Economic and Social Development

102nd International Scientific Conference on Economic and Social Development

Book of Proceedings

Editors:
Ana Lorga da Silva, Branislav Sutic, Mirjana Hladika

Lisbon, 20-21 October, 2023

Varazdin Development and Entrepreneurship Agency and **University North**
in cooperation with
ECEO – Universidade Lusofona
Faculty of Management University of Warsaw
Faculty of Law, Economics and Social Sciences Sale - Mohammed V University in Rabat
ENCGT - Ecole Nationale de Commerce et de Gestion de Tanger - Abdelmalek Essaadi University
Polytechnic of Medimurje in Cakovec

Editors:
Ana Lorga da Silva, Lusofona University, Portugal
Branislav Sutic, Polytechnic Nikola Tesla Gospic, Croatia
Mirjana Hladika, University of Zagreb, Croatia

Economic and Social Development

102nd International Scientific Conference on Economic and Social Development

Book of Proceedings

Lisbon, 20-21 October, 2023

CONTENTS

THE WAR IN SYRIA AS A TOPIC OF THREE SELECTED INTERNET PORTALS IN THE YEARS 2021 AND 2022

Petar Kurecic
University North, Croatia
pkurecic@unin.hr

Ema Krobot
University North, Croatia
emkrobot@unin.hr

ABSTRACT
The paper is a product of mentor-student cooperation. The conducted media research and analysis of internet portals confirms the decrease of media interest in the conflict in Syria. Geopolitical changes in the world, such as the war in Ukraine, in which world powers also play a major role, have redirected the interest of the media and the wider public. A significant percentage of analysed Internet portals mention the conflict in Syria exclusively in the context of the current war in Ukraine, and not as an independent topic worthy of journalistic coverage. The only exception is an internet portal based in a Middle Eastern country, Al-Jazeera, which, regardless of the duration of the conflict and geopolitical changes, continues to continuously publish texts related to Syria with the same intensity.
Keywords: *war, Syria, internet portals, content analysis*

1. INTRODUCTION
The conflict in Syria has attracted a lot of media attention from the very beginning, and the event that preceded the armed conflict also set a precedent in the media world. Pro-democracy protests across North Africa and the Middle East are often referred to as the first revolutions organized entirely on social media. Social networks facilitated communication among protest participants and were used to spread information and raise local and global awareness of the ongoing events. Soon, other media such as television and internet portals recognized the potential for creating journalistic stories. Every major media outlet had its correspondents in the countries affected by the Arab Spring, including in Syria. After the change of government in several countries and the calming of the situation, Syria entered an even more unstable period, which caused an even greater interest and need for journalistic coverage in the media, as well as in the general public. Media interest increased proportionally with the development of the conflict, culminating in the involvement of world powers in the war. However, after 12 years of almost non-stop warfare, of greater or lesser intensity, as well as the emergence of new conflicts in the world, media engagement has subsided along with public interest. The individual and comparative analysis of selected internet portals was done, i.e. texts published by the aforementioned portals, concerning the war in Syria, were analysed. The analysis also uses the war in Ukraine as a variable, because it is this conflict that is today most often compared to the one in Syria. The last part will offer the conclusion of the conducted research and the answer to the pre-set hypotheses. The first hypothesis (H1) is that internet portals created more content on the topic of the conflict in Syria in 2021 than in 2022. The second hypothesis (H2) is that geopolitical changes in the world (war in Ukraine) are one of the reasons for the reduced media interest in the conflict in Syria.

2. CONTENT ANALYSIS OF THE SELECTED INTERNET PORTALS
The analysis of the content of Internet portals begins with the selection of the media themselves. The media were selected based on the principle of prior familiarity with the content they create,

as well as the relevance of the portal. The research of the Internet portals The Guardian, Al Jazeera and Vecernji.hr was conducted during April and May 2023, and includes texts published between January 1, 2021 and December 31, 2022. A total of 854 publications were searched and analysed on three internet portals, and the search took place by entering the keywords "Syria" and "war" in the search engine of each individual portal.

2.1. The Guardian

The Guardian is owned by the Guardian Media Group, which has only one shareholder - the Scott Trust. The Scott Trust is named after CP Scott, the longest serving editor of The Guardian. Today, more than half of the media's income comes from the readers themselves. Namely, all the texts are free and available without any compensation, but at the end of each there is a link through which readers, if they wish, can donate a certain amount of money. Financial independence also enables editorial independence and prevents the media from being subject to any influence. The Guardian internet portal has its British, American, Australian and international edition, and for the purposes of this research, the international edition was analysed. The Internet portal is specialized in global news, and a significant part of the working journalists is made up of correspondents from all over the world. One of the topics from the geopolitical sphere that The Guardian has been covering for more than a decade is the war in Syria. SimilarWeb, a platform specialized in web analytics, is just one of the tools used to analyze internet portals. According to SimilarWeb data for the period from February to April 2023, The Guardian is ranked as the 123rd most visited portal in the world, while in Great Britain and in the special category "News and Media" it holds the 18th place. During February 2023, the portal records 322 million views, in March this figure rises sharply to as many as 357.2 million, and in April it drops again to 334.7 million views. The average of the three-month period can be reduced to 338 million views, while the average duration of the reader's visit is four minutes and 16 seconds. As for the geographical distribution, there are no big surprises. The portal is most read in Great Britain, where its readership is 42.92%, followed by the USA with 21.91%, then Australia with 10.05%, and the top five countries in terms of readership also include Canada with 3.81% and Ireland with 2.34%. This ranking is not surprising because The Guardian produces content in English, which is the official language in all five mentioned countries. If we talk about demographic indicators, 55.69% of the portal's readers are men, and 44.31% are women. Also, The Guardian is the most read by the audience belonging to the age group of 25 to 34 years (URL 7). In the period from January 1 to December 31, 2021, the Internet portal The Guardian published a total of 181 articles on the topic of the war in Syria. The most articles, 36 of them, were published in March, when the tenth anniversary of the Arab Spring and the beginning of the armed conflict in Syria was marked. In the rest of 2021, The Guardian devoted a large number of articles to the Arab Spring with titles such as "We will not give up: a new generation of activists is keeping the Syrian revolution alive" or "Arab Spring: What happened to the Syrian refugees stuck in Turkey?". Also, a significant part of the digital content was designed as a cross-section of the then ten-year war. In texts on such topics, Syrian President Al Assad is placed in the position of the main culprit for almost all crimes committed during the conflict. The crimes of the other conflicting parties were not followed to the same extent, which can be interpreted as an imbalance and a lack of objectivity in the reporting. The Guardian is based in Great Britain and has the largest number of British readers, so it is not surprising that some of the articles cover the official British policy towards Syria, i.e. the establishment of sanctions against the regime. During 2021, a total of 181 articles related to the conflict in Syria were published on the internet portal, of which 127 were written by an individual author or a group of authors. The Guardian uses international news agencies, specifically Reuters, France-Presse and Associated Press as one of its sources of information. News agencies were signed as a source in 16 articles.

The number of posts increased again in October, when it was reported that several families who had been detained in a refugee camp since 2019 and the fall of the Islamic State were allowed to return to Australia after a legal battle. One of the "permanent" topics on the portal for the last few years, and especially during 2022, is the discussion about the possible return of Shamima Begum to Great Britain. She left her home in London when she was only 15 years old and joined ISIS, but after the Islamic State was territorially defeated, the British public began to debate whether Shamima Begum still poses a threat to national security. The arguments of one side and the other are regularly reported by the British media, among them of course The Guardian. During 2022, a total of 163 articles related to the conflict in Syria were published on the Internet portal, which represents a decrease compared to the number of publications in 2021. Out of a total of 163 posts, 121 of them were created by an individual author or a group of authors. During 2022, the already mentioned correspondent from the Middle East, Martin Chulov, who wrote 21 articles on the topic of the conflict in Syria, also stood out. The remaining 21 posts were created using news agencies (Reuters, AFP, AP) as a source of information. As shown in the previous graph, the online portal The Guardian published fewer articles on the topic of the conflict in Syria in 2022 than in 2021. Also, in a significant number of articles published in 2022, the war in Syria was placed in the context of the war in Ukraine. Simply put, the conflict in Syria as a topic on the Internet portal does not appear independently, but as a comparison with the events in Ukraine. Out of a total of 163 articles published in 2022 about the war in Syria, 40 of them, or 24.54%, also mention Ukraine.

2.2. Al-Jazeera

The online portal Al Jazeera English was chosen as the subject of analysis in this research due to the already mentioned global reach it has, but also the fact that the headquarters of this media is located in Doha. Qatar, just like Syria, is an Arab country, which can mean that there are differences in reporting compared to media that have their headquarters in the so-called Western countries. In the period from February to April 2023, the Internet portal Al Jazeera was ranked 2250th in the world in terms of attendance, while in the USA it is in 1765th place. In the special category "News and Media", the online portal Al Jazeera is in 327th place. In February 2023, the Internet portal achieved 34.36 million views, in March the views increased to 36.87 million, and during April they fell again to 34.81 million. The reader spends an average of two minutes and 10 seconds on the Al Jazeera online portal, and the most represented age group is that of 25 to 34 years. 63.62% of readers are men, and 36.38% are women. In the USA, the readership of the portal is 25.62%, in Canada 9.99%, and in Great Britain 8.92%. The Internet portal Al Jazeera is represented in India by 6.11%, while in Australia its readership is 5.37%. The absence of Arab countries in the readership ranking should not be surprising, because it is an edition of the Internet portal in English. The Arabic edition of Al Jazeera attracts only those readers who are familiar with the Arabic language and script (URL 7). 230 articles about the war in Syria were published on the Al Jazeera internet portal in the period from January 1 to December 31, 2021. A sharp increase in the number of publications is visible in March, when many texts were published on the Internet portal that serve as a historical cross-section of the Arab Spring and the decades of war in Syria. In 2021, Al Jazeera reported on new attacks in Syria, which most often took place in the territory of Idlib, which proves that the situation in Syria is not completely peaceful even ten years after the beginning of the conflict. The digital content also covered the humanitarian disaster facing the country, UN Security Council decisions to extend humanitarian aid, as well as the worrying conditions in the refugee camps that have become home to thousands of people. During 2021, a total of 230 articles dealing with the war in Syria were published on the Al Jazeera portal, of which 157 were signed by "Editorial and agencies". Al Jazeera signs most of its media releases with the editorial, i.e. the name of the digital edition, without the signature of the authors who participated in their creation.

In such announcements, the news agencies Reuters, France-Presse and Associated Press were named as the main sources of information. Out of a total of 230 posts, an individual author or a group of authors created 62 of them. Kareem Chehayeb independently created 11 posts, which makes him the author with the most signed texts during 2021. In the period from January 1 to December 31, 2022, Al Jazeera published a total of 235 articles related to the conflict in Syria. A significant number of publications was visible in January, when the portal reported on the trial of Anwar Raslan, the first member of the Syrian government to be convicted of war crimes at the international court. Also, some of the content created in January included news about ISIS resurgence and attacks. There is another significant increase in the number of announcements in July. During that period, the created content paid special attention to the UN vote on extending cross-border humanitarian aid to Syria for another year. Russia vetoed the aforementioned Security Council resolution, which caused additional interest on the Internet portal. Also, the created content included announcements by Turkish President Erdogan about launching a new military operation in northern Syria against Kurdish fighters, which Turkey considers a terrorist organization. During November, several articles were published about Israeli attacks on Syria, and it should be noted that in its reporting, Al Jazeera places a special focus on crimes committed by Israel, which led to the portal being called out on several occasions for inciting anti-Semitism. During 2022, 235 articles on the subject of the war in Syria were published on the Al Jazeera internet portal, and the majority were created this time by agencies and editorial staff. The editors and agencies are signed as sources in 159 published texts.

2.3. Večernji.hr

Vecernji.hr represents the web edition of the Croatian daily Vecernji list. In 2021, Vecernji.hr introduced the option of charging for access to part of the published digital content. Večernji list has been published since 1959, and its peak circulation was achieved in the second half of the 1980s, when it was printed in 19 editions. Since 2000, it has been part of the Austrian newspaper concern Styria (URL 9). The content of Večernji is divided into several sections and covers a handful of topics from sports to showbiz, but special focus is placed on political events in the country and in the world. If we talk about ideological commitment, Večernji is placed in the position of the centre, which according to the editors enables objective and unbiased reporting on all political actors. In the period from February to April 2023, Vecernji.hr was ranked as the 2861st most visited internet portal in the world, and the eighth in the national ranking of Croatia. In the "News and Media" category, this Croatian portal ranks 409th. In February 2023, 29.44 million views were recorded, and in March, with a slight decrease, 28.95 million. During April, views continued to fall and reached a figure of 26.91 million. Readers spend an average of three minutes and 38 seconds on the mentioned internet portal. Vecernji.hr is by far the most read in Croatia (81.35%). Bosnia and Herzegovina follows with 4.32%, but it should be noted that Večernji also has its Bosnian edition, which is more widely read. In third place in terms of readership is Germany (2.80%), followed by Norway (2.52%) and Serbia (1.53%). And this internet portal mostly attracts readers who belong to the age group of 25 to 34 years. Also, 46.91% of readers are men, while the female audience leads this time with 53.09% (URL 7). The Internet portal Vecernji.hr published a total of 28 articles related to the war in Syria in the period from January 1 to December 31, 2021. However, during January, August and October, not a single article was published on the mentioned topic. In March, there is a sudden increase in the number of articles, and one of them bears quite a resemblance to the text published on the Internet portal The Guardian, as it includes claims that ten years after the beginning of the Arab Spring, the spirit of the revolution is still alive. In March, a story was also published about the Croatian Government's plan to return the Syrian oil fields to INA after its workers were withdrawn from Syria nine years earlier due to imposed sanctions.

During May, there was extensive coverage of the presidential elections in Syria, where Al Assad won his fourth term with 95.1% of the vote, and at the end of the year, the American army that liquidated the leader of the Islamic State. During 2021, 28 articles related to the war in Syria were published on the Internet portal Vecernji.hr. The most publications, 12 of them, were created by Hasan Haidar Diab and HINA (Croatian reporting news agency). It is interesting that in a way, in 2022, the topics that attracted great attention in 2021 are "repeated". One of such topics concerns the negotiations on the return of INA to the oil fields in Syria. The rest of the content created includes stories about operations against the Islamic State, as well as Turkish attacks on Kurdish positions in Syria. The Internet portal Vecernji.hr published a total of 22 announcements about the war in Syria during 2022. No excessive deviations from the sources used the year before were observed.

3. PARALLEL ANALYSIS OF THE THREE SELECTED PORTALS
The portals on which the research was carried out, and then the comparative analysis, are The Guardian, Al Jazeera and Vecernji.hr. Individual analysis of each of the mentioned media aimed to determine the features of the digital content that these portals most often publish. Also, a period of two years was analysed in order to show in a reviewed manner whether there are changes in the quantity of published content. A comparative analysis of all three portals seeks to detect differences in the published content, that is, to determine whether there are specific stories to which the portals have given special attention and media space. Another goal of the comparative analysis is to determine the differences in the quantity of publications over two years. The conducted research covered the time period from January 1, 2021 to December 31, 2022, and a total of 854 posts on The Guardian, Al Jazeera and Vecernji.hr portals were analysed. All 854 announcements are related to the war in Syria. In a period of two years, The Guardian published a total of 344 news related to the conflict in Syria. In 2021, 181 articles were published, and in 2022, 163 of them, which represents a decrease in media interest in the mentioned topic. A total of 465 articles about the war in Syria were published on the Al Jazeera internet portal, the most compared to the other two analysed portals. Al Jazeera is the only one to record a small increase in the number of publications - during 2021, 230 news items were published, and in 2022, this number increases slightly to 235. This portal has therefore shown a continuous interest in the situation in Syria. Vecernji.hr, the only Croatian analysed portal, published a total of 50 news related to the war in Syria over the course of two years. 28 articles were published on the portal in 2021, and 22 in 2022. In this case, just like with The Guardian portal, a slight decline in interest in the conflict in Syria is visible. After the conducted research, it is evident that the Internet portals The Guardian and Vecernji.hr recorded a decrease in the number of publications related to the war in Syria during 2022 compared to the year before. On the other hand, Al Jazeera is the only analysed portal where there is a slight increase in the number of publications in 2022. The Internet portal The Guardian mentions Ukraine in 24.54% of posts related to the war in Syria. A similar scenario is recorded by Vecernji.hr, which gives space to the situation in Ukraine in 33.33% of its posts on the topic of Syria. This confirms the thesis that geopolitical changes in the world, and especially the war in Ukraine, are one of the reasons for reduced media interest in the conflict in Syria. In the period from January 1, 2021 to December 31, 2022, the Al Jazeera internet portal published the most texts related to the war in Syria compared to the other two portals. It was also the only one to record an increase in the number of publications in 2022, and only 14.47% of texts about the war in Syria mention Ukraine. Such results are not surprising because Al Jazeera is a media outlet based in a Middle Eastern country and, regardless of geopolitical changes, regularly reports on events from the region.

4. CONCLUSIONS

In proportion to the calming of the conflict, the media's interest in reporting on Syria also decreased. The analysed Internet portals The Guardian and Vecernji.hr published fewer texts related to the war in Syria during 2022 compared to 2021, which partially confirms the hypothesis that Internet portals created more content on the topic in 2021 of the conflict in Syria than in 2022. The analysed Internet portal Al Jazeera is the only exception in the research results because in 2022 it published a negligible number of articles on the topic of the war in Syria than in 2021. Such results were expected because Al Jazeera a portal with a special interest in reporting on the countries of the Middle East and on events from the mentioned region. In 2022, a significant percentage of the investigated internet portals also reported on the war in Syria exclusively in the context of the war in Ukraine. The Internet portal The Guardian mentions Ukraine in 24.54% of posts related to the war in Syria. With the Vecernji.hr media, that percentage rises to 33.33%, which means that the Croatian internet portal draws a parallel with the war in Ukraine in almost a third of its announcements about the war in Syria. On the Al Jazeera portal, the percentage of posts that put the conflict in Syria in the context of the war in Ukraine is slightly lower, amounting to 14.47%. These results confirm the hypothesis that geopolitical changes in the world (war in Ukraine) are one of the reasons for reduced media interest in the conflict in Syria.

LITERATURE:
1. Syrian Law Journal. *Syria - Brief history*. https://www.syria.law/index.php/brief-history/.
2. Britannica. *Syrian civil war*. https://www.britannica.com/event/Syrian-Civil-War.
3. Yacoubian, Mona. 2021. *Syria Timeline: Since the Uprising Against Assad.* United States Institute of Peace. https://www.usip.org/syria-timeline-uprising-against-assad.
4. Reuters Staff. 2021. *Timeline: Ten years of Syria conflict, from protest to war to economic decline*. Reuters. https://www.reuters.com/article/us-syria-security-timeline-idUSKBN2B40G7.
5. Balanche, Fabrice. 2021. The Assad Regime Has Failed to Restore Full Sovereignty Over Syria. The Washington Institute for Near East Policy. https://www.washingtoninstitute.org/policy-analysis/assad-regime-has-failed-restore-full-sovereignty-over-syria.
6. The Guardian. About us. https://www.theguardian.com/about.
7. SimilarWeb. https://www.similarweb.com/.
8. Al Jazeera. About us. https://www.aljazeera.com/about-us.
9. Hrvatska enciklopedija. Večernji list. https://www.enciklopedija.hr/natuknica.aspx?id=64051.

