of financial market participants, including banks, insurance companies, asset managers, and pension funds. It requires these organizations to disclose information about their ESG policies, risks, impacts and performance at both an entity (company) and product level. Financial firms with investment funds must also disclose what percentage of their products are in line with the EU taxonomy. And, for products that don't meet the criteria, these companies must provide an explanation for why not. By requiring the EU Taxonomy as a reference, the SFDR aims to encourage financial market participants to consider the ESG impacts of the products and services they offer and to grow the financing of sustainable economic activities.

2.1 Socially Responsible Investment

SRI is defined as an investment philosophy that combines ethical or environmental goals with financial goals. (MDPI, 2023) While the historical origin of SRI stems from religious roots that date back two millennia, the demand for its implementation has increased sharply since the global financial crisis of 2008/2009.

The development of SRI has resulted in the emergence of different terminologies that focus on specific dimensions of investment strategies, such as responsible investing, ethical investment,

and green investment. For example, green investment is considered a new subset of SRI, focusing on environmental issues, and is defined as the investment necessary to reduce greenhouse gas and air pollutant emissions without significantly reducing the production and consumption of non-energy goods. Terminological differences can be explained in terms of their cultural aspects. For example, references to responsible investment are commonly used in the United Kingdom, but avoided in France and the United States because they ignore important social aspects.

Much of the literature focuses on comparing the financial performance of traditional investments with SRI. A review of SRI between 1986 and 2012 found that most papers indicate that SRI performance equals that of traditional investments and positively affects SRI activities and financial results. A recent literature review of SRI covered a more extended period (1981–2018) and found five thematic foci: the comparison of SRI with traditional investments, investor behavior, SRI compared with corporate social responsibility, institutional investors, and the construction of an SRI portfolio. In addition, a systematic review of SRI identified three themes, mostly falling into SRI performance studies, followed by investor behavior and SRI development studies. Another study extended the work of Widyawati by finding eight common keywords in the SRI literature: *corporate sustainability performance measurement, organizational studies, market reporting and perspective on SRI, governmental and stakeholder perspective, firm strategy and sustainability, corporate financial perspective, methods and books, ethical/sustainable mutual funds.* Another study classified SRI into four types: *socially based investments that focus on solving social issues, environmental investment, socio-environmental investment, and sustainability.*

According to the Global Sustainable Investment Review in 2020, which provides a global perspective on investment strategies growth of SRI, ESG integration ranks first, followed in order by negative/exclusionary screening, corporate engagement and shareholder action, norms-based screening, sustainability-themed investing, positive/best-in-class screening, and, lastly, impact/community investing. A review examined an investment strategy, mainly referring to ESG integration, in 190 academic papers from 1975 to the middle of 2009. The authors found that ESG integration is frequently mentioned in the SRI literature.

2.2 ESG Integration

Concerns about the environment have raised global awareness of sustainability issues, thereby shifting traditional investments directed toward profit maximization to those that support sustainability. The current tendency of the integration of sustainability and ESG in the financial market is termed SRI. SRI refers to ESG integration based on an explicit and systematic consideration of environmental, social, and governance factors in the investment decision-making process. The definition of ESG can be broken down in terms of three factors. Environmental factors consider how a company performs as a steward of the natural environment. Social factors examine how a company manages its relationships with its employees, suppliers, customers, and the communities in which it operates. Governance factors include a company's leadership, executive pay, internal controls, audits, and shareholder rights. These factors are used as a set of standards to assess a company's operations when screening for investments. (MDPI, 2023)

Empirical research shows that the effects of ESG on financial markets, as represented in firms' financial performance and value, are being debated in terms of both positive and negative impacts.

A study of more than 2000 empirical findings revealed that most ESG research findings indicate a positive impact of ESG on firms' corporate financial performance. In addition, a positive

relationship was found between ESG disclosure and profitability in European firms. A survey of empirical research in accounting and finance literature spanning 45 years also found a positive link between ESG and financial performance.

However, other findings indicate a negative impact of ESG on financial performance.

Most of the literature provides mixed signals regarding the positive and negative market values of ESG reporting. One author argues that a socially responsible market leads to an increased number of stakeholders. Others find a negative impact on market value and recommend improving report quality to mitigate this.

Investors play an essential role in supporting ESG and ethical practices, which is reflected in the literature in terms of the investor-based integration of ESG in decision-making, the process of investing in managing risks, and improvements to the investment process. However, research has also identified negative effects of investor integration of ESG, such as lack of consideration of the core issues that drive business models and finance, the lack of a business case, poor quality of data, and the absence of clear standards and definitions.

There are references to the manager-based integration of ESG into investment strategies at different levels, ranging from full integration to low integration, and using ESG reporting for reducing risk rather than for maximizing value.

2.3 Firm Sustainability

Addressing sustainability at firm level includes aspects such as the state of product recycling, sustainability issues within operations, strategies and business routines, and business models. Sustainability reputation significantly affects customer perception. For instance, a study reported a positive impact of sustainability (CSR and ESG) on a firm's reputation. Another study suggested that public awareness motivates firms to develop sustainability capabilities. Firm sustainability has been defined as successful adaptation to change and findings opportunities to offer valuable services—delivered efficiently and effectively—by achieving corporate sustainability through environmental, social, and economic factors to enhance efficiency. The management pillars that specifically address sustainability can be classified as follows: (1) corporate strategy, (2) management of human resources, (3) knowledge and innovation management, (4) measurement, (5) disclosure of independent assurance, and (6) integrated management systems. (MDPI, 2023)

The importance of integrating sustainability into a firm's strategy is discussed in the literature. For instance, it has been suggested that greenwashing occurs because of the absence of knowledge of the process of integrating sustainability into business routines and strategies. The authors examined the integration of economic, environmental, and social factors into different firm strategies, which they classified into an introverted strategy for risk mitigation, an extroverted strategy for legitimization, a conservative strategy for efficiency, and a holistic visionary strategy. In addition, another study provided a conceptual framework for linking sustainability strategies with Porter generic strategies. They suggest that radical innovation in sustainability initiatives leads to positive financial performance. A further study investigated the factors involved in the successful implementation of a corporate sustainability strategy related to organizational structure, culture, leadership, management control, employee motivation and qualifications, and internal and external communication.

The literature on the integration of sustainability into the business model concentrates on identifying features and frameworks, developing archetypes, and visualizing and simulating sustainable business models.

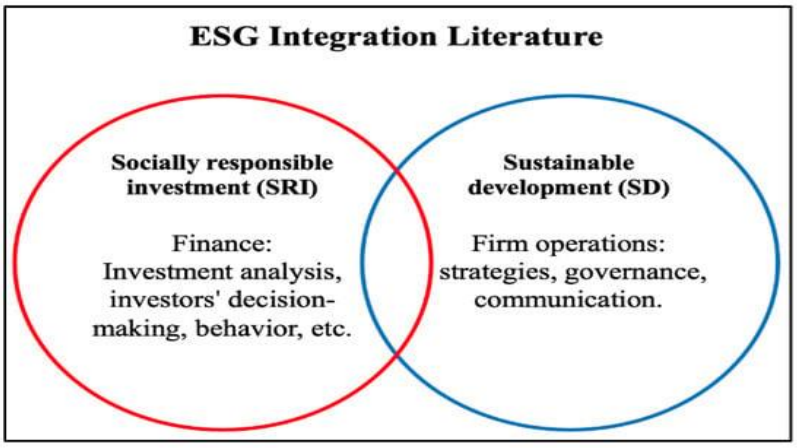
2.4 ESG Integration into Firms: Sustainable Development

The integration of sustainability and ESG into firm operations is referred to as SD. SD has been defined in corporate activities as balancing current sustainability with economic, environmental, and social aspects while also addressing company systems, such as operations and production, the organizational system, governance, assessment, and communication. (MDPI, 2023)

Few empirical studies have examined the impact of ESG on firm operations. The discussion is mostly limited to the positive impact of strategies that consider ESG performance, as well as corporate governance and ESG reporting. A positive impact of regulation on reporting strategies and governance practices is noted in firms becoming proactive in addressing sustainability through communication, transparency, stakeholder engagement, and the improvement of relationships with external resources.

However, ESG as an indicator of sustainability is criticized for not showing the position of firms with regard to the sustainability and trustworthiness of ESG data. Figure 2.4.1 illustrates ESG integration in the literature in terms of both investment and internal operations.