NON-GOVERNMENTAL ORGANIZATIONS AS REGIONAL DEVELOPMENT CONTRIBUTORS: HOW DOES REGIONAL DISTRIBUTION OF THE EU FUNDS SUPPORT LOOK LIKE IN SLOVAKIA?

Lucia Johanesova

University of Economics in Bratislava, Dolnozemska 1, Bratislava, Slovakia
lucia.johanesova@euba.sk

ABSTRACT

Society pays attention to the question if to support non-governmental organisations or not. NGOs are involved in the EU and member state strategies as participants in public policy making and receiver of funding. There is a lack of analysis in regional and thematic distribution of the EU and national support of NGOs' projects because NGOs as providers of the public goods which cannot be covered by the state or firms.Therefore, this research papers aims to examine it in the case of Slovak Republic for period 2014-2020. The EU and national support is concentrated in the development axes which are defined in the Partnership Agreement of Slovakia. Based on the regional distribution, most of NGOs' projects are aimed to the lagging region according to the EU strategy. Considering thematic distribution of NGOs' projects, regional development projects are concentrated in the poorer districts and education-oriented projects are centralized in development axes of a region. On the other hand, there is space to improve regional concentration in districts from lagging regions which are not covered as needed. It may be caused by widespread impact of NGOs' projects which are not settled in the district. This study analyses 1,278 projects of the NGOs in Slovakia by descriptive statistics and maps interpretations which provide better overview of the regional and thematic distribution of NGOs' projects among districts in Slovakia.
Keywords: *European Union support, non-governmental organizations, regional development, regional distribution, thematic distribution*

1. INTRODUCTION

In recent years, the importance of non-governmental organizations (hereinafter as 'NGOs'), as regional development contributors, is increasing within society, politicians, and scholars mostly due to their purpose of the state substitution in public services. In times of crisis as wars, environmental issues, raising violence against minorities, human rights repressions, lack of good quality education, and population ageing; individuals, families or groups tend to look for help in the NGOs. National governments make decision affecting individuals' welfare which can be impacted only by vote as a control instrument of the government. The level and growth of national income are significant for civil society participation: a faster growing and richer productive system means more resources to distribute to secure the support and compliance of all groups in society (Brinkerhoff and Goldsmith, 2003). The EU has created funding opportunities in the programming period 2014-2020 to fulfilled the Europe strategy 2020 aims, as one of them - increasing employment economy which delivers on social and territorial cohesion which is related mostly to the NGOs. The EU created the funding opportunities to support national strategies of regional development (anchored in the Partnership Agreement), support meaningful projects within society and minimize differences among EU regions. NGOs are included in the EU and national documents as important contributors to the governance, public policy making, and implementation of EU funds activities. To fulfil these goals, it is important to distribute EU and national support according to requirements of regions in a whole EU, including Slovakia.

As literature focuses on distribution of EU funds to the companies and businesses, there is missing information about NGOs funding. Therefore, the aim of this research paper is to analyse the regional distribution of the EU and national support of NGOs projects in Slovakia. Focus is oriented to types of support amount among regions, descriptive statistics, and visual analysis.

2. NON-GOVERNMENTAL ORGANIZATIONS IN EU REGIONAL DEVELOPMENT

Social enterprises, care for the orphans, socially disadvantaged, children and youth, mental health, harm reduction, homelessness or marginalized communities are topics covered by NGOs all over the world. These topics are included in strategic documents to be solved because if not covered by institution, they are costly. Governments aim to their reduction as a part of their competences. In countries with high degree of economic inequality, the supply of public goods and a level of state expenditure on public services are setup based on preferences of poorer groups. Therefore, the demand of median voter who has higher expectations is not fulfilled. This divergence between the supply of public goods and demand of median voter creates space for NGOs which respond to governmental undersupply of quasi-/public goods and services that are not covered by market. In the case of undersupply of public services, NGOs enter to market as co-provider. They do not maximize profits and, because they are not part of the public sector, they are not dependent on the political process. (Scott and Hopkins, 1999). An advantage of NGOs contains an involvement of volunteers, what brings benefits of the personnel expense reduction and the understanding of social value. Therefore, provision of public services by NGOs decreases transactional costs. NGOs involvement changes transition costs distribution between groups of people in society which enables better understand of potential and fundamental role in long-term prospective that transform the delivery of public services. Regional distribution of NGOs is not random but established on the needs of local communities and region. It is related to the governmental bodies, businesses, educational institutions, infrastructure, or technical support, because NGOs are not able to operate without other institutions involved in a regional development. An industry clusters may be defined very generally as a group of business enterprises and non-business organizations for whom membership within the group is an important element of each member firm's individual competitiveness. As the tides have turned toward more endogenous views of regional development (e.g., the creation of local state and development partnerships, business entrepreneurship strategies, incubators, programs to build social capital, human capital and technology initiatives, and industry clusters) to cope with global risks and opportunities, different political interests, as well as communities of scholars, seek different kinds of empirical applications (Bergmann and Fesser, 2020). As in the case of businesses, there are important location factors; which rely on an explicit evaluation of the present value of future returns and the costs of operating (Fruttero and Gauri 2005). Consideration of the location choice of NGOs brings multiple benefits, as anchored in the literature (Fruttero and Gauri 2005):

1) NGO provides valuable insights for donors and policymakers working in developing countries to assist in designing their strategies. It helps them understand whether or not NGOs target the most deprived villages and neediest communities and helps them secure their legitimacy to appear as valuable partners in the effort to eradicate poverty;

2) NGO location information could help donors and governments understand the motivation of these organizations, which in turn could help them find and select partners that are better aligned and design better contracts;

3) NGOs are nonprofit organizations that usually depend on the charitable inclinations of their founders and staff.

In a study of NGOs in Bangladesh, a donor - dependent NGO may have an incentive to work in areas with existing organizations if they know that it benefits them financially (Fruttero and

Gauri 2005). Staying close allows organizations to share infrastructure (Baum and Haveman, 1997). It also enables organizations to cooperate with themselves and negotiate better conditions with government. Clustering of NGOs brings innovation capacities into region and tendency to join innovative cluster with other business and non-business institutions. The impact of the innovative cluster in the development region analyses its contribution to the growth in productivity of the member companies and industries, to the increase in innovation capacity, to the creation of new businesses, to the support of innovation and to the expansion of the cluster (Fundeanu and Badele, 2013). The catalyst organizations aim to formalize partnership, to coordinate the development strategy of the pole of competitiveness in conjunction with the regional development strategy, to create a liaison with central and local authorities, to identify structures in collaboration with EU partner countries, in order to develop projects for transfer of knowledge and exchange of best practices (Fundeanu and Badele, 2013). Recognizing that regional development interests are eager to learn about all components of a local economy for which they are responsible, micro study analysts sometimes precede or accompany their proposals for detailed study of single industries by employing certain simple single-industry techniques drawn from regional analysis, which are then applied repetitively to commonly available multi-industry data (Bergmann and Fesser, 2020). NGOs characterised by co – production of the public services, they are important actors of the public policy creation, known as governance. Governance concerns with about how different sectors interact with each other and engage in joint decision making (Klijn, 2012). As NGOs know local communities and their needs, they are professionals in the topic and are able to negotiate with government better conditions for better society in the planning and design of public services. Due to all these reasons, NGOs play important part in local communities. However, transaction costs have to be covered by individual donors, business or public donations. Nonprofits must navigate fragmented funding streams, weather economic fluctuations, and contend with a variety of changes to traditional revenue sources (Young, 2007). The states provide different type of NGOs funding in order to support their activities. Given the importance of nonprofit service providers to the social safety net, stakeholders including philanthropic funders, practitioners, and public managers are concerned about fiscal sustainability in the nonprofit sector. (MacIndoe and Sullivan, 2014) Therefore, to support sustainability and long-term operation of NGOs should be in the interest of politicians and governments as well.

2.1. The European Union support in the programming period 2014-2020

Based on the Regulation (EU) No 1303/2013 of the European Parliament and the European Council there were established the European funds to support regional development in the programming period 2014-2020. During this period, the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund were supposed to provide sources for European regional development. In line with the conclusions of the European Council of 17 June 2010, whereby the Union strategy for smart, sustainable, and inclusive growth was adopted, the Union and Member States should implement the delivery of smart, sustainable, and inclusive growth, while promoting harmonious development of the Union and reducing regional disparities. (Regulation No 1303/2013) Aim of the Union strategy should be supported by strategic documents of the Member States known as Partnership agreements which should include the representatives of regional, local, urban and other public authorities, economic and social partners and other relevant bodies representing civil society, including environmental partners, non-governmental organisations and bodies responsible for promoting social inclusion, gender equality and non-discrimination, including, where appropriate, the umbrella organisations of such authorities and bodies (Regulation No 1303/2013). Preparation of planned actions should be covered by multiple stakeholders, built up on the experience and knowledge

and established based on the principles of governance, subsidiarity, and proportionality. EU support should be spent to the achievement of the EU objectives in line with national and regional needs of the member state. All EU rules were lined to the Europe 2020 strategy which goal is to generate smart, sustainable, and inclusive growth in the EU, improve coordination, ensure consistent implementation, and make access to the ESI Funds as straightforward as possible for those who may benefit from them. (Blue guide, 2016). The EU commitment in the cohesion policy is to provide investment for economic growth and employment and secure economic, social, and territorial cohesion. Financial sources from the EU funds are split between regions based on the needs and disparities. The level of support still depends on each region's position in relation to the average GDP per capita of the EU-27. (Blue guide, 2016). The rule of the ESF share in the Funds' resources at the European level amounts to at least 23.1%, a minimum share of this Fund was set for each Member State individually. (Blue guide, 2016)

2.2. Slovakia as the EU member state in programme period 2014-2020
Slovak Republic (hereinafter "Slovakia") is the European member since 1st May 2004 using Euro as currency from 1st January 2009. As a member state Slovakia confirmed commitment to fulfil EU strategic goals in order to support regional development and economic growth. The Partnership Agreement acts as overall strategic document, providing an overview of how ESI Funds will be used in each Member State in the 2014-2020 programming period. (Blue guide, 2016) Agreement contains inclusion of the EU strategic goals and 11 target objectives into local conditions. Slovak regions are obliged to be supported by the EU funds based on the rule - less developed regions (West Slovakia, Middle Slovakia, East Slovakia), transition region (none) and more developed region (Bratislava region). Bratislava region must be specially threated because of GDP per capita exceeds 90 % of the EU average in PPS. The high numbers are exceeded by presence of capital city. On the other hand, the Bratislava region also includes three further districts, Malacky, Pezinok and Senec, which have a 31% share in the region's population and an area more than 4 times larger than that of the city of Bratislava. Based on the analysis of development potential and needs among regions in Slovakia, the EU funds support is about to be aimed at regional units which can maximize effectiveness potential of local resources and region specifics. Suitable conditions are basics for elimination of regional disparities. The major development region centres are defined in the Concept of Territorial Development in Slovakia – Bratislava, Trnava, Nitra, Presov and Kosice. This territorial units are identified as most suitable for absorption of the EU funds because they represent a hierarchical system of settlement agglomerations with varying intensity of development of agglomeration and cooperation relationships between individual centres and municipalities in their hinterlands. (Partnership agreement, 2016) They are considered as educational, social, and entrepreneurial centres which operate with concentration of transport and other infrastructure needed which enhance regional competitiveness and provide access to activities for the highest number of citizens. Slovak specifics concentrate in the rural areas which need to be treated and assessed individually from the EU funds. It is caused by huge regional differences in low wage costs and low taxes. This establishment of Slovak competitiveness and maximization of development do not work from the long – term prospective, mostly due to low investments in research and innovation. These changes should be changed in the programming period 2014-2020 to proceed economic growth in innovations and increase regional competitiveness.

2.2.1. NGOs involvement in Slovakia in programming period 2014-2020
Partnership Agreement defines deeply involvement of NGOs in particular topics as linking R&D activities with academic sector or support of social economy; participation in working groups of Operational Programmes preparation and provision of public services.

Important role of the NGOs in the EU support activities is providing of the public services and social innovation and involvement in the participation cooperation with government and municipalities. Participation of NGOs is expected in the OP Human resources. This aim is to increase EU funds absorption and to build up capacities of NGOs, mostly in the topics of women's rights and gender equality. NGOs expected position is to provide employment services in order to increase involvement of people at highest risk of social exclusion into labour market by using innovative solutions at the market.

3. METHODOLOGY

The EU and national support distribution aimed to the non-government organizations was analysed by using dataset of the National agency for Network and Electronic Services of the Slovak Republic (data.gov.sk) which provides details about supported projects in the programming periord 2014-2020. Selection process of the NGOs projects was drawn based on the Finstat database containing NGOs information details. The identification number of NGO and law entity were compared between Finstat and data.gov.sk extracts and selected as an NGO project. To analyse regional distribution of the EU and national support of the NGOs projects in Slovakia, the examined parameters are as follows:

- number of projects in a district – is a sum of all NGOs projects which were supported in a district;
- average support of NGOs project in a district – is an average sum calculated based on a total support of NGOs project in a district divided by a number of supported NGOs projects in a district;
- EU support of NGOs projects in a district – is a sum of EU support among all supported NGOs projects in a district;
- National support of NGOs projects in a district – is a sum of the National support among all supported NGOs projects in a district;
- Total support of NGOs projects in a district – is a sum of the EU and National support among all supported NGOs projects in a district.

District is a spatial and territorial unit which represents NUTS4. All parameters were examined based on the district distribution using maximum and minimum comparation. However, it was necessary to analyse NGOs projects support in three steps from the prospective of the EU funds (table 1), operational programmes (table 2), district distribution (map 1-3). Tables were provided by Excel and regional distribution maps by Datawrapper. This research is limited by possibility to compare numbers of NGOs in districts with funding and amounts of the NGOs projects in districts as there is no spatial study of NGOs in Slovakia. Another limitation is caused by overall project comparation with portion of NGOs projects, as there are also another business and non-business organizations providing the same or similar public services.

4. REGIONAL DISTRIBUTION OF EU AND NATIONAL SUPPORT IN SLOVAKIA

All regional development activities supported from the EU and national funds are represented by 15,694 projects in Slovakia. Total support of all projects contributes by 20,843,925,637.11 EUR; the EU support by 14,288,526,730.40 EUR; national support by 2,142,479,947.38 EUR into regional development. The EU support of the NGOs in Slovakia has been split over 1,278 projects. The biggest portion (666 projects) have been funded from the European Social Fund, on contrary only 23 projects belong to Cohesion Fund. If considering total support of NGOs projects, the highest amount of money (215,024,952.73 EUR) has been paid from the European Fund of Regional Development, the lowest amount (5,357,160.52 EUR) from the European Agriculture Fund for Rural Development. Total amount of EU support for NGOs has been in the amount of 386,805,815.74 EUR.

EU fund	NGOs Projects funded	Total support of NGOs projects
European Regional Development Fund	476	215,094,392.39
European Agricultural fund for Rural Development	113	5,357,160.52
European Social Fund	666	160,336,860.15
Cohesion Fund	23	6,017,402.68
Grand Total	**1278**	**386,805,815.74**

Table 1: Structure of NGOs projects by EU fund
(Source: Own proceeding based on the data.gov.sk)

Considering operational programme (hereinafter 'OP') structure, the biggest number of projects are covered by OP Human Resources (578 projects), the lowest number is in the OP Interreg V-A Slovakia – Austria (2 projects) which is aimed to the cross-border cooperation. The biggest average support of NGOs projects has been concentrated in the OP Integrated Infrastructure in the amount of 610,387.05 EUR, the lowest in the OP Interreg V-A Slovakia – Czech Republic in the amount of 112,887.24 EUR.

Operational Programme	NGOs projects funded	Average support of NGOs project
Integrated regional OP	428	418,963.16
Interreg V-A SK - CZ 2014-2020	8	112,887.24
Interreg V-A SK - AT 2014-2020	2	131,840.79
OP Effective Public Administration	92	213,805.93
OP Integrated Infrastructure	16	610,387.05
OP Environment Quality	42	286,435.52
OP Human Resources	578	225,414.67
Rural Development Program 2014-2020	113	47,402.92

Table 2: Structure of NGOs projects by OP
(Source: Own proceeding based on the data.gov.sk)

Duration of a project is another detail which affects the portion of subsidy. 2-year projects were in the total amount of 382 projects, followed by 288 one-year projects and 241 four-year projects. The lowest number of (47) projects were shorter than year. Comparing a type of fund, the highest number of 2-year projects (304) were funded from the European Social Fund (hereinafter 'ESF'), following 1-year projects funded also by ESF (154), European Regional Development Fund which supported highest number of 4-year projects (185). The longest NGOs projects (87) were supported over a 6-year period. Considering a regional distribution of projects among districts, the highest numbers of supported projects are in Prešov (68) and Bratislava I (60), followed by Bratislava II (43), Bratislava III (41), and Nitra (41). High concentration of projects (above 25) are Košice I, Žilina, Trenčín, Rimavská Sobota, Bratislava V, Banská Bystrica, Prievidza, Zvolen, Trnava, Michalovce, Komárno, Bratislava IV, Poprad. There is no supported project in district Košice III. Only 1 project was funded in the districts Žarnovica, Košice IV, Nové Mesto nad Váhom and Turčianske Teplice. The lowest concentration of supported projects (less than 5 included) is also in districts Gelnica, Stropkov, Ilava, Sobrance, Bánovce nad Bebravou, Hlohovec, Námestovo, Považská Bystrica, Bytča, Kysucké Nové Mesto, Tvrdošín. In the comparation of the districts from the prospective of funding, there were used average funding of the NGO´s project, national funding of the NGOs projects, EU funding of the NGOs projects and Total funding of the NGOs projects.