Figure 2.4.1 ESG Integration Literature



Source: https://www.mdpi.com/2071-1050/14/5/2959, Accessed 21 June 2023;

It quickly becomes clear that real impact will require companies to undergo a fundamental shift in how decisions get made at all levels of the business, from focusing primarily on profit maximization to considering a range of factors and stakeholders. Commitments must therefore be paired with organizational change efforts that empower day-to-day decision makers like this regional manager to work towards and be held accountable to these commitments.

This is business transformation at its purest. Just as a company undergoing a digital transformation would invest in reorganizing their operations, so too must ESG leaders deploy all the change management tools at their disposal to successfully embed ESG priorities into the fabric of the business. Companies committed to ESG must thus create a culture and operating system in which ESG goals are prioritized.

No company can prosper nowadays if it is not involved in the community and the people around it. Companies need to take an active role in the community, beyond just making a profit. The positive benefits of this strategy include the company's expansion and durability of its success.

3. DATA AND METHODOLOGY

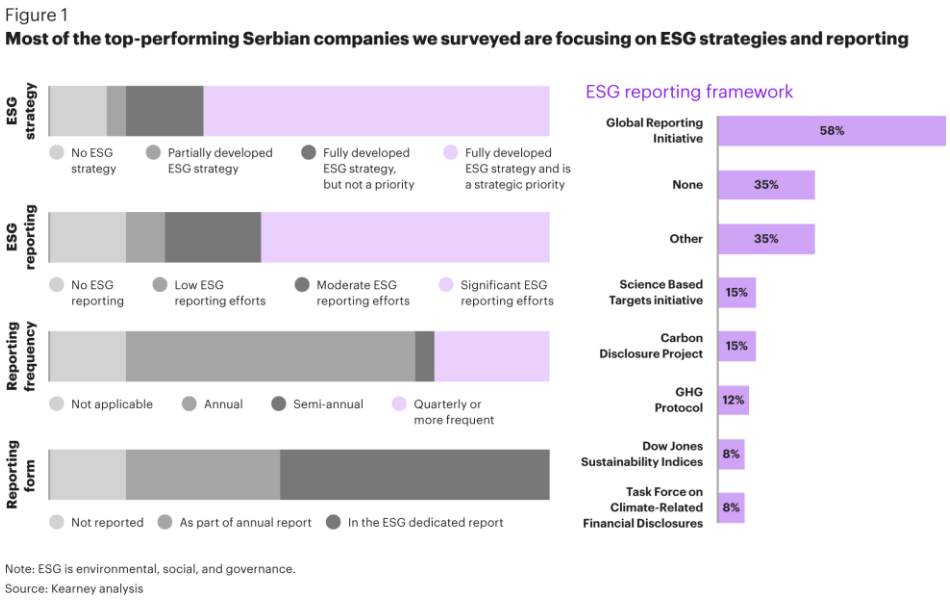
This research discusses the importance of ESG into operations of the business. With growing scrutiny on businesses' role in addressing environmental and social outcomes, many companies are embracing sustainable business practices. Sustainability has become a strategic imperative for companies as they position themselves for the future. The environmental and social challenges the world faces today are complex and urgent. The stakes are getting higher. That's why value-led sustainability is everybody's business.

The data used are secondary, they are the result of research on Environmental, Social, Governance, Integration into the Business Model. In order to provide a comprehensive and transparent view of the relationship between ESG and business models, the data obtained is based on the SALSA framework. (MDPI, 2023)

The growing importance of ESG for businesses in Serbia

ESG issues are becoming much more important for most companies, as seen in their strategy development and reporting efforts (see figure 3.1). In fact, 84 percent of the companies that they surveyed say they have developed an ESG strategy, and 69 percent consider it a strategic priority. More than half say they are investing significant efforts into their ESG reporting. The most common frequency of reporting is once a year; however, a quarter of companies say they report quarterly or more often. More than half have an ESG-dedicated report, but roughly 15 percent say they do not have a clear ESG strategy and therefore no reporting.