Average funding of the NGO´s project per district (map 1) is highest in the districts Žarnovica (782,352.94 EUR), Brezno (669,764.97 EUR) and Trnava (625,097.66 EUR). Support higher than 330k EUR is also in the districts – Bardejov, Skalica, Stará Ľubovňa, Kežmarok, Žilina, Banská Bystrica, Senica, Púchov, Levoča, Košice IV, Galanta, Sobrance and Nové Zámky. The lowest amount of average funding of the NGO´s project is in the districts Svidník (79,659.43 EUR) and Košice III (0 EUR – due to no project supported). This measure is lower than 180k EUR in the districts - Dunajská Streda, Piešťany, Bytča, Liptovský Mikuláš, Ružomberok, Košice I, Zlaté Moravce, Bánovce nad Bebravou, Topoľčany, Tvrdošín, Košice II, Partizánske, Kysucké Nové Mesto, Hlohovec.
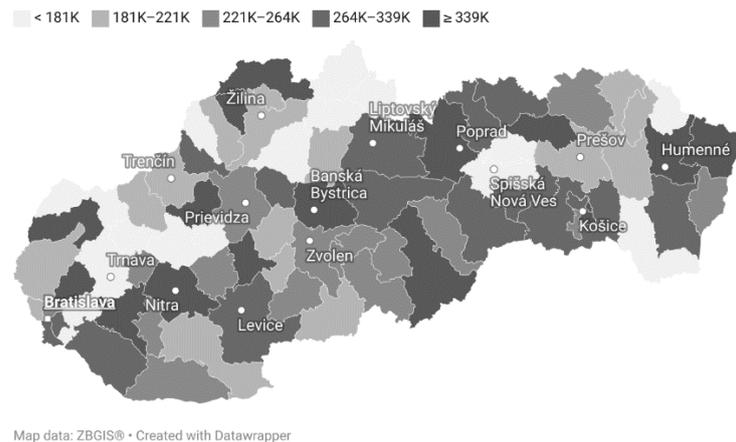
Map 1: Average funding of the NGOs projects per district
(Source: Own proceeding based on the data.gov.sk)

Analyzing a national funding of the NGOs projects, the highest support was assigned in the districts Bratislava I (2,971,503.51 EUR) and Bratislava II (2,012,674.15 EUR). National support higher than 720k EUR was in the following districts – Senec, Trnava, Žilina, Bratislava III, Bratislava V, Brezno, Prešov, Bardejov, Bratislava IV, Zvolen, Nitra, Stará Ľubovňa, Poprad and Banská Bystrica. No national funding of the NGOs projects was in the Košice III (no supported project) and Nové Mesto nad Váhom. National support lower than 44.3k EUR was in the districts – Partizánske, Sabinov, Košice IV, Stropkov, Kysucké Nové Mesto, Tvrdošín, Zlaté Moravce, Turčianske Teplice, Dolný Kubín, Gelnica, Svidník, Námestovo, Bánovce nad Bebravou, Hlohovec. Comparison of the NGOs projects EU funding, there are used sums of all funds in the district. Highest EU funding of the NGOs projects was in the districts Trnava (15,687,405.62 EUR) and Bratislava I (15,383,916.02 EUR). EU support higher than 7M EUR was in the following districts – Žilina, Prešov, Bardejov, Brezno, Banská Bystrica, Rimavská Sobota, Bratislava III, Nitra, Stará Ľubovňa, Kežmarok, Trenčín, Zvolen, Prievidza and Bratislava II. The lowest EU funding of the NGOs projects was in the Turčianske Teplice (161,290.48 EUR) and Košice III (no supported project). EU support lower than 1M EUR was in the districts – Partizánske, Ilava, Žarnovica, Bánovce nad Bebravou, Svidník, Považská Bystrica, Hlohovec, Košice IV, Bytča, Tvrdošín, Kysucké Nové Mesto and Nové Mesto nad Váhom. Total funding of the NGOs projects (map 2) is highest in Bratislava I (18,355,419.53 EUR). NGOs projects support in the districts higher than 7.8M EUR is in the districts – Trnava, Žilina, Prešov, Bardejov, Brezno, Banská Bystrica, Bratislava III, Rimavská Sobota, Nitra, Bratislava II, Stará Ľubovňa, Kežmarok, Trenčín, Zvolen and Bratislava V. Lowest total funding of the NGOs projects is in the district Turčianske Teplice (189,753.50 EUR), Košice III (no project, not taken into consideration).

Total funding of the NGOs projects lower than 1.18M EUR is in the districts – Námestovo, Piešťany, Partizánske, Ilava, Žarnovica, Bánovce nad Bebravou, Svidník, Považská Bystrica, Hlohovec, Košice IV, Bytča, Tvrdošín, Kysucké Nové Mesto and Nové Mesto nad Váhom.
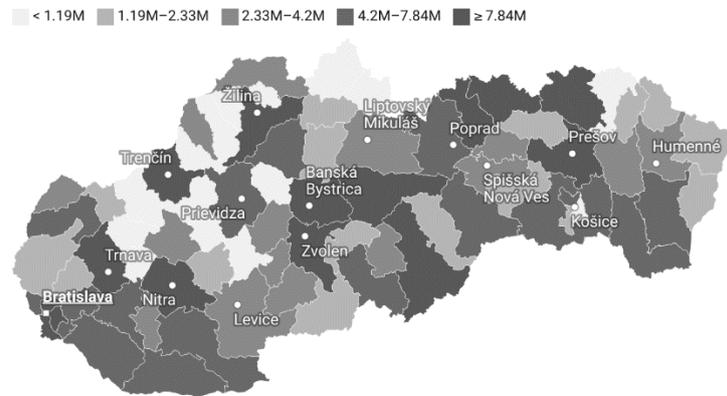
Map 2: Total funding of the NGOs projects per district
(Source: Own proceeding based on the data.gov.sk)

Analysis of final project output shows that the highest number of projects are aimed to the regional development (428) followed by education (271). The lowest amount of the projects is aimed to the migrants (1), socially disadvantaged (1), social entrepreneurship (2), research and science (2), effective public administration (3). Other topics with supported projects not more than 10 projects (included) are – mental health, homelessness, creative industry, community centres and care for the orphans. NGOs projects aimed to the regional development include implementations of the local strategies to economic, social or cultural development of local communities and infrastructure. Most of the projects are located in the districts - Košice – okolie, Michalovce, Nitra, Rimavská Sobota, Trebišov, Prešov, Trenčín, Bardejov, Kežmarok, Stará Ľubovňa, Topoľčany, Trnava, Prievidza. There is no project in districts of the Bratislava. The education-oriented NGOs projects (map 3) include wide range of trainings and courses which are aimed to the support of employment service, inclusion into labour market, or topic education in environmental or effective public administration topics. Most of the education NGOs projects are covered by OP Human Resources. Regional distribution of the education NGOs projects is concentrated in districts – Prešov, Bratislava I, Košice I, Bratislava II, Bratislava IV, Banská Bystrica, Bratislava III, Poprad, Žilina.
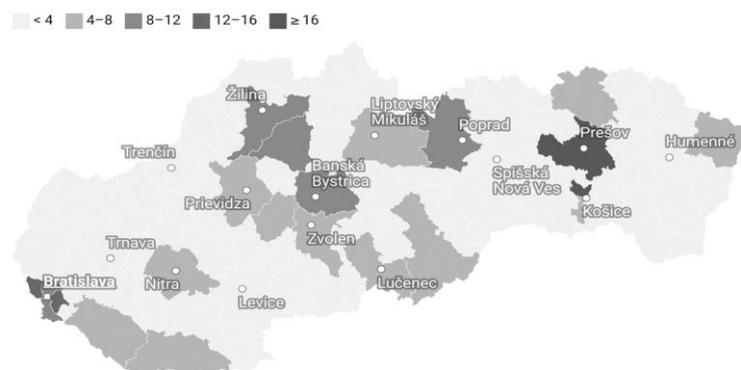
Map 3: Number of the NGOs projects per district – Education
(Source: Own proceeding based on the data.gov.sk)

5. CONCLUSION

The EU support of the NGOs in Slovakia has been split over 1,278 projects in the total amount of EU support - 386 mil. Regional distribution of the NGOs projects has been concentrated mainly in districts - Prešov, Bratislava, Nitra which represent development axes identified in the Partnership Agreement of the Slovak Republic for the years 2014-2020. On the contrary, a small number of projects are supported in Kosice which is the centre of eastern Slovakia characterized as one of the poorest regions. Considering funding, the highest amounts of support are located in the districts closer to Trnava, Nitra, Banská Bystrica, Prešov and Košice, which are regional centres. Lowest average amount of average funding occurs in the eastern districts which are lagging regions of Slovakia. Highest EU funding of the NGOs projects is found in the districts which have high level of infrastructure and are the locations of universities. The biggest portion of projects has been funded from the ESF. Considering thematic distribution of NGOs' projects, regional development projects are concentrated in the poorer districts and education-oriented projects are centralized in development axes of a region. Based on the regional distribution, most of NGOs' projects are aimed to the lagging region according to the EU strategy. Advantages of NGOs projects represent wider operation among districts if there is specialization, so projects can influence more communities if required. Therefore, it is not necessary to have a topic-oriented NGO in every region. There has been found that the EU and national support is concentrate in the development axes as planned in the Partnership Agreement of Slovakia. However, there is space to focus on poor districts in eastern parts of the Slovak Republic which require long-term attention regarding regional development activities. Comparing other aims of the Partnership Agreement there should be more projects supported in the topic of social inclusion, mental health, or science and research. As numbers of supported projects are connected to total number of NGOs in particular district and total number of NGOs' applications, there can be done comparation analysis of there two important features as well.

LITERATURE:
1. Anheier, H. K. and Leat, D. (2005) Creative Philanthropy, London: Routledge
2. Anheier, H. K. and Toepler, S. (eds.) (1999a) Private Funds, Public Purpose: Philanthropic Foundations in International Perspective, New York: Kluwer Academic/Plenum.
3. Baum, J., Haveman, H. (1997). Love thy neighbour? Differentiation and agglomeration in the Manhattan hotel industry, 1898–1990. Administrative Science Quarterly, 42(2), 304–338.
4. Bergman, E., Feser, E. (2020) - Industrial and Regional Clusters: Concepts and Comparative Applications. WVU Research Repository, Web book of Regional Science.
5. Besley, T. and Ghatak, M. (2017) - Public–private partnerships for the provision of public goods: Theory and an application to NGOs. Research in Economics 71
6. Brandsen, T., Pestoff, V. (2006) - Co-production, the Third sector and the delivery of public services. Public Management Review, vol. 8 issue 5, p. 493-501
7. Brandford, N., Bramwell, A. (2016) – Regional economic development: institutions, innovation and policy, Handbook on the Geographies of Innovation p. 292-308.
8. Brinkerhoff, D., Goldsmith, A.(2003) - How Citizens Participate in Macroeconomic Policy: International Experience and Implications for Poverty Reduction, World Development Vol.31, No.4, pp.685–701.

9. Cameron, J. (2020) - Development economics, the New Institutional Economics and NGOs, Third World Quarterly, 21:4, p. 627-635,
10. Carrerras, M. C., Angarita, N. (2018) - Economic adversity and electoral participation of vulnerable socioeconomic groups, Electoral Studies, Volume 57, pp. 110-120
11. Cheng, Y. (2019) - Exploring the Role of Nonprofits in Public Service Provision: Moving from Coproduction to Co-governance. Public Administration Review 79, no. 2: 203-214.
12. Dipendra, K. (2019) - Between Rhetoric and Action: Do NGOs Go Where They Are Needed? Voluntas: International Journal of Voluntary and Nonprofit Organizations volume 30, pp. 1197–1211
13. European Commission (2016) – Blue Guide – European Structural and Investment Funds 2014-2020, available online (20/9/2023): https://ec.europa.eu/regional_policy/sources/guides/blue_book/blueguide_en.pdf
14. Regulation (EU) No 1303/2013: available online (20/9/2023): https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R1303
15. Fruttero, A., Gauri, V. (2007) - The Strategic Choices of NGOs: Location Decisions in Rural Bangladesh, The Journal of Development Studies, 41:5, 759-787
16. Fundeanu, D., Badele, S. (2014) - The impact of regional innovative clusters on competitiveness. Procedia - Social and Behavioural Sciences 124, p. 405 – 414
17. Gidron, B. (2010) - Promoting civil society in Third Sector organizations through participatory management patterns. European Management Journal 28, p. 403– 412
18. Government of the Slovak Republic (2014): Partnership Agreement of the Slovak Republic for the years 2014-2020, available online : https://www.partnerskadohoda.gov.sk/zakladne-dokumenty/
19. Klijn, E. (2012) - Public Management and Governance: a comparison of two paradigms to deal with modern complex problems. The handbook of governance, Oxford: Oxford University Press, p. 201-214
20. MacIndoe, H., Sullivan, F. (2014) - Nonprofit Responses to Financial Uncertainty: How Does Financial Vulnerability Shape Nonprofit Collaboration? Journal of Management and Sustainability; Vol. 4, No. 3
21. Pestoff, V. (1992) - Third Sector and Co-Operative Services - An Alternative to Privatization. Journal of Consumer Policy 15: p. 21-45.
22. Scot, C.D., Hopkins, R. (1999) – The economics of non-governmental organizations, LSE STICERD Research Paper No. DEDPS15, Available at SSRN: https://ssrn.com/abstract=1126984
23. Schenkel,M., Ermano, P., Marino, D. (2014) - Recent Trends in the Supply and Demand of Volunteers, American Journal of Industrial and Business Management, Volume 04(06), p. 319-331
24. Weisbrod, B. A. (1988) The Non-profit Economy, Cambridge, MA: Harvard University Press

THE IMPACT OF COVID-19 PANDEMIC AND CHANGES IN CONSUMER HABITS ON BUSINESS RESULTS: AN EMPIRICAL STUDY OF THE GOPRO CORPORATION

Josko Lozic
University North, Croatia
jlozic@unin.hr

Marin Milkovic
University North, Croatia
mmilkovic@unin.hr

Katerina Fotova Cikovic
University North, Croatia
kcikovic@unin.hr

ABSTRACT

This paper's aim is to determine the financial aspects of the business process in the context of changes that have taken place in the corporate environment in the period 2016 to 2020. The research involves GoPro company's annual financial statements and other relevant sources for financial analysis. The research combines the analysis of selected financial indicators with indicators of changes in the sales structure. The findings revealed a significant decline in revenue and sales in the latter years, which are directly related to the changes of global consumers' habits. GoPro Corporation has noted a steady decrease in sales over the whole analysed period. Moreover, the corporation's net profit is negative and the direct operating expenses are consistently growing. The smartphone has become a fundamental competition with action cameras, i.e. a substitute that achieves continuous sales growth. The global changes taking place in the corporate environment undoubtedly indicate the need to restructure and transform the corporate strategic business models. Notwithstanding, the impact of the recent global COVID-19 pandemic has been considered and presented.
Keywords: *action camera, COVID-19, GoPro, net loss, operating cost*

1. INTRODUCTION

By the term "action camera" we mean cameras specially designed to be carried by people, things or animals in motion. Action cameras often allow wide-angle shooting and can be attached to the body in a variety of ways - with headbands, on the chest, on a helmet, or can be attached to bicycles and other devices (Lofthus, Frers 2021). The camera can be used as a stationary object or it can be mounted on a bicycle, on a helmet, in a car, on a piece of clothing and the like (Chalfen 2014). In research on raising children and improving parenting, the camera has been used as a tool to understand children's behaviour. The camera was mounted on children on different parts of the body to explain the different of behaviours (Trafí-Prats, Caton 2020). GoPro is the most well-known corporation among the manufacturers of "action cameras", but other corporations are also trying to develop similar products. The GoPro camera is associated with free time and outdoor activities, but can also be used on other life occasions. It has gained great popularity as part of equipment on drones (Agostinho et.al. 2020), but also as equipment for underwater shooting (Strandvad et.al. 2021). The corporation has developed software that allows shooting at an angle of 360º (Byona, Phuab 2021), which is used as a model of a movable camera to capture the space in front of objects under video surveillance (Roth et.al. 2019). Special software has been developed for the camera that broadcasts real-time content on a defined platform that corresponds to the business model of the platform economy (Parker et.al.

2016) (Moazed, Johnson 2016). Like other cameras used for real-time broadcasting, they produce the effects of looking at the camera instead of looking at the face which reinforces the importance of the impact of real-life applications (Gardner, Davies 2014). Our sexuality, ethnicity, habitat, age and income no longer shape our barriers. We are all screenagers, happy addicts in the international screen-based pursuit (Low 2013). GoPro is an example of a camera that directly confirms the fact of media performance that is powerful and profound precisely because other content is given as "content" as McLuhan pointed out (McLuhan 2008). The paper analyses the financial and business activity of the corporation. Selected financial indicators as well as other selected indicators of business analysis indicate a decline in demand for GoPro cameras and changes in consumer habits. In addition, the pandemic crisis has negatively affected user mobility and a significant decline in the number of pieces sold has been felt.

2. LITERATURE REVIEW
Research related to GoPro cameras is most often focused on the technical characteristics of use, i.e. the quality of photos and images obtained by using and using the application. Image quality and data accuracy are based on a geographic information system or absolute coordinate space (Guan et.al. 2020). The image is divided into several smaller segments of the image, without overlapping the colours, textures or shape of objects (Wojna et.al. 2017). In order to detect relationships between objects in space (May et.al. 2003; Fang et.al. 2018). The data collected by the camera can be used to analyse the image quality related to altitude (Guan et.al. 2020). Camera photography can be useful for surveillance at rest and sudden movements such as beach photography and the operation of a public baths rescue service (Harrison, Williams 2017). The camera is also used for military purposes and is used by the Israeli army in various military operations (Stein 2017). Action cameras and their effects can be analysed in the context of the camera as a subject who creates media content or as a person who uses the camera to create media content according to their own views. The research seeks to separate what is the visual relationship between technology as a neutral medium and the person who determines the frame and perspective of directing an action camera (Lofthus, Frers 2021). Cameras can record the interaction of individuals, i.e. long-term recording and comparison of recordings provides the ability to predict the standardized behaviour of individuals. Such research was conducted over a period of eleven days, and more than 400 hours of recordings were recorded, using nine GoPro cameras that worked continuously, on the behaviour of individuals in a given space (Roth et.al. 2019). Due to the simplicity and efficiency of use, it became part of the equipment in operating rooms and replaced classic cameras. In addition, it reduces the possibility of contamination of surgical meat (Adin et.al. 2019). Research has shown that image quality and shooting accuracy are higher with GoPro cameras than with Google Glass (Lee et.al. 2017). Action cameras are easy to use and are used by beginners as well as professionals. Cameras are used in capturing outdoor space, but also under the sea surface. The GoPro camera became especially popular among activists who sought to perpetuate the myth of mermaids and filmed divers near shark sharks that are close relatives of whales (Strandvad et.al. 2021). The GoPro camera was used in underwater photography to investigate understanding of fish behaviour and communication models due to the high quality of footage obtained in submarine use (Bussmann et.al. 2021.). Research also includes recording in the wild, where sounds are also recorded (Vannini, Stewart 2016). The camera is used on drones that capture space at an angle of 3600, which gives the understanding of the images a very special context (Agostinho et.al. 2020). Research has shown that customers in the Netherlands trust the recommendations to buy a GoPro camera more than customers in Russia (Broeder, Hout 2019). GoPro is an effective ethnographic tool for applying self-reflexivity by increasing an objective perspective of user navigational patterns, while also generating researcher social empathy for the user experience (Kinsey et.al. 2016).

3. METHODOLOGY AND RESEARCH QUESTIONS

Research and analysis are based on the Annual Report GoPro, Statista.com and other relevant sources for scientific research. The paper selects special financial indicators and other business indicators that explain changes in the financial and business situation in the context of changes occurring in the organization. The research is aimed at answering two basic research questions:

1) How much has the global COVID-19 pandemic affected the corporation's overall business?
2) How much have changes in consumer habits and growth in smartphone sales affected the corporation's business?

The results of the research and the explanation of the results are presented in the chapter Discussion and conclusion.

4. BUSINESS ANALYSIS

The research is divided into three basic areas. In the first part, the financial operations of the corporation are analysed, i.e. the selected financial indicators are analysed. The second part analyses the volume and geographical structure of sales in the context of the global Covid 19 pandemic. The third part analyses the global trend of smartphone sales in the context of another research question. The analysis also includes testing in the ANOVA model to research and analyse the impact of the camera sales trend on the corporation's total revenue.

4.1. Financial analysis

The analysis of GoPro's business includes a period of five years, i.e. from 2016 to 2020. Table 1 shows the selected financial performance indicators. The research is focused on the analysis of revenues, cost of revenues, and operating and net profits. In the analysed period, total revenues fell by 24.8%. Cost of revenue fell less than the decline in revenue, i.e. fell by 20.2%, which directly affected the decline in gross profit of 31.9%. The average gross income in the analysed period was 34.6%, which means that in the last analysed period it was higher than the average. In 2020, gross income fell by 23.8% compared to 2019, which is the largest decline in the analysed period. However, in the same year, the decline in revenue was 25.3% and the decline in cost of revenue was 26.1%, which was directly reflected in the growth of gross profit. In 2020, total revenues had the largest decline in the analysed period. The results of the research are shown in Table 1. Operating and net profit were continuously negative in the analysed period. Both profits were slowly recovering until 2019, and then the loss from core business increased again. The corporation reduced operating losses until the last analysed period, when losses began to rise again. On the one hand, the impact of the Covid 19 pandemic has had a very strong impact on the corporation's financial results, and on the other hand, the corporation has entered a mature phase. Similar trends and financial results were achieved by other technology corporations (Lozić et.al. 2020; Lozić et.al. 2021).