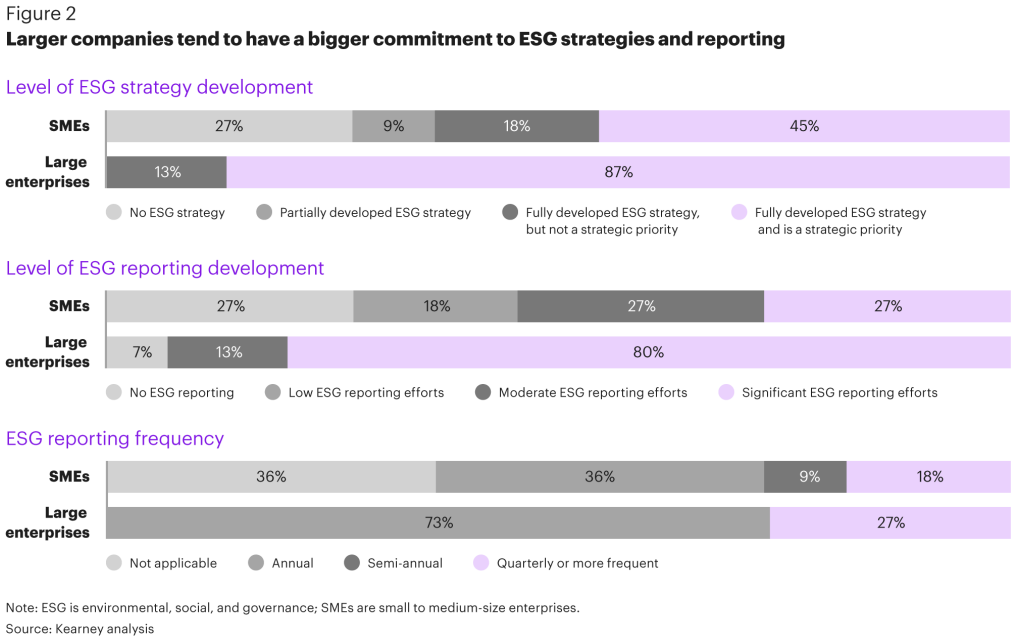
Figure 3.1 ESG strategies: a priority for the top-performing Serbian companies



Source: https://www.kearney.com/service/sustainability/article/-/insights/the-growing-importance-of-esg-for-businesses-in-serbia-from-strategy-to-reporting, Accessed 21 June 2023

When it comes to ESG strategies and reporting, large enterprises display a stronger focus and commitment than SMEs (see figure 3.2). In fact, all of the large companies in their study have fully developed ESG strategies, and 87 percent consider it to be a strategic priority. Meanwhile, two-thirds of SMEs say they have a fully developed ESG strategy, but only 45 percent consider it a strategic priority. Additionally, 80 percent of large companies say they invest significant efforts into their ESG reporting, while only a quarter of SMEs do the same. This is likely a consequence of large enterprises being part of multinational groups that are adjusting their strategies and reporting to meet existing and upcoming European regulations.

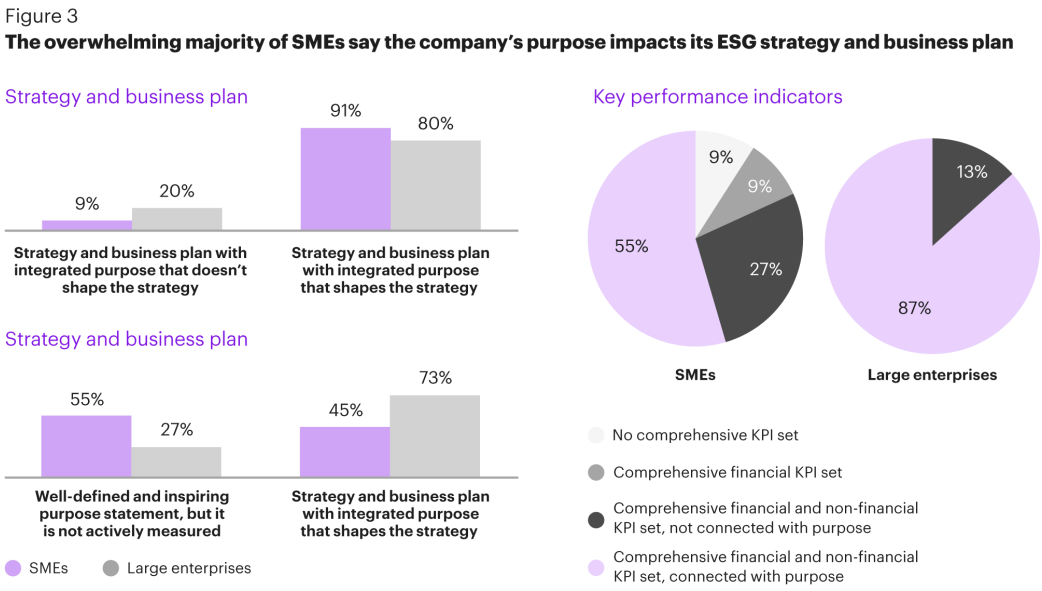
Figure 3.2 Big versus small: does it make a difference?