Table 1: Financial items from income statements (000; $)

	2016	2017	2018	2019	2020
Revenue	**1.185.481**	**1.179.741**	**1.148.337**	**1.194.651**	**891.925**
Cost of revenue	723.561	795.211	786.903	781.862	577.411
Gross profit	461.920	384.530	361.434	412.789	314.514
%	*39,0%*	*32,6%*	*31,5%*	*34,6%*	*35,3%*
Operating income (loss)	**-372.969**	**-163.460**	**-93.962**	**-2.333**	**-36.819**
Net income (loss)	**-419.003**	**-182.873**	**-109.034**	**-14.642**	**-66.783**

Source: own illustration (GoPro Annual Report)

Table 2: Financial items regression analysis
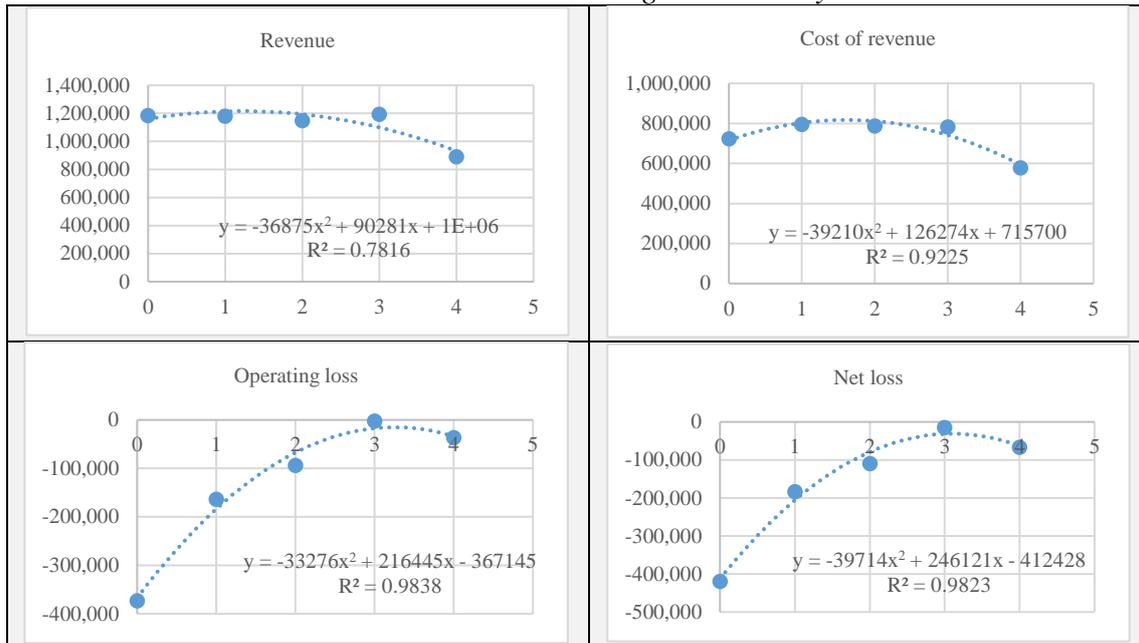
Source: own illustration

The results of regression analysis determine the direction of movement of the selected parameters. Total revenues are explained by the regression direction equation $y = -36875x2 + 90281x + 1E + 06$, with the coefficient of determination $R^2 = 0.7816$. In the penultimate analysed period, the inflection point is above the regression line, i.e. total revenues increased by 4% compared to the previous period, and in the last period fell by 25.3%. Cost of revenue are explained by the regression direction equation $y = -39210x2 + 126274x +715700$, with a coefficient of determination $R^2 = 0.9225$. The smallest increase in costs was realized in the penultimate period and amounted to 0.6%. Operating loss are explained by the regression direction equation $y = -33276x2 + 216445x – 367145$, with the coefficient of determination $R^2 = 0.9838$. Operating loss decreased until 2019, only to increase by 1,478.2% in the last analysed period. The net loss is explained by the regression equation $y = -39714x2 + 246121x - 412428$, with the coefficient of determination $R^2 = 0.9823$. The net loss trend is similar to the operating loss and increased by 356.1% in the last analysed period. The results of the analysis are shown in Table 2.

4.2. The impact of COVID-19

The results of the financial analysis indicated a decline in sales in the global market. In the analysed period of five years, sales fell by 40.78%. In the context of the COVID-19 pandemic, research results have shown interesting results. In 2019, revenues increased compared to the previous year, the loss from operating operations was the lowest, which is a direct result of the growth in camera sales in 2018. The crisis related to the pandemic, its real effects, showed only in 2020. The decline in sales in 2019 compared to the previous period was 1.8%, while the decline in sales in 2020 compared to the previous period was 33.8%, which is the largest total decline in sales.

Figure following on the next page

Figure 1: Number of camera pieces sold (000)
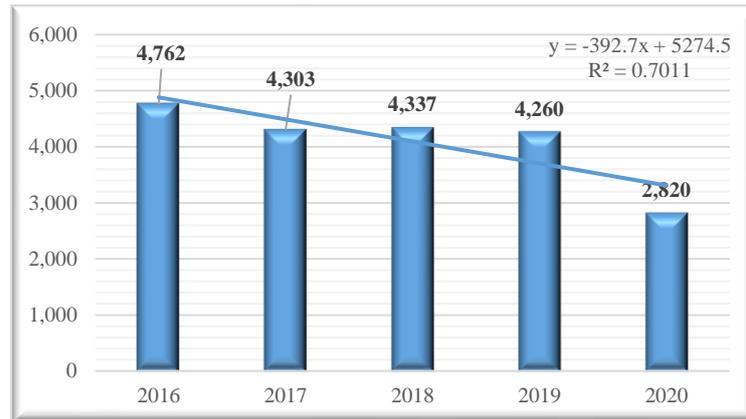
Source: own illustration (Statista.com)

The decrease in sales in the analysed period is explained by the equation of the linear regression trend $y = -392.7x + 5274.5$, with the coefficient of determination $R^2 = 0.7011$. The average annual decline in sales was 9.59%, but a coefficient of determination of 0.7 ($R^2 < 0.8$) is not sufficient to accurately interpret the results at the significance level of 0.05. The results of the research are shown in Figure 1.

Table 3: ANOVA

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,958967851							
R Square	0,919619338							
Adjusted R Squa	0,892825784							
Standard Error	42131,83962							
Observations	5							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	60925432062	6,0925E+10	34,32241	0,00991583			
Residual	3	5325275730	1775091910					
Total	4	66250707792						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	438263,0452	117886,6062	3,71766615	0,033862	63095,25078	813430,84	63095,2508	813430,8396
No. cam sold	166,4300251	28,40813951	5,85853308	0,009916	76,02264646	256,8374	76,0226465	256,8374037

Source: Own illustration

The results of regression analysis with the ANOVA model showed a strong correlation between the trend of revenue and the trend of camera sales, i.e. Multiple R = 0.95897 with the coefficient of determination Adjusted R Square = 0.89286 (for series less than 30 frequencies). The results of the research determined a significant impact of the dependent variable on the trend of total revenues Significance F = 0.009916 and a significant impact of camera sales on the global market on total corporation revenues p = 0.009916 at the level of significance of 0.05. The analysis of the sales structure indicates changes in trends in the global market. The results of the research are shown in Table 3. The decline in the corporation's revenue is directly related to the decline in the number of cameras sold, which indicates the need to change the management paradigm. Technological development and leadership in quality within the industry is not enough to offset financial losses from operations.

Figure 2: GoPro's global revenue by continent (%)
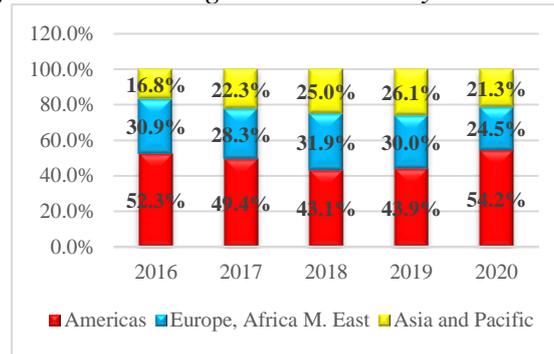
Source: own illustration (Statista.com)

The decline in sales is related to the decline in sales in the largest media market, i.e. the US market. The Asia-Pacific market is growing slowly, but it cannot compensate for the decline in sales in the United States. In 2018, the biggest growth was in the Asia and Pacific markets, and in the same period, the European market also recovered. The financial results were felt in 2019. The sharp decline in the markets of Asia and the Pacific and Europe in the last analysed period significantly affected the global decline in sales. The results of the research are shown in Figure 2.

Table 4: GoPro business percentage change (2016-2020)

	Revenue ($ mill)	%	No. cam sold (000)	%
2016	1.185.481	-	4.762	-
2017	1.179.741	-0,5%	4.303	-9,6%
2018	1.148.337	-2,7%	4.337	0,8%
2019	1.194.651	4,0%	4.260	-1,8%
2020	891.925	-25,3%	2.820	-33,8%
	Average	-6,1%	Average	-11,1%

Source: Own illustration

The decline in the corporation's revenue as well as the decline in the number of cameras sold is not continuous. The decline in sales was halted in 2018 to continue in the coming period. This was reflected in revenue growth in 2019. However, the impact of the global Covid 19 pandemic significantly affected the decline in revenue and the decline in sales in 2020. The decline in revenue in 2020 was 25.3% compared to the previous period, i.e. sales were 33.8% compared to the previous period. The average decline in revenue in the analysed period was 6.1% while the average decline in sales was 11.1%. One part of the decline in sales was offset by continuous improvements and rising prices, but total revenue could not be offset. The results of the research are shown in Table 4.

4.3. Impact of smartphone market

Another research question focuses on analysing the impact of smartphone sales on GoPro camera sales. The smartphone sales trend was inversely proportional to GoPro camera sales. In the analysed period, sales grew continuously until 2018, after which sales began to decline. The impact of the Covid 19 pandemic stopped smartphone sales right at the start and sales fell by 10.5% in 2020. The decline in sales of GoPro cameras in the last analysed period was almost three times larger than the sales of smartphones. The results of the research are shown in Figure 3.

Figure 3: Number of smartphones sold to end users worldwide (mill.)
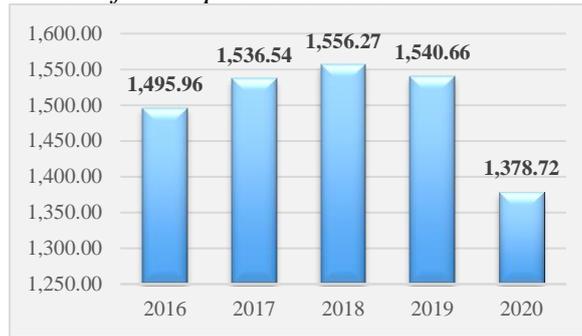
Source: Statista.com (own illustration)

The trend of smartphone sales is explained by the regression equation $y = -31.456x^2 + 165.7x + 1350.5$, with a coefficient of determination $R^2 = 0.9182$. Correlation analysis showed a very strong relationship between the sales trend of GoPro cameras and smartphones, i.e. the relationship was $r = 0.8395$. The growth in smartphone sales directly affected the decline in GoPro camera sales. With the global development of the Covid 19 pandemic, the decline in smartphone sales was felt first, followed by GoPro cameras.

5. DISCUSION AND CONCLUSION

The results of the GoPro business survey highlighted several significant conclusions that indicate the need to change the business paradigm:

1) The corporation is the leader within the camera industry in terms of product quality, but operating profit and net income are negative throughout the analysed period.
2) The number of pieces sold continuously decreases (eighth in one analysed period), while at the same time the corporation receives recognition for leadership in quality.
3) Smartphone sales are growing continuously, except in the last analysed period, but this did not significantly affect the sales of GoPro cameras, which proves the strong impact of the pandemic on this industry.

The answers to the research questions showed very interesting results. The answer to the first research question can be analysed from several different aspects. The crisis associated with COVID-19 had a negative impact on the financial result as well as on total sales. However, the corporation's revenue and total sales fell even before the pandemic. Operating and net profits were slowly recovering, but fell again after the pandemic. It can be concluded that the crisis has had a very negative effect on the corporation's operations. The second research question confirms the results of the research and the conclusions of the first research question. Changes in consumer habits and the growth of smartphone sales have directly affected the decline in sales of action cameras. In the first three analysed periods, camera sales continued to grow while camera sales continued to decline as did revenue. The results of the research indicate the need to separate quantitative from qualitative research. The decline in revenue and negative trends in camera sales are inversely proportional to the sales trend considered in the global market. The reason is a change of habits, not the quality of the product. In a study by Wired magazine, which specializes in new technologies, the GoPro Hero 10 Black model was chosen as the best action camera in 2021. In addition, the GoPro Hero 9 Black has been selected for the highest value for money in the global market (Gilbertson 2021). The quality of the camera and the ratio of value to price to pay is no longer enough to maintain the financial stability of the corporation. The corporation's total revenues have been falling year by year, and operating and net profits have been negative for six years. Changes in the environment significantly affect the overall business result of the corporation.

On the one hand, sales are falling in the traditionally largest market for action cameras, and on the other hand, sales of mobile phones are continuously growing. Competitors have appeared on the market with cameras of lower quality, but also significantly lower prices, which are preferred by younger users. Changes in consumer habits are part of the process of overall changes that have affected postmodern societies (Lozić et al. 2019). Members of Generation Z are not burdened with exceptional image quality or owning the most expensive brands on the market (Seemiller, Grace 2019). Financial operations become unsustainable with the current losses that corporations record in their regular operations. The number of products sold decreases from year to year, and corporations do not generate income from other business activities. The corporation's business model has entered a mature phase and significant restructuring of the business model is needed. The results of the research are the basis for research after the end of the COVID-19 pandemic. The first part of the research should focus on the analysis of financial data, i.e. the analysis of the revenue trend. The second part of the research should be focused on the sales trend, i.e. research on the change in demand for cameras after the end of the pandemic. The results of the research have undoubtedly shown a decline in interest in high quality within the video recording industry. In addition, the corporation's business model has remained in the classic pipeline model, which controls the entire value chain of the finished product. Future research should lay the groundwork for discovering the possibility of changing the corporate paradigm of the corporation and transforming one part of the business from a pipeline model to a platform model.

LITERATURE:
1. Adin, C.; Royal, K.; Roe, K. S.; Mathews, K.; Risselada, M. & V. Scharf (2019). „Comparison of still image quality between traditional 35 mm digital and GoPro cameras in a surgical Setting". *Journal of Visual Communication in Medicine*. DOI: 10.1080/17453054.2019.1618702
2. Agostinho, D.; Maurer, K. & Veel, K. (2020). „Introduction to The Sensorial Experience of the Drone". *The Senses and Society*, 15:3, 251-258, DOI: 10.1080/17458927.2020.18 20195.
3. Broeder, P. & van Hout, A. (2019). „When friends recommend: online purchasing behaviour of Russian and Dutch people when prompted by recommendations from Facebook friends". *Russian Journal of Communication*, 11:3, 191-203. DOI:10.1080/194 09419.2019.1656545.
4. Bussmann, K.; Utne-Palm, A.C. & de Jong, K. (2021). „Sound production in male and female corkwing wrasses and its relation to visual behaviour". *Bioacoustics*, 30:6, 629-651, DOI: 10.1080/09524622.2020.1838324.
5. Byona, K.K. & Phuab, J. (2021). „Digital and Interactive Marketing Communications in Sports". Journal of interactive advertising, Vol.21, No. 2, 75.-78.
6. Chalfen, R. (2014). „Your panopticon or mine?' Incorporating wearable technology's Glass and GoPro into visual social science". *Visual Studies*, 29:3, 299-310, DOI:10.1080/ 1472586X.2014.941547.
7. Fang, Z.; Xu, H.; Shaw, S.L. Li, Q.; Yuan, S. & Li, L. (2018). "Pedestrian Navigation Research Trend: From Absolute Space to Relative Space-Based Approach." *Geomatics and Information Science of Wuhan University* 43 (12): 2173–2182.
8. Gardner, H. & Davies, K. (2014). „How today's youth navigate identity, intimacy, and imagination in a digital world". *Yale University Press*. ISBN: 9780300209341.
9. Gilbertson, S. (2021). „The Best Action Cameras". *Wired Magazine*. https://www.wired.com/gallery/best-action-cameras/. [21.04.2022.]
10. GoPro Annual report. https://investor.gopro.com/financials-and-filings/financials/def ault.aspx. [15.04.2022.]

11. GoPro. Statista.com. https://www.statista.com/statistics/451123/gopros-sales-worldwide/. [15.04.2022.]

12. Guan, F.; Fanga, Z.; Yuc, T.; Fenga, M. & Yanga, F. (2020). „Detecting visually salient scene areas and deriving their relative spatial relations from continuous street-view panoramas". International journal of digital earth, Vol. 13., No. 12, 1504-1531, https://doi.org/10.1080/17538947.2020.1731618.

13. Harrison, S. & Williams, R.F. (2017). „Monitoring the swim zone while finding south: sustained orientation in multiactivity among beach lifeguards". Text&Talk 2017; 37(6): 683–711. https://doi.org/10.1515/text-2017-0023.

14. Kinsey, K.M.; Schoonover, D. & Jasmine Spitler, J. (2016). „GoPro as an ethnographic tool: A wayfinding study in an academic library". Journal of access services, Vol.13, No.1, 7-26. Doi:10.1080/1536967.2016.1154465.

15. Lee, C.K.; Kim, Y.; Lee, N.; Kim, B.; Kim, D. & Yi, S. (2017). „Feasibility Study of Utilization of Action Camera, GoPro Hero 4, Google Glass, and Panasonic HX-A100 in Spine Surgery". *SPINE.* Vo. 42, Nu. 4, pp 275–280. DOI: 10.1097/BRS.000000000000 1719.

16. Lofthus, L. & Frers, L. (2021). „Action camera: First person perspective or hybrid in motion"? *Visual Studies*, DOI:10.1080/1472586X.2021.1878055.

17. Low, A. (2013). Implosion: What the internet has really done to culture and communication. LID Publishing Ltd.

18. Lozić, J. (2021). "The impact of the Covid 19 pandemic on the business of the eBay platform". *68th International Scientific Conference on Economic and Social Development.* Aveiro, pp. 127-135. ISSN 1849-7535.

19. Lozić, J.; Milković, M. & Lozić. I. (2019). „Entrepreneurship development in the context of postmodern: future of entrepreneurship or adaptation to development of postmodern society". *49th International Scientific Conference on Economic and Social Development – "Building Resilient Society"*. Zagreb, pp. 578-590.

20. Lozić, J.; Vojković, G. ; Milković, M. (2020). "Financial" aspects of Spotify streaming model". *MIPRO 43 International Convention,* 1720-1724.

21. May, A.J.; Ross, T.; Bayer, S.H. & Tarkiaine, M.J. (2003). "Pedestrian Navigation Aids: Information Requirements and Design Implications." *Personal and Ubiquitous Computing* 7 (6): 331–338. doi:10.1007/s00779-003-0248-5.

22. McLuhan, M. (2008). *Razumijevanje medija: Mediji kao čovjekovi produžeci.* Golden Marketing – Tehnička knjiga. ISBN 978-953-212-303-6.

23. Moazed, A.; Johnson, N.L. (2016). *Modern Monopolies – What it takes to Dominate the 21st Century Economy*, Applico, LLC. ISBN 9781250091895.

24. Parker, G.G.; Van Alstyne, M.W.; Choudary, S.P. (2016). *Platform Revolution: How Networked Markets are Transforming the Economy and How to Make Them Work forYou*, W.W. Norton & Company Ltd. ISBN 978-0-393-24913-2.

25. Roth, W.M.; Socha, D. & Tenenberg, J. (2019). „How actions and words come to make sense in a continuously changing world of work: A case study from software development", https://doi.org/10.1515/sem-2019-0002.

26. Seemiller, C.; Grace, M. (2019). *Generation Z: A century in a making*. Routledge. ISBN 9781138337312.

27. Stein, R.L. (2017). „GoPro Occupation Networked Cameras, Israeli Military Rule, and the Digital Promise". *Current Anthropology*, Volume 58, Supplement 15. pp. 556-564. DOI: 10.1086/688869.

28. Strandvad, S.M.; Davis, T.C. & Dunn, M. (2021). „Skills and strategies of activist mermaids: from pretty to powerful pictures". *Text and Performance Quarterly*, DOI: 10.1080/10462937.2021.2005129.

29. Trafí-Prats, L & Caton, L. (2020). „Towards an Ethico-Aesthetic of Parenting: Sensing Ritornellos of Play with GoPro Data". *Genealogy*, 4, 34; doi:10.3390/genealogy4020034.
30. Vannini, P. & Stewart, L.M. (2016). „The GoPro gaze". C*ultural geographies in practice,* pp. 1-7. DOI: 10.1177/1474474016647369.
31. Wojna, Z.; Gorban, A.N.;Lee, D.S.; Murphy, K.; Yu, Q.; Li,Y. & Julian Ibarz, J. (2017). "Attention-Based Extraction of Structured Information from Street View Imagery." *14th IAPR International Conference on Document Analysis and Recognition (ICDAR). Kyoto, IEEE*, 844–850. doi:10.1109/ICDAR.2017.143.

ARTIFICIAL INTELLIGENCE AND PREVENTION OF SOLID WASTE GENERATION – RESEARCH REVIEW

Robertina Zdjelar
University of Zagreb, Faculty of Organization and Informatics Varaždin , Croatia
City utility company Komunalac, Koprivnica, Croatia
rzdjelar@foi.hr

Aleksandra Anic Vucinic
University of Zagreb, Faculty of Faculty of Geotechnical Engineering,
Department of Environmental Engineering, Varaždin, Croatia
aav@gfv.unizg.hr

Ivana Presecki
University of Zagreb, Faculty of Faculty of Geotechnical Engineering,
Department of Environmental Engineering, Varaždin, Croatia
ivana.presecki@gfv.unizg.hr

ABSTRACT
Technological advancements and accelerated practical application of Artificial Intelligence leave an impact on economy, society, and, therefore, on individuals. Moreover, technological development exercises a significant impact on climate change. On the one hand, by shortening the goods lifecycle and demand for new technological solutions, it generates large amounts of waste too quickly. On the other hand, technological development offers solutions that contribute to saving natural resources and reducing CO2 emissions. Encouraged by the aforementioned interdependence between the application of Artificial Intelligence and issues of waste management in general, the authors will provide a systematic review of Artificial Intelligence application in the field of solid waste management in the last twenty-three years with the intention to research the impact of Artificial Intelligence on prevention of waste generation.
Keywords: *Artificial Intelligence, solid waste management, waste prevention*

1. INTRODUCTION
Faced with challenges such as climate change caused by global warming at a time when Artificial Intelligence (AI) has reached a stage of development where it is facing widespread use raises an unavoidable question in scientific circles: Can AI support sustainable development? "Waste means any substance or object which the holder discards or intends or is required to discard" (The European Parliament and Council, 2008, Article 3., p. 9). According to the Waste Management concept (WM) waste can be classified "by physical state (solid, liquid, gaseous), and then within solid waste by original use (packaging waste, food waste, etc.), material (glass, paper, etc.), physical properties (combustible, compostable, recyclable), origin (domestic, commercial, agricultural, industrial, etc.) or safety level (hazardous, non-hazardous)" (McDougall, 2003, p. 2). Key global environmental goals are related to the challenge of reducing the amount of waste (World Bank, 2018, p. 18) (McDougall et al., 2003, p. 9), especially of that being deposited on landfills (Eurostat, 2020). The authors of this paper are looking for scientific foundations of AI application in order to prevent waste generation (Waste prevention), as the best maturity level on WM scale (EPEEF, 2016, p. 9) (The European Parliament and Council, 2008, Article 4., p. 10) (European Parliament and Council, 2008) (EC, 2021, p.7.).

Croatian practice of WM meets with a lot of challenges, the most important one being how to decrease the amount of solid waste to be disposed on landfills (Government of the Republic of Croatia, 2017, p. 62). The scope of waste prevention includes formulation of product eco-design policy addressing both the generation of waste, as well as presence of hazardous substances therein, with a goal to promote technologies focusing on durable, re-usable and recyclable products (The European Parliament and Council, 2008, Article 9.). "Waste prevention encompasses a range of policy options and has a broad range of benefits. Targeting at-source waste production, it reduces the amount and toxicity of waste before recycling, composting, energy recovery and landfilling become options. Waste prevention also includes measures to reduce the adverse impacts of the generated waste on the environment and human health. Waste prevention can be achieved by reducing the quantity of material used in the creation of products and increasing the efficiency with which products, once created, are used. Preventing waste by limiting unnecessary consumption and by designing and consuming products that generate less waste are forms of strict avoidance of waste. Waste prevention also encompasses actions that can be undertaken once a product reaches its end-of-life: rather than discarding the product, the final user should consider re-use, repair or refurbishment as options. Extending a product's lifetime or considering options like reuse are forms of prevention though diversion of waste flows." (EC, 2012, p. 7). Additionally, the term "Waste prevention" can include initiatives directed to buyer/consumer behaviour to reduce waste generation as Chengqin et al. (2022) consider in the domain of food waste. The authors Lasaridi et al. (2015) considered the topic of waste prevention scenarios by using Web-Based tools. Waste management means "collection, transport, recovery and disposal of waste, including the supervision of such operations and the after-care of disposal sites, and including actions taken as a dealer or broker" (European Parliament and Council, 2008, Article 3. point 9.). This paper presents research results based on literature review and practical application of qualitative content analysis method (Creswell, 2009). Following the introduction, where the authors clarify the context of the research, including the definition of the key concepts: "Prevention of waste", "Artificial Intelligence" and "Waste management", chapters with research methodology description are listed. The authors clearly state the criteria used to conduct their search of relevant scientific citation databases and the criteria for excluding certain categories of papers. The objectives of the research are to determine which views on the topic previous researchers had and which key issues were explored in the selected papers. Conclusions and recommendations from previous research related to affecting and applying AI in the prevention of waste generation are the basis for identifying new challenges and planning further research activities. In this research, authors refer to the following definition of key terms "Artificial intelligence (AI) refers to systems that display intelligent behaviours analyzing their environment and taking actions – with some degree of autonomy – to achieve specific goals. AI-based systems can be purely software-based, acting in the virtual world (e.g. voice assistants, image analysis software, search engines, speech and face recognition systems) or they can be embedded in hardware devices (e.g. advanced robots, autonomous cars, drones or Internet of Things applications)." (EC, 2019). Although the foundations of artificial intelligence were laid seventy years ago, intensive application in the wider environment has become topical in the last five years. The development of strong information and communication technology has certainly significantly contributed to this. To set basic classification of AI methods and techniques for this research authors used Ye et al. (2020, p. 3) who presented AI technologies for environmental pollution controls; Abdallah et al. (2020, p. 235); Ihsanullah et al. (2022, p. 309) who specified advantages and limitations of commonly used AI techniques; Naveenkumar et al. (2023) who considered the potential AI techniques by stages of municipal solid waste; de Souza Melaré et al. (2017) who specified algorithms in mind map for solid waste management; Mounadel et al. (2023) who specified AI methods in MSW management; Andeobu et al. (2022) who described the AI technologies, and

Warwick (2011) who presented the basics of AI. Therefore, the research question of this study is Q1: What are the possibilities of AI in the prevention of solid waste generation?

2. RESEARCH METHODS

This chapter presents research strategy and selection criteria according to a few phases – defining the scope of the research, literature research, filtering for final sample, analysing the sample using content analysis.

2.1. Research strategy and selection criteria

The research method for collecting relevant research articles is based on The Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) (Page, et al., 2021), ((Page, et al., 2021a). The sources used in this study are scientific papers published in journals indexed in Scopus WoS. The scope of the review is limited to the "Artificial Intelligence" and "Solid waste management" topics. The literature research conducted at the end of May 2023 resulted as follows: a) Scopus by using query "(TITLE-ABS-KEY ("solid waste management") AND TITLE-ABS-KEY ("artificial intelligence" OR "AI"))" identified 121 documents; b) WoS by using query "solid waste management" (Topic) and "artificial intelligence" OR "AI" (Topic) identified 42 documents. Additional filtering by subject area ("ENVIRONMENT") and document type (review) by queries Scopus as "(LIMIT-TO (DOCTYPE , "re")) AND (LIMIT-TO (SUBJAREA , "ENVI")) " and in WoS as "(Document Types = Review Article), Web of Science Categories = Environmental Science" the authors get 10 and 6 articles, respectively, and two being duplicates. The authors have screened the abstracts, collecting full text of articles and analysed them. From the list of 14 articles, full text of an article was not accessible. It was published in 2000, and is related to spatial issue of municipal incinerators so it was classified as out of scope. Consequently, 13 papers have been considered in the following research phase. The sample content analysis of the 13 identified papers consists of finding the main research questions: the effects of AI on WM and Solid Waste Management (SWM). The key purpose of this study is to determine whether the authors of previous review papers covered the possible AI application in waste generation prevention in their analysis. The authors have compiled valuable, double reviewed, scientific research reviews as data collection type from public sources (Scopus and WoS) by content analysis (Creswell, 2009), as qualitative procedure to research what kind of AI possibilities were recognized in the last decade for waste generation prevention. The entities have been coded by RR and the number of paper (Table 1). The authors have recorded structured notes of findings on maturity level on WM scale (EPEEF, 2016, p. 9) (The European Parliament and Council, 2008, Article 4., p. 10) and type of AI methods, techniques supporting the SWM.

Table following on the next page

Reference	Code of article
Ye, Z.; Yang, J.; Zhong, N.; Tu, X.; Jia, J.; Wang, J., (2020)	RR01
Abdallah, M.; Abu Talib, M.; Feroz, S.; Nasir, Q.; Abdalla, H.; Mahfood, B., (2020)	RR02
Ihsanullah, I.; Alam, Gulzar; Jamal, Arshad; Shaik, Feroz, (2022)	RR03
Fan, Yee Van; Chin, Hon Huin; Klemes, Jiri Jaromir; Varbanov, Petar Sabev; Liu, Xia, (2020)	**RR05**
Naveenkumar, R.; Iyyappan, J.; Pravin, R.; Kadry, S.; Han, J.; Sindhu, R.; Awasthi, M.K.; Rokhum, S.L.; Baskar, G. , (2023)	**RR06**
Pheakdey, Dek Vimean; Quan, Nguyen Van; Khanh, Tran Dang; Xuan, Tran Dang, (2022)	**RR08**
Rowan, N.J., (2023)	**RR09**
Vitorino de Souza Melaré, A.; Montenegro González, S.; Faceli, K.; Casadei, V., (2017)	RR10
Mounadel, A.; Ech-Cheikh, H.; Lissane Elhaq, S.; Rachid, A.; Sadik, M.; Abdellaoui, B., (2023)	**RR11**
Chen, Y.; Chen, Y.; Chen, K.; Liu, M., (2023)	RR14
Lu, Jia-Wei; Chang, Ni-Bin; Liao, Li, (2013)	**RR15**
Alves, L.; Ferreira Cruz, E.; Lopes, S.I.; Faria, P.M.; Rosado da Cruz, A.M., (2022)	**RR16**
Andeobu, L.; Wibowo, S.; Grandhi, S., (2022)	**RR18**

Table 1: List of sample codes
(Source: Authors)

2.2. Sample content analysis

During the content analysis the authors detected which of three categories WM each article relates to: C1) Wastewater, C2) Solid Waste and/or C3) Air pollution. The following step is full text content analysis, the task being to select one or more values of following attributes: 1) Maturity level of WM according to The European Parliament and Council (2008, Article 4., p. 10 ; 2) AI techniques and methods applied for solving issues on WM and 3) Purpose of applying AI in WM issues. The D1 domain "The maturity level of WM" is specified by five values: D.1. Waste prevention (in production process; as D1SDG 12 goal); D1.2. Preparation for re-use; D1.3. Recycling; D1.4. Other recovery procedures (waste to energy, composting); D1.5 Disposal on landfills. The domain D2 "Artificial Intelligence" in waste prevention is a topic of all articles in the observed sample, and the task was to specify what AI technique/method is specified in the context of each article. The D2 domain is detailed as: D2.1. Artificial Neural Networks (ANN), more specifically D.2.1a. Multilayer perceptron neural network (MLPNN); D2.2. Support vector machine (SVM); D2.3. Genetic algorithm (GA); D2.4. Fuzzy logic (FL); D2.5. Machine learning (ML) (computer vision, recognition and identification); D2.6. Hybrid intelligent systems (HIS); D2.7. Decision Trees (DT); D2.8. Linear regression (LR); D2.9. Internet of Things (IoT); D2.10 Game theory (GT); D2.11. Blockchain technology (traceability of evidence in value chain) (BCT). The key terms from D2.1. to D2.11 are shortly described hereinafter. Artificial Neural Network (ANN) is gaining prominence in various applications like pattern recognition, prediction and forecasting, recognition etc. ANN belongs to the family of Artificial Intelligence along with Fuzzy Logic, Expert Systems, Support Vector Machine (Kukreja, 2016). "Support Vector Machines (SVM) have been recently developed in the framework of statistical learning theory (Vapnik, 1998) (Cortes and Vapnik, 1995), and have been successfully applied to a number of applications, ranging from time series prediction

(Fernandez, 1999), to face recognition (Tefas et al., 1999), to biological data processing for medical diagnosis (Veropoulos et al., 1999) " (Evgeniou, 1999). Genetic algorithms (GA) are used to optimize numerous problems, like provide cost effective solutions to find optimal values; for image reconstruction, to improve the accuracy and precision. These tools help to analyze the systems in a swift manner. (Sohail, 2023). "Fuzzy logic (FL) offers a great deal of adaptability for exploiting reasoning, adding an idea of degree when checking states and allowing states to be other than obvious or misleading, taking into account possible errors and weaknesses. " (Ganaie, 2023, p. 1). Machine learning (ML) exhibits the "learning" based a large sets of data inputs and outputs, while also having the capacity to learn and improve its analyses through the use of computational algorithms (Helm, 2020). Hybrid Intelligent System (HIS) are based on "sensors (affecters) that transmit information to a neural network that converts data from the sensors to symbolic form, based on which a universal inference engine generates input data for a motor neural network. The result of the motor neural network is low level commands that control the executive devices of the hybrid intellectual system. In this case, the sensors also perceive information about the state of the components of the system itself" (Dushkin, 2021, p. 165). A Decision Tree (DT) "is a decision support system that uses a tree-like graph decisions and their possible after-effect, including chance event results, resource costs, and utility. A Decision Tree, or a classification tree, is used to learn a classification function which concludes the value of a dependent attribute (variable) given the values of the independent (input) attributes (variables). This verifies a problem known as supervised classification because the dependent attribute and the counting of classes (values) are given" (Bhargava, et al. 2013, p. 1114). "The Linear Regression (LR) is one of the simplest and most common machine learning algorithms. It is a mathematical approach used to perform predictive analysis. Linear regression allows continuous/real or mathematical variables projections." (Maulud and Abdulazeez, 2020, p. 140). "Internet Of Things (IOT) is a network of various devices that are connected over the internet and they can collect and exchange data with each other, These IOT devices generate a lot of data that needs to be collected and mined for actionable results through use artificial intelligence (AI) to manage huge data flows and storage in the IOT network" (Mohamed, 2020, p. 30.). "Game theory (GT) is key to understanding the kinds of problems having well founded solution concepts, and where to expect problems in AI used to inform decisions in situations involving paradoxes and dilemmas in competition and cooperation" (Hanley, J, 2021, p. 116). Blockchain technology (BCT) "is a distributed, open source, immutable, public digital ledger which is distributed among networked peers" (Salah, 2019, p. 2). The research consists of categorizing the articles by D1 to D2 domain values as previously specified in this chapter. Content analysis provided artefacts for answers to Q1 research question: "What are the possibilities of AI in the prevention of waste generation?". The content analysis results of the research sample are grouped in four categories and presented in the following chapter.

3. RESEARCH RESULTS – AN OVERVIEW
As defined in the previous chapter, articles were categorised by criteria of pollution topic. All of the papers from Table 1 consider SW management, while 39% of papers consider all the three categories. The pollution issues are general and, therefore, the authors have researched a wider context of waste. Consequently, 7 pf the selected articles considered solid waste in the context of air pollution, and 7 in the context of wastewater. Five out of 13 articles considered all three categories of pollution issues, therefore it could be concluded that AI solutions have been researched in a wider context of pollution issues. The authors Ye et al. (2020) give an overview of the research on AI application in each of the three categories. In this research, the authors directed the research more deeply and examine in more detail which segment of waste prevention AI can contribute to more.

3.1. D1 Domain - The maturity level of WM

One of the articles has not specifically defined the domain value (Chen, et al., 2023), but its content is in the scope of the research. Table 2. presents results of content analysis by WM maturity level. Eight articles out of 13 focus on reducing waste or waste prevention (articles written in bold in Table 1).

	Number of articles	% (out of 13)
D1.1. Waste prevention (WP)	8	61,5
D1.2. Preparation for re-use (PRU)	4	30,8
D1.3. Recycling (REC)	9	69,2
D1.4. Other recovery procedures (ORP)	9	69,2
D1.5. Disposal on landfill (DOL)	5	38,5

Table 2: Review of sample by WM maturity level
(Source: Authors)

In RR14 article considers AI in general, yet it does not declare specific AI techniques/methods, so it has been excluded for D2 analyse.

3.2. D2 Domain - "Artificial Intelligence" in waste prevention

The articles included in the research focus on specific AI techniques/methods as presented in Table 3. The most mentioned AI method is Machine learning (75%), and the least mentioned is D2.10 Game theory (GT) (12,5%). According to the full text content analysis of the article sample ML is mostly mentioned in the context of computer vision, recognition and identification which is mostly used for prediction of pollution, forecast of waste generation and modeling products. The ML is applied in many aspects WM, but it is mostly used to learn about the real system behaviour and offers the ability to make conclusions.