Source: https://www.kearney.com/service/sustainability/article/-/insights/the-growing-importance-of-esg-for-businesses-in-serbia-from-strategy-to-reporting, Accessed 21 June 2023

The Serbian companies that they surveyed invest a great deal of effort into creating a strategy and business plan with a cohesive goal that is connected to their purpose. Interestingly, 91 percent of SMEs say their purpose influences their strategy and their business plan, compared with 80 percent of large businesses (see figure 3.3).

Figure 3.3 ESG Strategies and business plans



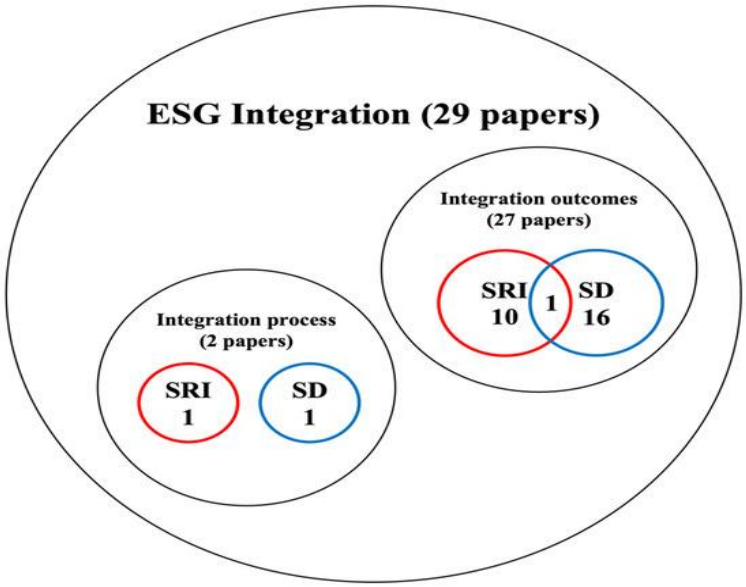
Source: https://www.kearney.com/service/sustainability/article/-/insights/the-growing-importance-of-esg-for-businesses-in-serbia-from-strategy-to-reporting, Accessed 21 June 2023

All of the companies say they have well-defined, inspiring purpose statements. On average, the statement is measured more often within large enterprises. Almost three-quarters of large firms say they actively measure it, compared with only 45 percent of SMEs. In terms of key performance indicators (KPIs), SMEs on average do not connect them with a purpose to the same extent as large enterprises. All large companies say they have both financial and non-financial KPIs. However, 13 percent of large enterprises and 27 percent of SMEs say they don't connect their financial and non-financial indicators with the organization's purpose.

4. RESULTS AND DISCUSSION

Figure 4.1 shows the results of the discussion of ESG and the business model. They analyzed the 29 papers on the basis of process and outcomes and distinguished them based on ESG integration along the lines of SRI and SD.