	Number of articles	% of D1.1. (8)
D2.1. ANN	4	50
D2.2. SVM	3	37,5
D2.3. GA	4	50
D2.4. FL	4	50
D2.5. ML	6	75
D2.6. HIS	2	25
D2.7. DT	4	50
D2.8. LR	3	37,5
D2.9. IoT	3	37,5
D2.10 GT	1	12,5
D2.11. BCT	2	25

Table 3: Review of the articles related to D.1.1. Waste prevention by applying AI techniques/methods
(Source: Authors)

Waste prevention can be supported at every stage of the product life cycle in such a way that by collecting data from production using IoT (collecting Big Data), by using ML, FL it can prove production hardware (robots) to be adjusted better depending on row materials, or in second hand to support decision making on the selection of row materials with special emphasis on the quality of the same, in order to prevent the generation of waste due to poor raw materials. Additionally, using ANN, ML, SVM assure pattern recognition so in the production it can prevent production with using low quality row material to save time, and energy, and prevent

producing low quality products. Transport and distribution have specific requests (timing, temperature) that can be supported by IoT systems to prevent damage on products and on time delivery. BCT can support waste prevention by assuring the usage of smart contracts to track and automate transactions without the need for a centralised authority for example to prevent the theft of brands, and thus prevent the generation of waste and destruction of fake products. LR, GT and GA can contribute to waste prevention in the phase of purchase and use, when planning measures that require a change in customer behaviour, by predicting and forecasting can be useful. LR, GT and GA can support sustainable consumption. ANN and DT can support waste prevention in the phase of re-use by pattern recognition and classification of waste.

4. DISCUSSION

Raising consumer awareness to choose products that have less negative impact on the environment is the most important key in waste generation prevention. By changing consumer habits all manufacturers and service providers would have to justify their products/services in order to be more competitive on the market according to environmental aspects. The consumers take all responsibility, and AI has to be the tool that transforms this mission into reality. From the analyzed articles the authors conclude that AI is in the function of solving certain tasks in the already generated waste (monitors collection, recognizes sorting patterns, helps with decomposition and disposal, monitors greenhouse gas emissions into the environment, helps predict and assess waste generation). So, the question arises how can AI help in the production phase and how can it contribute to the life cycle: for something to become waste as later as possible, or for it to become useful waste. Furthermore, how much recycled material is embedded in the products? It also raises the question of whether AI can contribute to "raising consumer awareness" that when choosing and buying products or consuming services, they know in advance what this means for the environment? The producers have the obligation to inform consumers/customers on facts about the products they sell or services they provide but do those facts really have an impact on consumer's awareness? The problem of waste disposal has been transferred to the jurisdiction of local self-government, but the key question is who is responsible for the waste generation? It is not all about the cost of waste disposal, it is about the capacities of landfills as well. It seems that, according to the existing practice, the greatest contribution can be made by customers or service users because they choose what to purchase. They should be able to count on AI to obtain a clear calculation for each product/service as to how much energy was consumed for production, how much CO_2 was emitted during production and transportation, which raw materials were used for manufacture, how much waste (apart from packaging) will remain after using the product. AI can contribute to grouping products by the degree of their environmental impact at the end of their lifespan.

5. CONCLUSION

The conclusion of the analysis is that AI is mostly used in waste prevention as prediction and forecasting tools using data collected from real systems to predict or forecast future events. The efficient usage of AI in waste prevention for producers and service suppliers is to: 1) help design better (zero waste) products/services according to collected data for ex-post evaluation of products/services at the end of their life cycle; 2) design production process as zero waste process – by using max quantity of recycled material (that have value chain supported by blockchain technology), by less energy consumption or max consumption of energy from renewable sources; 3) transport and distribution of products by zero waste transportation; 4) raise customer/consumer awareness of the first three issues that has impact on their habits. A systematic approach to waste prevention using AI requires the cooperation of academia, innovators and local government, which according to most European regulations is responsible for reducing the amount of waste that is landfilled.

This research is designed as an introduction to a detailed analysis of the application of artificial intelligence in waste prevention. Detailed analysis of the application of AI at each stage of WM and SWM will be carried out through the next research in a significantly wider scope.

LITERATURE:
1. Abdallah, M., Talib, M. A., Feroz, S., Nasir, Q., Abdalla, H., & Mahfood, B. (2020). Artificial intelligence applications in solid waste management: A systematic research review. Waste Management, 109, 231-246.
2. Alves, L., Ferreira Cruz, E., Lopes, S. I., Faria, P. M., & Rosado da Cruz, A. M. (2022). Towards circular economy in the textiles and clothing value chain through blockchain technology and IoT: A review. Waste Management & Research, 40(1), 3-23.
3. Bhargava, N., Sharma, G., Bhargava, R., & Mathuria, M. (2013). Decision tree analysis on j48 algorithm for data mining. Proceedings of international journal of advanced research in computer science and software engineering, 3(6).
4. Chen, Y. Chen, Y., K. Chen, K., Liu, M. (2023). "Research Progress and Hotspot Analysis of Residential Carbon Emissions Based on CiteSpace Software", Int. J. Environ. Res. Public. Health, vol. 20, no. 3, 2023, doi: 10.3390/ijerph20031706.
5. Chengqin, E. K., Zailani, S., Rahman, M. K., Aziz, A. A., Bhuiyan, M. A., & Gazi, M. A. I. (2022). Determinants of household behavioural intention towards reducing, reusing and recycling food waste management. Nankai Business Review International, (ahead-of-print).
6. Creswell, J. W. (2009). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, 3rd edition, SAGE Publications
7. de Souza Melaré, A. V., González, S. M., Faceli, K., & Casadei, V. (2017). Technologies and decision support systems to aid solid-waste management: a systematic review. Waste management, 59, 567-584.
8. Dushkin, R. V., & Andronov, M. G. (2021). The hybrid design for artificial intelligence systems. In Intelligent Systems and Applications: Proceedings of the 2020 Intelligent Systems Conference (IntelliSys) Volume 1 (pp. 164-170). Springer International Publishing.
9. Eurostat. (2020). Waste management indicators, Retrieved from https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Waste_management_indicators#Landfilling, accessed on Jully 10th 2022
10. Evgeniou, T., Pontil, M. (1999). Support vector machines: Theory and applications. In Advanced Course on Artificial Intelligence (pp. 249-257). Berlin, Heidelberg: Springer Berlin Heidelberg.
11. Fan, Y.V., Chin, H. H., Klemeš, J. J., Varbanov, P. S., & Liu, X. (2020). Optimisation and process design tools for cleaner production. Journal of Cleaner Production, 247, 119181.
12. Ganaie, F. R. (2023). Application of Fuzzy Logic in Artificial Intelligence. International Journal for Research in Applied Science & Engineering Technology (IJRASET) ISSN: 2321-9653; Volume 11 Issue IV Apr 2023
13. Government of the Republic of Croatia. (2017). Waste management plan of the Republic of Croatia for the period 2017-2022, "Public Gazettes" No. 3/17 and 1/22, Retrieved from https://narodne-novine.nn.hr/clanci/sluzbeni/2017_01_3_120.html, accessed June 20th 2020.
14. Hanley, J. T. (2021). GAMES, game theory and artificial intelligence. Journal of Defense Analytics and Logistics, 5(2), 114-130.
15. Helm, J. M., Swiergosz, A. M., Haeberle, H. S., Karnuta, J. M., Schaffer, J. L., Krebs, V. E., ... & Ramkumar, P. N. (2020). Machine learning and artificial intelligence: definitions, applications, and future directions. Current reviews in musculoskeletal medicine, 13, 69-76.

16. Ihsanullah, I., Alam, G., Jamal, A., & Shaik, F. (2022). Recent advances in applications of artificial intelligence in solid waste management: A review. Chemosphere, 136631.
17. Kukreja, H., Bharath, N., Siddesh, C. S., & Kuldeep, S. (2016). An introduction to artificial neural network. Int J Adv Res Innov Ideas Educ, 1, 27-30
18. Lasaridi, K., Hatzi, O., Batistatos, G., Abeliotis, K., Chroni, C., Kalogeropoulos, N., Chatzieleftheriou, C., Gargoulas, N., Mavropoulos, A., Zorpas, A., Nikolaidou, M., Anagnostopoulos, D. (2015). Waste prevention scenarios using a web-based tool for local authorities. Waste and biomass valorization, 6, 625-636.
19. Lu, J. W., Chang, N. B., & Liao, L. (2013). Environmental informatics for solid and hazardous waste management: advances, challenges, and perspectives. Critical reviews in environmental science and technology, 43(15), 1557-1656.
20. Maulud, D., & Abdulazeez, A. M. (2020). A review on linear regression comprehensive in machine learning. Journal of Applied Science and Technology Trends, 1(4), 140-147.
21. McDougall, F.R., White, P.R., Franke, M., Hindle, P. (2003). Integrated Solid Waste Management: A Lifecycle Inventory. Berlin: Springer.
22. Mounadel, A., Ech-Cheikh, H., Lissane Elhaq, S., Rachid, A., Sadik, M., & Abdellaoui, B. (2023). Application of artificial intelligence techniques in municipal solid waste management: a systematic literature review. Environmental Technology Reviews, 12(1), 316-336.
23. Mohamed, E. (2020). The relation of artificial intelligence with Internet of Things: A survey. Journal of Cybersecurity and Information Management, 1(1), 30-34.
24. Naveenkumar, R., Iyyappan, J., Pravin, R., Kadry, S., Han, J., Sindhu, R., ... & Baskar, G. (2023). A strategic review on sustainable approaches in municipal solid waste management and energy recovery: Role of artificial intelligence, economic stability and life cycle assessment. Bioresource Technology, 129044.
25. Nuhu, S. K., Manan, Z. A., Alwi, S. R. W., & Reba, M. N. M. (2021). Roles of geospatial technology in eco-industrial park site selection: State–of–the-art review. Journal of Cleaner Production, 309, 127361.
26. Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., ... & Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. International journal of surgery, 88, 105906.
27. Page, M. J., Moher, D., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., ... & McKenzie, J. E. (2021a). PRISMA 2020 explanation and elaboration: updated guidance and exemplars for reporting systematic reviews. bmj, 372.
28. Pheakdey, D. V., Quan, N. V., Khanh, T. D., & Xuan, T. D. (2022). Challenges and priorities of municipal solid waste management in Cambodia. Int. J. Environ. Res. Public. Health, 19(14), 8458.
29. Rowan, N. J. (2023). Challenges and future opportunities to unlock the critical supply chain of personal and protective equipment (PPE) encompassing decontamination and reuse under emergency use authorization conditions during the COVID-19 pandemic: Through a reflective circularity and sustainability lens. Science of the Total Environment, 161455.
30. Salah, K., Rehman, M. H. U., Nizamuddin, N., & Al-Fuqaha, A. (2019). Blockchain for AI: Review and open research challenges. IEEE Access, 7, 10127-10149
31. Sohail, A. (2023). Genetic algorithms in the fields of artificial intelligence and data sciences. Annals of Data Science, 10(4), 1007-1018.
32. The European Commission (EC), (2012). Preparing a Waste Prevention Programme. Guidance Document. https://www.gov.br/cidades/pt-br/assuntos/saneamento/protegeer/biblioteca/PreparingaWastePreventionProgramme.pdf, Accessed March 10th 2023.

33. The European Commission (EC), (2019). A Definition of AI: Main capabilities and disciplines, Retrieved from https://digital-strategy.ec.europa.eu/en/library/definition-artificial-intelligence-main-capabilities-and-scientific-disciplines, accessed April 20th 2022

34. The European Commission (EC), (2021). Pathway to a Healthy Planet for All EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil', Retrieved from https://eur-lex.europa.eu/resource.html?uri=cellar:a1c34a56-b314-11eb-8aca-01aa75ed71a1.0001.02/DOC_1&format=PDF, accessed May 10th 2023

35. The European Parliament and Council, (2008). Directive 2008/98/EC on waste and repealing certain Directives, Retrieved fromhttps://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32008L0098, accessed March 10th 2023

36. The Environmental Protection and Energy Efficiency Fund (EPEEF), (2016). Guidelines for reuse, Retrieved from https://www.fzoeu.hr/UserDocsImages/datoteke/_v28.pdf ?vel=2433118, accessed March 10th 2018

37. Warwick, K. (2012). Artificial Intelligence: the basics, Routledge.

38. World Bank, (2018). What A Waste 2.0: A Global Snapshot of Solid Waste Management to 2050. International Bank for Reconstruction and Development. Retrieved from https://openknowledge.worldbank.org/entities/publication/d3f9d45e-115f-559b-b14f-2855 2410e90a, accessed March 20th 2020

39. Ye, Z., Yang, J., Zhong, N., Tu, X., Jia, J., & Wang, J. (2020). Tackling environmental challenges in pollution controls using artificial intelligence: A review. Science of the Total Environment, 699, 134279.

CORPORATE SUSTAINABILITY PERFORMANCE AND DIVIDEND PAYOUTS: THE CASE OF COMPANIES LISTED IN THE STOXX EUROPE 600 INDEX

Agnieszka Matuszewska-Pierzynka
University of Lodz,
68 Narutowicza St., 90-136 Lodz, Poland
agnieszka.matuszewska@uni.lodz.pl

Aleksandra Pieloch-Babiarz
University of Lodz,
68 Narutowicza St., 90-136 Lodz, Poland
aleksandra.pieloch@uni.lodz.pl

ABSTRACT
The previous research on the relationship between corporate sustainability performance (CSP) and corporate financial performance (CFP) mainly focuses on the effects of environmental, social and governance (ESG) performance on profitability or market value of a company, not sufficiently investigating its impact on dividend policy. Hence, the main objective of this paper is to fill the identified research gap by examining the relationship between ESG performance and the dividend payouts. In order to accomplish this goal, a research hypothesis has been formulated, positing that the impact of ESG scores of a company on the level of dividend payout ratios is positive. The empirical verification of this hypothesis has been conducted with the use of the panel regression model applied to European companies listed in the Stoxx Europe 600 Index for the years 2010-2022. The general model includes sustainability variables, such as environmental, social and governance pillar scores, along with the ESG controversies score, which measures the ability of a company to avoid environmental, social and governance risks reflected in global media. All required financial and sustainability data has been retrieved from the LSEG Eikon database. The estimation results revealed that the joint ESG score has a statistically significant and positive influence on the dividend payout ratio (DPR). When examining particular pillar scores, the impact of the social pillar is both significant and positive, whereas the effects of the other pillars are insignificant. The effect of ESG controversies score (CONT_Score) on the DPR is statistically significant and negative. The incorporation of the CONT_Score into model specifications does not alter the effects of joint ESG score and social pillar score. As not all sustainability variables exhibit statistical significance, the research hypothesis cannot be confirmed. Nevertheless, the findings imply that managers ought to direct their focus towards the social dimension of corporate sustainability, encompassing workforce, community, human rights and product responsibility, as well as its controversies in particular dimensions. The novelty of this paper lies in its exploration of the link between ESG performance and dividend payouts, a field that has not been investigated enough in the previous studies, especially in regard to controversial ESG actions of a company.
Keywords: Corporate sustainability, Dividend payouts, ESG controversies score, ESG scores, European companies, the Stoxx Europe 600 Index

1. INTRODUCTION
Corporate sustainability can be defined as meeting the needs of an enterprise's direct and indirect stakeholders, both in the present and the future (Dyllick & Hockerts, 2002; Giovannoni & Fabietti, 2013; WCED, 1987). According to the Triple-Bottom-Line (TBL) approach (Elkington, 1997), enterprises should strive to maintain a balance between economic, social, and environmental performance to create long-term value for all stakeholder groups (Sanders

& Wood, 2015), while ensuring compliance with applicable laws (UN, 2012; SDSN, 2013). Holistic business models for sustainability (Jonker & Witte, 2006; Oželienė, 2017), typically based on the Triple-Bottom-Line (TBL) approach, try to describe the mechanisms that enterprises use to convert their environmental, social, and governance (ESG) efforts into the satisfaction of shareholders, employees, customers, suppliers, local communities, and corporate financial performance. Perrini et al. (2011) emphasized the significance of employees' trust, customer loyalty, firm reputation, and reliability as drivers of stakeholder performance. These factors are enhanced by the integration of socially responsible activities in key management areas, which can improve the relationship between revenue and cost-related outcomes. Kantabutra and Ketprapakorn (2020) explained that within an enterprise, a crucial role is played by its members, who can enhance corporate sustainability performance across economic, environmental, social, and governance dimensions only when they are emotionally committed to the implementation of sustainability values and vision. The improvement of corporate sustaianbility performance, in turn, strengthens stakeholder satisfaction and brand equity. Empirical research on corporate sustainability aims to identify a statistically significant relationship between corporate sustainability performance (CSP) and corporate financial performance (CFP) in both non-financial enterprises (Wagner, 2010; Jha & Rangarajan, 2020) and financial enterprises (Soana, 2011; Nizam, Ng, Dewandaru, Nagayev, & Nikoba, 2019). The authors also seek to determine its type (Barnett & Salomon, 2012; Nollet, Filis, & Mitrokostas, 2016) and direction (Behl, Kumari, Makhija, & Sharma, 2022; Douissa & Azrak, 2022). Furthermore, they conduct comparative analyses across countries (Przychodzeń, 2013) and industries (Tuppura, Arminen, Pätäri, & Jantunen, 2016), considering the sustainability of countries (Xiao, Wang, van der Vaart, & van Donk, 2018) and industries (Ziegler, Schröder, & Rennings, 2007) as determinants of the CSP-CFP link. While empirical research on the relationship betwen CSP and CFP is extensive, it usually focuses on the impact of ESG performance on an enterprise's profitability and market value (Gillan, Koch, & Starks, 2021). For the shareholders' perspective, the crucial information appears to be also the impact of ESG scores on dividend payouts, which can be seen by them as a direct financial benefit of corporate sustainability. The relationship between corporate sustainability and dividend payouts can be explained through fundamental theories of enterprises, such as agency theory, signaling theory, and stakeholder theory. According to agency theory (Jensen & Meckling, 1976), as enterprises develop and ownership becomes separated from management, the goals of managers and shareholders begin to diverge. The desire to achieve goals and maximize their own benefits by managers (agents) and shareholders (principals) leads to the so-called agency conflict. This conflict is particularly pronounced in enterprises with significant free cash flows. High free cash flows may induce managers to overinvest, including in responsible and sustainable corporate initiatives, which can result in a decline in shareholder value (Jensen, 1986). The financial tool for mitigating agency conflicts and limiting overinvestment is dividend payouts (Easterbrook, 1984). This has been confirmed in numerous scientific studies (La Porta, Lopez, Shleifer & Vishny, 2000; DeAngelo, DeAngelo & Skinner, 2009; Michael, 2013; Yeo, 2018; Pepur, Peronja & Lača, 2019; Driver, Grosman & Scaramozzino, 2020; Hu, Huang, & Chen, 2020). With regard to agency theory, Matos, Barros and Sarmento (2020) argue that enterprises with high ESG scores are expected to pay out high dividends to prevent overinvestment in ESG initiatives. The second theoretical approach concerns the information content of dividends and is based on information asymmetry. Many studies have shown that dividend payouts reduce information asymmetry (Miller & Rock, 1985; Lin, Chen, & Tsai, 2017; Kim, Jung, & Cho, 2021; Agarwal & Chakraverty, 2023). Dividend payouts serve as a positive signal from an enterprise, allowing investors to assess the enterprise's profitability and value (Bhattacharya, 1979). Research on the use of dividends for signaling purposes and its impact on the market price of shares and future company performance has been conducted for decades (Miller &