Figure 4.1 Paper analysis results of ESG integration process and outcomes



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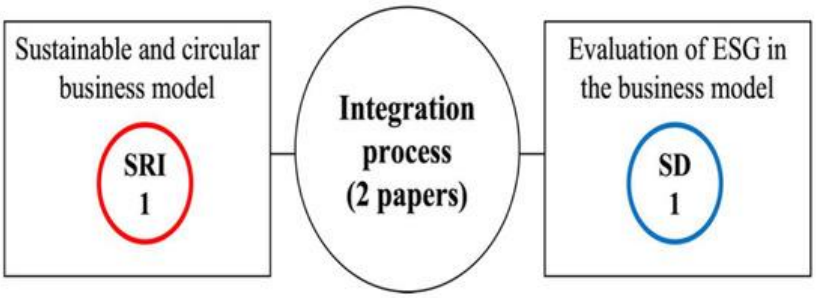
They found that 27 papers conceptualized ESG into the business model as an outcome, they included 10 papers along the lines of SRI, 16 papers following the view of SD, and 1 paper that addressed both SRI and SD. The papers provided only a general conception of the relationship between ESG and business models with no details of how the integration actually occurred. They grouped similar integration outcomes into four dimensions: (1) integration behaviors of ESG, in which the literature discusses the impact of government regulations, investors, and banks on integration behavior; (2) the advantages of ESG integration for firms and investors; (3) ESG practices, such as an examination of current cases addressing ESG in the business model; and (4) critical views of ESG in the business model. (MDPI, 2023)

Of the remaining two papers, the first examined the integration process based on the SRI view, while the second paper addressed the integration in terms of SD. The latter dealt with a firm integrating the concepts of sustainability and circular economy into its business model through value proposition, value delivery, value creation, and value capture.

Figure 4.2 Integration process

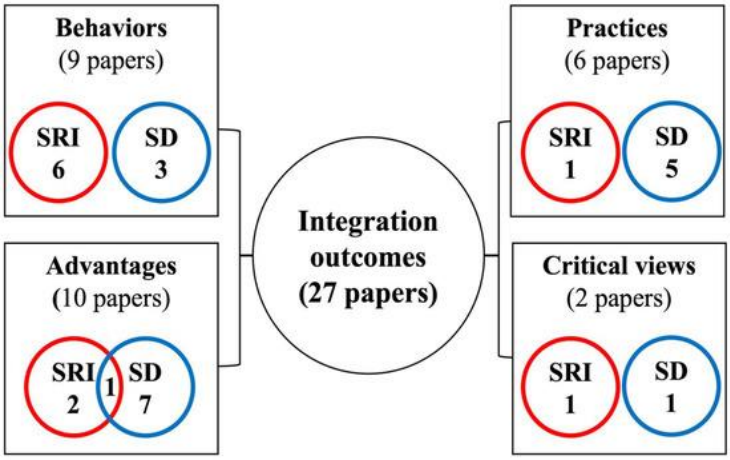


Source: https://www.mdpi.com/2071-1050/14/5/2959, Accessed 21 June 2023;

Figure 4.2 shows the two papers that discussed the ESG integration process. The first deals with the integration process from the SRI perspective and supports the evaluation of the firms' ESG performance through their ESG and business model links. The second discusses sustainability from an SD perspective in terms of the four ESG business model elements, value proposition, creation, delivery, and capture. In this case, the business model fosters sustainability.

4.1 ESG Integration: Outcomes

Figure 4.1.1 Integration outcomes



Source: https://www.mdpi.com/2071-1050/14/5/2959, Accessed 21 June 2023;

Figure 4.1.1 presents the details of their findings on the ESG integration outcomes, they found nine papers related to integration behaviors, ten related to the advantages of ESG integration, six to practices of ESG, and two papers related to critical views.

Limitations and future changes for North Macedonia

ESG practices are still in the early stages of development in Macedonia, the Macedonian government has taken steps to promote sustainability and encourage responsible business practices in the country. In 2020, the government adopted the National Strategy for Sustainable Development, which aims to promote social, economic, and environmental sustainability in the country.

The inclusion of ESG factors in the Corporate Governance Code highlights the importance of responsible corporate governance practices and promotes transparency and accountability

among publicly traded companies in Macedonia. However, it is worth noting that not all companies operating in North Macedonia have fully integrated ESG considerations into their corporate culture.

While some companies have embraced sustainability and social responsibility as core values, others have been slower to adapt to these trends. As such, the degree to which ESG factors are integrated into the corporate culture of Macedonian companies can vary widely. Overall, there is growing awareness of the importance of ESG factors in the business community in North Macedonia, and this is reflected in the country's regulatory framework. However, more work may be needed to fully integrate ESG considerations into the corporate culture of all companies operating in the country.

5. CONCLUSION

Companies committed to ESG must thus create a culture and operating system in which ESG goals are prioritized. Leaders can start by: *acknowledging the challenges, modelling the hard tradeoffs, reworking the system* and *empowering decision – makers.*

ESG should be a transformational, change management effort that touches every part of the business. Otherwise, managers will experience confusion over their role in implementing an ESG strategy, teams will continue to operate business as usual and ESG commitments will go unfulfilled. But leaders who commit to reworking norms, cultivating new behaviors and building new processes will create an environment in which ESG becomes part of the culture and a north star that helps orient all decisions. This, in turn, will position their organizations to lead on ESG and take a meaningful role in addressing the biggest environmental and social issues of our time.

The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity. The 17 SDGs are integrated – they recognize that action in one area will affect outcomes in others, and that development must balance social, economic and environmental sustainability.

ESG sustainability is crucial for businesses as it enhances reputation, attracts socially conscious investors, reduces risks, fosters innovation, and aligns with evolving consumer preferences, driving long-term profitability while contributing to a more sustainable and equitable world. Implementing ESG sustainability requires strategic integration into business operations, utilizing modern technology, engaging stakeholders, and measuring and reporting performance accurately. While challenges may arise, organizations can overcome them through education, communication, and prioritizing sustainable practices.

Sustainable Investing Principles to Enhance North Macedonia’s Corporate Sector

The American Chamber of Commerce in North Macedonia (AmCham), supported by the Center for International Private Enterprise, has launched a project aimed at strengthening the role of the country’s corporate sector in building a sustainable and resilient society. The project focuses on integrating ESG principles into business strategies and consists of two main pillars: business awareness and education. (AmCham, 2023)

Under the business awareness pillar, activities will include content creation and the development of an ESG booklet. Further, a thematic ESG conference will be organized to promote understanding and share best practices among companies.

The education pillar involves conducting a readiness assessment to evaluate companies' knowledge and preparedness for ESG implementation. This assessment will be followed by the organization of training courses for companies. The training modules will be tailored based on the assessment results, covering topics such as stakeholder analysis, baseline assessment, and reporting requirements.

The project activities are designed to bridge the knowledge gap, raise awareness, and assist companies in implementing ESG practices.

AmCham aims to be a driving force in achieving an ESG and sustainable investment-compliant corporate sector in North Macedonia. The project's specific objectives are to familiarize companies and stakeholders with the concept of ESG and to enhance companies' knowledge and expertise in integrating it into their business strategies. This will increase visibility and understanding of ESG among relevant stakeholders and promote the development of sustainable business models.

Acknowledgements

Mentor Supervisor: Prof. Leonid Nakov, PhD

REFERENCES – BIBLIOGRAPHY

1. Aldowaish, A., et al. (2022). Environmental, social, and governance integration into the business model: Literature review and research agenda. *Sustainability, 14*(5), 2959. https://doi.org/10.3390/su14052959
2. AmCham. (2023, July 13). Sustainable investing principles to enhance North Macedonia's corporate sector. Retrieved from https://amcham.mk/amcham-news/sustainable-investing-principles-to-enhance-north-macedonias-corporate-sector/
3. APCO Worldwide. (2023). ESG transformation requires the hard work of change management. Retrieved from https://apcoworldwide.com/blog/esg-transformation-requires-the-hard-work-of-change-management/
4. Apiday. (2023). The importance of ESG for a business. Retrieved from https://www.apiday.com/blog-posts/why-is-esg-environmental-social-and-governance-important-for-a-business#:~:text=ESG%20frameworks%20are%20important%20to,a%20company%20for%20their%20purposes
5. Kearney. (2023, May 8). The growing importance of ESG for businesses in Serbia: From strategy to reporting. Retrieved from https://www.kearney.com/sustainability/article/
6. S & P Global. (2020, February 25). What is the difference between ESG investing and socially responsible investing? Retrieved from https://www.spglobal.com/en/research-insights/articles/what-is-the-difference-between-esg-investing-and-socially-responsible-investing
7. Wastebits. (2023, March 23). 9 key challenges companies face when implementing ESG goals. Retrieved from https://blog.wastebits.com/9-key-challenges-companies-face-when-implementing-esg-goals/