Rock, 1985; Baker & Powell, 1999; Grullon, Michaely, Benartzi & Thaler, 2005; Cheng, Fung & Leung, 2007; Baker, 2009; Nguyen & Wang, 2013; Alaeto, 2018; Che & Fuller, 2020; Lin & Lee, 2021; Zhao, 2023). Furthermore, the literature also considers linking ESG initiatives with dividend signaling. However, theoretical predictions are not clear in this respect. Ellili (2022) argues that ESG practices and dividends may act as substitutes, while Benlemlih (2019) underscores the importance of balancing the interests of shareholders and other stakeholders. Therefore, socially responsible enterprises pay out dividends to send a positive signal, showing that they take into account all stakeholders' interests (Benlemlih, 2019; Matos, Barros & Sarmento, 2020). This perspective is closely consistent with the third theoretical approach, i.e., stakeholder theory (Freeman, Wicks & Parmar 2004; Freeman, Harrison, Wicks, Parmar & De Colle, 2010). According to stakeholder theory, managers ought to distribute wealth equitably to those contributing to its creation (Gallo, 2004; Samet & Jarbouri, 2017). As Matos, Barros, and Sarmento (2020) claim, equitable wealth distribution can have opposite consequences. On the one hand, it can imply a decrease in dividends for shareholders. On the other hand, enterprises implementing ESG initiatives can benefit in the perception of various stakeholders, particularly creditors. This may result in preferential treatment, potentially leading to lower financing costs. As a consequence, funds for dividend payouts can be made available (Matos, Barros, & Sarmento, 2020). To the best knowledge of the authors, there are few papers describing the results of studies on the impact of corporate sustainability performance on dividend payouts. Furthermore, those results are inconsistent and often even contradictory. Samet and Jarboui (2017) examine the impact of CSR performance on dividends. They focus on European companies from 17 countries and show that enterprises with higher corporate social responsibility (CSR) performance pay higher dividends. Using data from US-listed enterprises, Cheung, Hub, and Schwiebert (2018) find no significant link between corporate social responsibility and the propensity to pay dividends. However, they demonstrate that enterprises with higher CSR performance tend to have a higher dividend payout ratio. The research carried out by Benlemlih (2019) shows that among US enterprises, those with high CSR payout higher dividends. Furthermore, their research proves that socially irresponsible enterprises adjust dividends more rapidly than socially responsible ones. It means that dividend payouts are more stable in high CSR enterprises. Research by Matos, Barros, and Sarmento (2020), conducted on European companies, does not reveal any relationship between ESG performance and the propensity to pay dividends. However, ESG scores, both the overall ESG score as well as environmental, social, and governance pillar scores, positively affect dividend stability. Niccolò, Battisti, Papa, and Miglietta (2020) analyze Chinese listed companies and show a negative impact of ESG practices on dividend payouts. Their findings underline that investing in ESG initiatives has an impact on shareholders' wealth, decreasing dividend payouts. Saeed and Zamir (2021) investigate enterprises listed in eight emerging markets: India, China, Indonesia, Pakistan, Malaysia, Korea, Turkey, and Russia. Their research reveals that CSR disclosures exert a negative impact on dividend growth, dividend payout, and dividend yield. Furthermore, this effect is more prevalent for enterprises with higher institutional ownership. Ellili (2022) investigates whether ESG disclosure is positively associated with dividend payouts, focusing on enterprises listed in the UAE financial markets. The research results indicate the existence of a positive relationship between ESG performance and dividend levels. Zahid, Taran, Khan, and Chersan (2023) investigate the relationship between ESG scores and dividend payouts using data on Western European listed enterprises that are leaders in ESG. They demonstrate a significant positive relationship between ESG performance and dividend levels. The authors argue that companies with strong ESG practices strive to meet the goals of all stakeholders, which is why they pay dividends. However, a commitment to high-quality ESG activities causes dividends to grow slowly. The study by Dahiya, Singh, and Chaudhry (2023) focuses on the largest Indian listed enterprises.

The research results show that corporate social responsibility positively affects the dividend payout ratio. The authors explain that increased incomes and lower financial constraints are the likely factors causing this relationship. Moreover, they argue that the positive link between CSR performance and dividend payouts suggests that the interests of shareholders and other non-financial stakeholders can be reconciled. Unfortunately, while there are some studies on the relationship between ESG performance and dividend payouts, this field of study still remains insufficiently explored, especially in the case of ESG controversies. Only Casey, Casey, and Griffin (2020) investigate 50 US enterprises from the IT sector, considering controversies in environmental, social, and governance sustainability dimensions. The authors study the link between CSR performance and dividend yield. Their research proves that enterprises with high ESG performance have high dividend yields. However, the variable describing ESG controversies was not statistically significant in any of the estimated models. Therefore, further research in this area is needed, especially research involving ESG controversies. Hence, the essential aim of this paper is to address the identified research gap by investigating the relationship between ESG performance and dividend payouts. To achieve this objective, the authors have formulated a research hypothesis, suggesting that the impact of a company's ESG scores on the level of dividend payout ratios is positive. The empirical verification of this hypothesis was conducted using a panel regression model applied to European companies listed in the Stoxx Europe 600 Index for the years 2010-2022. The general model incorporates sustainability variables, including environmental, social, and governance pillar scores, alongside the ESG controversies score, which assesses a company's ability to mitigate environmental, social, and governance risks as reported in global media. All necessary financial and sustainability data were sourced from the London Stock Exchange Group (*LSEG*) *Eikon* (formerly *Refinitiv*) database. All calculations were performed in the statistical package *Gretl.*

2. RESEARCH METHODOLOGY
2.1. Data
The research hypotheses were verified using data from 2010 to 2022 (a thirteen-year research period). The reasearch sample was comprised of 413 non-financial enterprises from the European Union countries listed in the Stoxx Europe 600 Index on June 1, 2023. Initially, 600 companies were qualified for the research sample. Nethertheless, one of them did not have any data available in the *LSEG Eikon* database, which was the source of financial indicators and sustainability scores used in this study. Then, 186 enterprises were excluded from the sample. This group included the following entities:
- 109 enterprises operating in the financial sector;
- 55 enterprises outside the EU;
- 22 enterprises without data for the entire thirteen-year period.

The final research sample, consisting of 413 companies (5,369 firm-year observations), was dominated by:
- the United Kingdom's enterprises (23%: 95 companies);
- enterprises from the industrial sector (25%: 104 companies).

2.2. Panel regression model
To verify the research hypothesis, the panel regression approach was employed. The authors proposed the following general model:

$$Dividend_{i,t} = \alpha_0 + \alpha_1 Return_{i,t-1} + \alpha_2 Liquidity_{i,t-1} + \alpha_3 Debt_{i,t-1} + \alpha_4 Growth_{i,t-1} + \alpha_5 Size_{i,t-1} + \alpha_6 Country_{i,t} + \alpha_7 Sector_{i,t} + \beta X_{i,t-1} + \varepsilon_{i,t}$$

where:
- *Dividend$_{i,t}$* – the dividend payout ratio of the *i*-th enterprise in year *t* — the relation of total dividend paid out in year *t* to net earnings in year *t*-1;
- *Return$_{i,t-1}$* – the return on assets of the *i*-th enterprise in year *t*-1 – the relation of net profits to total assets;
- *Liquidity$_{i,t-1}$* – the current ratio of the *i*-th enterprise in year *t*-1 – the relation of current assets to current liabilities;
- *Debt$_{i,t-1}$* – leverage ratio of the *i*-th enterprise in year *t*-1 – the relation of total debt to total equity;
- *Growth$_{i,t-1}$* – the growth opportunities measured by the market-to-book value ratio of the *i*-th enterprise in year *t*-1 – the relation of closing price of the share to book value per share
- *Size$_{i,t-1}$* – the size of the *i*-th enterprise in year *t*-1 – the natural logarithm of total assets;
- *Country$_{i,t}$* – a binary variable equal to 1 if the country of origin of the *i*-th enterprise is the *United Kingdom* (UK) in year *t*, and 0 otherwise – the UK ceased to be a member of the European Union on January 31, 2020;
- *Sector$_{i,t}$* – a binary variable equal to 1 if the sector in which the *i*-th enterprise mainly operates is *technology* in year *t*, and 0 otherwise – according to the ICB Industry classification;
- $\mathbf{X}_{i,t-1}$ – a vector, which represents sustainability performance and varies depending on the ESG scores considered in particular model specifications – ESG scores range from 0 to 100, with higher scores indicating a higher level of corporate sustainability;
- $\varepsilon_{i,t}$ – it is a random component.

Depending on the model specification, the vector $\mathbf{X}$ can consist of:
- *ESG_Score$_{i, t-1}$* – the overall sustainability score of the *i*-th enterprise in year *t*-1 – the overall sustainability score, which is the sum of weighted scores in environmental, social, and governance pillars (the weights depend on the sector in which the enterprise operates);
- *E_Score$_{i, t-1}$* – the environmental pillar score of the *i*-th enterprise in year *t*-1 – it measures an enterprise's effectiveness in avoiding environmental risk and taking advantage of environmental opportunities (the enterprise's impact on natural systems and complete ecosystems);
- *S_Score$_{i, t-1}$* – the social pillar score of the *i*-th enterprise in year *t*-1 – it measures an enterprise's reputation and its ability to inspire the trust and loyalty of employees, customers, and society (the status of an company's license to operate);
- *G_Score$_{i, t-1}$* – the governance pillar score of the *i*-th enterprise in year *t*-1 – it measures an enterprise's capacity to manage and control its corporate rights and obligations (the assessment of internal systems and processes that make the board members and executives of a company act in the best interests of its long-term stakeholders);
- *CONT_Score$_{i, t-1}$* – the ESG controversies score of the *i*-th enterprise in year *t*-1 – it measures an enterprise's exposure to environmental, social, and governance controversies and negative events reflected in global media.

The model specifications, differing in the composition of the $\mathbf{X}$ vector, are as follows:
1) $Dividend_{i,t} = \alpha_0 + \alpha_1 Return_{i,t-1} + \alpha_2 Liquidity_{i,t-1} + \alpha_3 Debt_{i,t-1} + \alpha_4 Growth_{i,t-1} + \alpha_5 Size_{i,t-1} + \alpha_6 Country_{i,t} + \alpha_7 Sector_{i,t} + \beta_1 ESG\_Score_{i,t-1} + \varepsilon_{i,t}$

2) $Dividend_{i,t} = \alpha_0 + \alpha_1 Return_{i,t-1} + \alpha_2 Liquidity_{i,t-1} + \alpha_3 Debt_{i,t-1} + \alpha_4 Growth_{i,t-1} + \alpha_5 Size_{i,t-1} + \alpha_6 Country_{i,t} + \alpha_7 Sector_{i,t} + \beta_1 E\_Score_{i,t-1} + \varepsilon_{i,t}$

3) $Dividend_{i,t} = \alpha_0 + \alpha_1 Return_{i,t-1} + \alpha_2 Liquidity_{i,t-1} + \alpha_3 Debt_{i,t-1} + \alpha_4 Growth_{i,t-1} + \alpha_5 Size_{i,t-1} + \alpha_6 Country_{i,t} + \alpha_7 Sector_{i,t} + \beta_1 S\_Score_{i,t-1} + \varepsilon_{i,t}$

4) $Dividend_{i,t} = \alpha_0 + \alpha_1 Return_{i,t-1} + \alpha_2 Liquidity_{i,t-1} + \alpha_3 Debt_{i,t-1} + \alpha_4 Growth_{i,t-1} + \alpha_5 Size_{i,t-1} + \alpha_6 Country_{i,t} + \alpha_7 Sector_{i,t} + \beta_1 G\_Score_{i,t-1} + \varepsilon_{i,t}$

5) $Dividend_{i,t} = \alpha_0 + \alpha_1 Return_{i,t-1} + \alpha_2 Liquidity_{i,t-1} + \alpha_3 Debt_{i,t-1} + \alpha_4 Growth_{i,t-1} + \alpha_5 Size_{i,t-1} + \alpha_6 Country_{i,t} + \alpha_7 Sector_{i,t} + \beta_1 E\_Score_{i,t-1} + \beta_2 S\_Score_{i,t-1} + \beta_3 G\_Score_{i,t-1} + \varepsilon_{i,t}$

6) $Dividend_{i,t} = \alpha_0 + \alpha_1 Return_{i,t-1} + \alpha_2 Liquidity_{i,t-1} + \alpha_3 Debt_{i,t-1} + \alpha_4 Growth_{i,t-1} + \alpha_5 Size_{i,t-1} + \alpha_6 Country_{i,t} + \alpha_7 Sector_{i,t} + \beta_1 ESG\_Score_{i,t-1} + \beta_2 CONT\_Score_{i,t-1} + \varepsilon_{i,t}$

7) $Dividend_{i,t} = \alpha_0 + \alpha_1 Return_{i,t-1} + \alpha_2 Liquidity_{i,t-1} + \alpha_3 Debt_{i,t-1} + \alpha_4 Growth_{i,t-1} + \alpha_5 Size_{i,t-1} + \alpha_6 Country_{i,t} + \alpha_7 Sector_{i,t} + \beta_1 E\_Score_{i,t-1} + \beta_2 CONT\_Score_{i,t-1} + \varepsilon_{i,t}$

8) $Dividend_{i,t} = \alpha_0 + \alpha_1 Return_{i,t-1} + \alpha_2 Liquidity_{i,t-1} + \alpha_3 Debt_{i,t-1} + \alpha_4 Growth_{i,t-1} + \alpha_5 Size_{i,t-1} + \alpha_6 Country_{i,t} + \alpha_7 Sector_{i,t} + \beta_1 S\_Score_{i,t-1} + \beta_2 CONT\_Score_{i,t-1} + \varepsilon_{i,t}$

9) $Dividend_{i,t} = \alpha_0 + \alpha_1 Return_{i,t-1} + \alpha_2 Liquidity_{i,t-1} + \alpha_3 Debt_{i,t-1} + \alpha_4 Growth_{i,t-1} + \alpha_5 Size_{i,t-1} + \alpha_6 Country_{i,t} + \alpha_7 Sector_{i,t} + \beta_1 G\_Score_{i,t-1} + \beta_2 CONT\_Score_{i,t-1} + \varepsilon_{i,t}$

10) $Dividend_{i,t} = \alpha_0 + \alpha_1 Return_{i,t-1} + \alpha_2 Liquidity_{i,t-1} + \alpha_3 Debt_{i,t-1} + \alpha_4 Growth_{i,t-1} + \alpha_5 Size_{i,t-1} + \alpha_6 Country_{i,t} + \alpha_7 Sector_{i,t} + \beta_1 E\_Score_{i,t-1} + \beta_2 S\_Score_{i,t-1} + \beta_3 G\_Score_{i,t-1} + \beta_4 CONT\_Score_{i,t-1} + \varepsilon_{i,t}$

11) $Dividend_{i,t} = \alpha_0 + \alpha_1 Return_{i,t-1} + \alpha_2 Liquidity_{i,t-1} + \alpha_3 Debt_{i,t-1} + \alpha_4 Growth_{i,t-1} + \alpha_5 Size_{i,t-1} + \alpha_6 Country_{i,t} + \alpha_7 Sector_{i,t} + \beta_1 CONT\_Score_{i,t-1} + \varepsilon_{i,t}$

To estimate the proposed models, we used panel data for 413 European companies listed in the Stoxx Europe 600 Index over a 13-year period. Subsequently, the pooled OLS model was employed. The decision to use the pooled OLS model instead of the random-effects model or fixed-effects model was based on the results of the F test and the Hausman test. For all eleven models, p-values of the F test were above 0.05, while p-values of the Hausman test did not exceed 0.05. All calculations were performed using the statistical package *Gretl*.

3. RESEARCH RESULTS
3.1. Estimation results of models without the ESG controversies score
Table 1 presents the estimation results for five specifications of the general model. The statistically significant coefficients for control variables are revealed in all five model specifications for *Return* and *Growth*. Both of them are significant at 1%, but the coefficient for *Return* is negative, while the coefficient for *Growth* is positive. This means that the amount of dividend increases with an increase in the market-to-book value ratio and a decrease in the return on assets. The negative raltionship between Return and dividend payouts can be explained by the signaling theory and dividend smoothing. The other control variables (i.e. *Liquidity* and *Debt*) in these specificaations are statistically insignificant. The dividend payouts are higher for enterprises from the UK and lower for enterprises operating in the technology sector. The coefficients for *Country* and *Sector* are significant at 5% or 10% in all considered model specifications.

Dividend payouts are higher for UK enterprises than for enterprises in other countries because they are well-established companies in the later stages of their life cycle, making an effort to compensate shareholders for the increased market risk following Brexit. At the same time, dividend payouts are lower in enterprises operating in the technology sector than in other enterprises because their free cash flows are used for R&D expenditures instead of dividends. The first model specification examines the impact of joint ESG performance on the amount of dividend payout. The coefficient for *ESG_Score* is positive (β1=0.7144) and statistically significant at 5%. Thus, an improvement in the overall ESG score leads to higher dividend payouts. The next three specifications reveal the separate effects of specific sustainability dimensions on the dividend payout ratio. The coefficients for all particular pillar scores are positive, but only *S_Score* is statistically significant. Furthermore, *S_Score* remains significant and positive when all particular pillar scores are considered together in one model specification (Specification 5).

Variables	Spec. 1	Spec. 2	Spec. 3	Spec. 4	Spec. 5
Intercept	-100.4330	-119.9110	-95.0588	-156.6420	-95.8968
Return	-2.6815***	-2.6602***	-2.6563***	-2.6586***	-2.6499***
Liquidity	4.1380	4.3204	4.1944	3.7768	4.3719
Debt	0.0002	-0.0003	-0.0005	-0.0003	-0.001
Growth	0.8561***	0.8665***	0.8596***	0.8562***	0.8637***
Size	6.0295	7.7495	5.7050	10.3490	5.9471
Country	23.7679*	25.9027*	25.4592*	26.6604**	26.8647**
Sector	-16.3753*	-14.4645*	-19.1909*	-15.1515*	-19.1949**
ESG_Score	0.7144**				
E_Score		0.3872			0.0378
S_Score			0.7058**		0.7419**
G_Score				0.0351	-0.1711
F test (p-value)	0.9419 (0.7840)	0.9426 (0.7810)	0.9435 (0.7771)	0.9424 (0.7819)	0.9440 (0.7752)
Hausman test; $\chi^2(K)$ (p-value)	40.4605 (0.000)	40.8129 (0.000)	40.5360 (0.000)	41.3613 (0.000)	43.7558 (0.000)
*Note: *, **, *** denote statistical significance at the 10%, 5%, and 1% level, respectively.*					

Table 1: Estimation results of panel regression models without the ESG controversies score (Source: Own calculations based on data retrieved from the LSEG Eikon data base on June 1, 2023)

3.2. Estimation results of models with the ESG controversies score

Table 2 presents the estimation results for six specifications of the general model. As before, statistically significant coefficients for control variables are revealed in all currently considered model specifications for *Return* and *Growth*. It indicates that, while holding book value and total assets at constant levels, the amount of dividend increases when the market value is higher and net earnings are lower. The coefficient for *Sector* is still significant and negative but the positive coefficient for *Country* is now insignificant. The variable of the country ceases to be significant because shareholders' awareness of ESG controversies makes the company less risky from an investment perspective. Consequently, the company's country of origin becomes unimportant. The coefficient for *ESG_Score* remains positive and statistically significant even when the ESG controversies score is added to the model specification. The *CONT_Score* is negative and statistically significant at 10% in all model specifications. The coefficient for this sustainability score ranges from -0.5700 to -0.5354.

The relationship between ESG controversies and the dividend amount is negative because mitigating risks in sustainability dimensions or taking actions to reduce their effects requires financial expenditures, which may lead to the necessity of reducing dividend payments. The only particular pillar score that is statistically significant in these model specifications is, once again, *S_Score* – the coefficient for the social pillar score is positive.

Variables	Spec. 6	Spec. 7	Spec. 8	Spec. 9	Spec. 10	Spec. 11
Intercept	43.5240	32.2572	50.9130	0.5113	52.1354	1.0535
Return	-2.6903***	-2.6718***	-2.6678***	-2.6686***	-2.6599***	-2.6694***
Liquidity	3.8702	4.0352	3.9342	3.5640	4.1353	3.5518
Debt	0.0041	0.0039	0.0035	0.0038	0.0029	0.0038
Growth	0.8344***	0.8431***	0.8375***	0.8339***	0.8418***	0.8336***
Size	2.0845	3.4123	1.6146	5.8980	1.8823	5.8188
Country	18.2084	19.8858	19.6558	20.9006	21.3284	20.7252
Sector	-17.2480*	-15.5604*	-19.9155**	-16.1741*	-20.0262**	-16.1883*
ESG_Score	0.6399*					
E_Score		0.3542			0.0306	
S_Score			0.6570**		0.7123**	
G_Score				-0.0206	-0.2151	
CONT_Score	-0.5354*	-0.5548*	-0.5366*	-0.5700*	-0.5476*	-0.5686*
F test (p-value)	0.9439 (0.7754)	0.9446 (0.7726)	0.9454 (0.7691)	0.9447 (0.7723)	0.9461 (0.7663)	0.9447 (0.7724)
Hausman test; $\chi^2(K)$ (p-value)	41.0959 (0.000)	41.4010 (0.000)	41.1106 (0.000)	42.0533 (0.000)	44.3876 (0.000)	40.7841 (0.000)
Note: *, **, *** denote statistical significance at the 10%, 5%, and 1% level, respectively.						

Table 2: Estimation results of panel regression models with the ESG controversies score (Source: Own calculations based on data retrieved from the LSEG Eikon data base on June 1, 2023)

4. CONCLUSION

There are four main conclusions:
- the joint ESG score has a statistically significant and positive impact on the dividend payout ratio (DPR);
- the impact of the social pillar is both significant and positive, whereas the effects of the other pillars are insignificant;
- the effect of controversies ESG score (*CONT_Score*) on the DPR is statistically significant and negative;
- the inclusion of *CONT_Score* into model specifications does not affect the impact of joint ESG score and social pillar score on DPR.

Since not all sustainability variables revealed statistical significance, the research hypothesis cannot be confirmed. Our findings align with Samet and Jarboui (2017), Benlemlih (2019), Ellili (2022), Zahid et al. (2023), and Dahiya et al. (2023). However, they contradict the findings of Niccolò et al. (2020) and Saeed and Zamir (2021). Regarding research involving ESG controversies, our results differ from those of Casey et al. (2020), where the ESG controversies score is found to be insignificant. Nevertheless, the findings imply that managers should prioritize their focus on the social dimension of corporate sustainability, which includes aspects such as the workforce, community, human rights, and product responsibility, as well as controversies within specific dimensions.

The novelty of this paper lies in its exploration of the link between ESG performance and dividend payouts – a field that has not been extensively investigated in previous studies, particularly concerning a company's controversial ESG actions.

LITERATURE:

1. Agarwal, N., Chakraverty, A. (2023). Growth opportunities, information asymmetry, and dividend payout: evidence from mandatory IFRS adoption. *European Accounting Review, 32*(1), pp. 113–139.
2. Alaeto, E. H. (2018). Impact of dividend announcements on stock prices of UK firms listed in London Stock Exchange. *International Journal of Financial Management, 8*(2), pp. 1-10.
3. Baker, H. K., Powell, G. E. (1999). How corporate managers view dividend policy. *Quarterly Journal of Business & Economics, 38*(2), pp. 17-35.
4. Baker, K. H. (Ed.). (2009). *Dividends and dividend policy cash dividends: Theoretical and empirical evidence*, Hoboken: John Wiley & Sons.
5. Barnett, M. L., Salomon, R. M. (2012). Does it pay to be really good? Addressing the shape of the relationship between social and financial performance. *Strategic Management Journal, 33*, pp. 1304-1320.
6. Behl, A., Kumari, P. S. R., Makhija, H., Sharma, D. (2022). Exploring the relationship of ESG score and firm value using cross-lagged panel analysis: case of the Indian Energy sector. *Annals of Operations Research, 313*, pp. 231-256.
7. Benlemlih, M. (2019). Corporate social responsibility and dividend policy. *Research in International Business and Finance*, 47, pp. 114-138.
8. Bhattacharya, S. (1979). Imperfect information, dividend policy, and "the bird in the hand" fallacy. *Bell Journal of Economics, 10*(1), pp. 259–270.
9. Casey Jr., K. M., Casey, K. M., Griffin, K. (2020). Does good stewardship reduce agency costs in the IT sector? Evidence from dividend policy and ESG ratings. *Global Journal of Accounting and Finance Volume, 4*(1), pp. 6-16.
10. Che, X., Fuller, K. P. (2020). What does the timing of dividend reductions signal*?. Review of Quantitative Finance and Accounting, 55*(3), pp. 1035-1061.
11. Cheng, L., Fung, H. G., Leung, T. (2007). Information effects of dividends: Evidence from the Hong Kong market. *Review of Quantitative Finance & Accounting, 28*(1), pp. 23-54.
12. Cheung, A., Hub, M., Schwiebert, J. (2018). Corporate social responsibility and dividend policy. *Accounting and Finance, 58*(3), pp. 787-816.
13. Dahiya, M., Singh, S., Chaudhry, N. (2023). Corporate social responsibility and dividend policy in India. *Management Decision, ahead-of-print* (ahead-of-print), pp. 1-25.
14. DeAngelo, H., DeAngelo, L., Skinner, D. J. (2009). Corporate payout policy. *Foundations and Trends in Finance, 3*(2–3), pp. 95-287.
15. Douissa I. B., Azrak T. (2022). Long-run dynamics between CFP and CSP in the GCC banking sector: estimation non-statutory heterogeneous panels allowing for cross-sectional dependence. *Social Responsibility Journal, 18*(3), pp. 518-533.
16. Driver, C., Grosman, A., Scaramozzino, P. (2020). Dividend policy and investor pressure. *Economic Modelling, 89*, pp. 559-576.

17. Dyllick, T., Hockerts, K. (2002). Beyond the case for corporate sustainability. *Business Strategy and the Environment, 11*(2), pp. 130-141.
18. Easterbrook, F. H. (1984). Two agency-cost explanations of dividends. *The American Economic Review, 74*(4), pp. 650-659.
19. Elkington, J. (1997). *Cannibals with Forks. The Triple Bottom Line of 21st Century Business.* Oxford: Capstone Publishing Ltd.
20. Ellili, N. O. D. (2022). Impact of environmental, social and governance disclosure on dividend policy: What is the role of corporate governance? Evidence from an emerging market. *Corporate Social Responsibility and Environmental Management, 29*(5), pp. 1-18.
21. Freeman, R. E., Harrison, J. S., Wicks, A. C., Parmar, B. L., De Colle, S. (2010). *Stakeholder theory: The state of the art*. Cambridge: Cambridge University Press.
22. Freeman, R. E., Wicks, A. C., Parmar, B. (2004). Stakeholder theory and "the corporate objective revisited". *Organization Science, 15*(3), pp. 364-369.
23. Gallo, M. A. (2004). The family business and its social responsibilities. *Family Business Review, 17*(2), pp. 135-148.
24. Gillan, S. L., Koch, A., Starks, L. T. (2021). Firms and social responsibility: a review of ESG and CSR research in corporate finance. *Journal of Corporate Finance, 66*, pp. 1-34.
25. Giovannoni, E., Fabietti, G. (2013). What is sustainability? A review of the concept and its applications, In C. Busco, M. L. Frigo, P. Quattrone, A. Riccaboni (Eds.), *Integrated reporting. Concepts and cases that redefine corporate accountability* (pp. 21-40). Berlin: Springer.
26. Grullon, G., Michaely, R., Benartzi, S., Thaler, R. H. (2005). Dividend changes do not signal changes in future profitability. *The Journal of Business, 78*(5), pp. 1659-1682.
27. Hu, Y., Huang, W., Chen, Z., (2020). Stock liquidity, agency cost, and dividend payouts. *Applied Economics Letters, 27*(4), pp. 335-339.
28. Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *The American Economic Review, 76*(2), pp. 323-329.
29. Jensen, M. C., Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), pp. 305-360.
30. Jha, M. K., Rangarajan, K. (2020). Analysis of corporate sustainability performance and corporate financial performance causal linkage in the Indian context. *Asian Journal of Sustainability and Social Responsibility, 5*(1), pp. 1-30.
31. Jonker, J., Witte, M. (2006). *Management Models for Corporate Social Responsibility*. New York: Springer Berlin Heidelberg.
32. Kantabutra, S., Ketprapakorn, N. (2020). Toward a theory of corporate sustainability: A theoretical integration and exploration. *Journal of Cleaner Production*, *270*, pp. 1-22.
33. Kim, S., Jung, J. Y., Cho, S. W. (2021). Does information asymmetry affect dividend policy? Analysis using market microstructure variables. *Sustainability, 13*(7), pp. 1-19.
34. La Porta, R., Lopez, F., Shleifer, A., Vishny, R. (2000). Agency problems and dividend policies around the world. *Journal of Finance, 55*(1), pp. 1-33.
35. Lin, J. J., Lee, C. F. (2021). Does managerial reluctance of dividend cuts signal future earnings?. *Review of Quantitative Finance & Accounting, 56*(2), pp. 453-478.
36. Lin, T. J., Chen, Y. P., Tsai, H. F. (2017). The relationship among information asymmetry, dividend policy and ownership structure. *Finance Research Letters, 20*, pp. 1-12.
37. Matos, P. V., Barros, V., Sarmento, J. M. (2020). Does ESG affect the stability of dividend policies in Europe?. *Sustainability, 12*(21), pp. 1-15.
38. Michael, N. B. (2013). Agency conflict and corporate dividend policy decisions in Nigeria. *Asian Economic and Financial Review, 3*(8), pp. 1110-1121.
39. Miller, M. H., Rock, K. (1985). Dividend policy under asymmetric information. *The Journal of Finance, 40*(4), pp. 1031-1051.

40. Nguyen, N. H., Wang, D. Y. (2013). Stock dividends in China: signalling or liquidity explanations?. *Accounting & Finance, 53*(2), pp. 513-535.
41. Niccolò, N., Battisti, E., Papa, A., Miglietta, N. (2020). Shareholder value and dividend policy: the role of ESG strategies. *Proceedings of the 2020 IEEE International Conference on Technology Management, Operations and Decisions (ICTMOD)*. Marrakech, Morocco: IEEE, pp. 29-33.
42. Nizam, E., Ng, A., Dewandaru, G., Nagayev, R., Nikoba, M. A. (2019). The impact of social and environmental sustainability on financial performance: a global analysis of the banking sector. *Journal of Multinational Financial Management, 49*, pp. 35-53.
43. Nollet, J., Filis, G., Mitrokostas, E. (2016). Corporate social responsibility and financial performance: A non-linear and disaggregated approach. *Economic Modelling, 52*, pp. 400-407.
44. Oželienė, D. (2017). A review of enterprise sustainable development models: Critical appraisal. *International Scientific Journal "Science. Business. Society", 2*(2), pp. 97-103.
45. Pepur, P., Peronja, I., Lača, S. (2019). Free cash flow as dividend determinant, *FEB Zagreb International Odyssey Conference on Economics & Business, 10*, pp. 468-473.
46. Perrini, F., Russo, A., Tencati, A., Vurro, C. (2011). Deconstructing the relationship between corporate social and financial performance. *Journal of Business Ethics, 102*(1), pp. 9-76.
47. Przychodzeń, W. (2013). *Zrównoważone przedsiębiorstwo. Teoria, praktyka, wycena, nauczanie*. [*Sustainable enterprise. Theory, practice, valuation, teaching*]. Warszawa: Poltext.
48. Saeed, A., Zamir, F. (2021). How does CSR disclosure affect dividend payments in emerging markets?. *Emerging Markets Review, 46*, pp. 1-20.
49. Samet, M., Jarboui, A. (2017). Corporate social responsibility and payout decisions. *Managerial Finance, 43*(9), pp. 982-998.
50. Sanders, N. R., Wood, J. D. (2015). *Foundations of Sustainable Business*. New Jersey, NJ: Wiley.
51. Soana, M. G. (2011). The relationship between corporate social performance and corporate financial performance in the bank sector. *Journal of Business Ethics, 104*(1), pp. 133-148.
52. Sustainable Development Solution Network [SDSN] (2013). *An action agenda for sustainable development*. New York, NY: UN.
53. Tuppura, A., Arminen H., Pätäri, S., Jantunen, A. (2016). Corporate social and financial performance in different industry contexts: the chicken or the egg? *Social Responsibility Journal, 12*(4), pp. 672-686.
54. United Nations [UN] (2012). *Future we want*. Rio de Janeiro: UN.
55. Wagner, M. (2010). The role of corporate sustainability performance for economic performance: a firm-level analysis of moderation effects. *Ecological Economics, 69*(7), pp. 1553-1560.
56. World Commission on Environment and Development [WCED] (1987). *Our common future*. Oxford: Oxford University Press.
57. Xiao, C., Wang, Q., van der Vaart, T., van Donk, D. P. (2018). When does corporate sustainability performance pay off? The impact of Country-level sustainability performance. *Ecological Economics, 146*, pp. 325-333.
58. Yeo, H. J. (2018). Role of free cash flows in making investment and dividend decisions: The case of the shipping industry. *The Asian Journal of Shipping and Logistics, 34*(2), pp. 113-118.
59. Zahid, R. A., Taran, A., Khan, M. K., Chersan, I. C. (2023). ESG, dividend payout policy and the moderating role of audit quality: empirical evidence from Western Europe. *Borsa Istanbul Review, 23*(2), pp. 350-367.

60. Zhao, K. M. (2023). Signaling or tunneling: the dividend policies of Chinese ADRs listed in the US. *International Journal of Managerial Finance*, *ahead-of-print* (ahead-of-print), pp. 1-22.

61. Ziegler, A., Schröder, M., Rennings, K. (2007). The effects of environmental and social performance on the stock performance of European corporations. *Environmental and Resource Economics, 37*(4), pp. 661-680.

STRESS AND CONFLICT IN AGRICULTURAL AND WINE COMPANIES IN THE INTERIOR OF THE COUNTRY

Felipa Lopes dos Reis
Portugal
p4338@ulusofona.pt

Carolina Carola
Portugal

Ana Karina
Portugal

Lidia Reis
Portugal

ABSTRACT
With the work that follows, we intend to address the issue of stress and conflict in agricultural and wine organizations in the interior of the country. We will analyse if stress is present in the daily lives of companies, how it influences the productivity of employees, if stress is a positive or negative factor, if employees feel pressured, if the pressure felt in the work environment is reflected in a negative or positive way in personal life and we will also understand how employees of the chosen companies prefer to solve conflicts, if they prefer to solve them by sharing, by cooperating with other employees or by avoiding the problem. On the other hand, we will also analyse how the chosen companies are affected in comparison to other companies, specifically we will try to understand what impact multinationals have on small and medium-sized Portuguese companies, especially those that were the subject of this study. Finally, we will analyse if the employees like their profession and if from their point of view there is rivalry in companies in the interior of the country and how it can affect their performance.
Keywords: *stress, conflict, analysis, sharing, collaboration, avoidance, interior of the country*

1. INTRODUCTION

Conflict is part of our life as human beings in constant interaction with others, it is an integral part of our life. Its existence is not harmful, on the contrary, it promotes growth and development. Their annulment or non-existence would in no way be beneficial to either individuals or organizations. The development of the theme is essentially situated in the scope of conflict management and consequent satisfaction of workers in the business context, specifically intended to analyse the styles of conflict management and the various dimensions inherent to job satisfaction. To respond to the general objective defined, we applied a questionnaire to employees of four companies in the same industry. With the study carried out, we intend to conclude if a Sharing conflict management strategy is used, which means that, in general, employees when faced with a conflict situation always give something in their positions or opinions, if it is the style of Collaboration that implies collaboration between the parties and, consequently, leads to a greater openness of negotiation, presupposing a high concern for oneself and others, or whether it is the style of Avoidance, that is, the avoidance of the problem presupposing a reduced concern for oneself and others. We intend not only to talk about how employees see the company in relation to all the above, but we also want to deepen the questionnaire to the owners of the companies in order to understand if they are a part of everything that goes on in the company and if they are up to the task of solving the existing problems or problems that may arise. The companies analyzed, despite being in the same

industry, have objectives and small situations that differentiate them from each other, this will be positive for the perception of how conflicts can be different from company to company. Finally, we will also address small problems that this company has that causes increased stress of employees and that if there is no good management can lead to larger problems and difficult to solve. Finally, we want to draw some conclusions from how companies in the interior of the country deal with the adversities they go through and what is the difference in solving these same problems compared to other companies in the country. Nowadays there is more and more talk about stress and conflicts and how the pressure felt in the work environment can be felt in our personal life and even make us have problems that are difficult to solve in the long term (e.g. psychological problems), so the primary objectives of this work are to understand how companies are affected by these factors and if they are doing something to address these problems.

2. THEORETICAL CONTEXTUALIZATION / LITERATURE REVIEW

Stress and organizational conflict are two major issues that affect the productivity and well-being of employees in any organization. Understanding the theoretical context of these phenomena is essential for managers to develop effective strategies to manage them. Workplace stress can be related to workload, role ambiguity, interpersonal conflicts, and lack of support from colleagues or superiors. Organizational conflict arises when there is a disagreement between individuals or groups regarding goals, resources, values, or power. Conflict can be constructive if it leads to creative problem-solving or destructive if it turns into aggression and hostility. Reis, Felipa (2023) defines stress as when we do not have adequate responsiveness to the demands of satisfaction. It is the process of mismatch between the person and his surroundings, which brings negative consequences for the individual and for the company. Being the body's response to events that cause dementia in well-being. It is incited by any occurrence that is negative/positive, which forces the individual to change his behaviour. Stress – is a transactional process of misadjustment between the person and his surroundings, which produces physical, psychological, and behavioural responses with negative consequences for the individual and the organization. Stressors – are events that induce stress in the people who face it. The Conflict according to Reis, Felipa (2023) is the process by which an effort is made by A to prevent efforts of B through some kind of Obstruction and that will result in the frustration of B with regard to the achievement of its goals. The factors that contribute to conflicts are the interdependence of work that occurs when two or more groups depend on each other to complete tasks, the difference in goals that occurs when there are differences in goals between departments, and the differences in perceptions that occur when differences in goals are accompanied by different perceptions of reality.

Types of conflict:
- Interests/goals
- Cognitive/judgmental/intellectual
- Normative
- Resources
- Evaluatives
- Affective/socio-economic

3. METHODOLOGY
3.1. Hypothesis
We base the hypotheses of this work through the main question of the theoretical framework: "How can stress and conflict affect the productivity of agricultural and wine companies located in the interior of the country in various ways".

We have also subdivided this question into several others such as "does stress influence your productivity and the performance of your functions?", "Do you believe that if there were more incentives on the part of the State the conflicts and stress often linked to economic factors would cease to exist?" Do you think that companies in the interior of the country are fundamental to the Portuguese economy?" "Do you think that the population gives due value to companies in the interior of the country?" among other questions that will be paramount for the investigation of our work and for a better perception of how the chosen companies work. Some examples of problems are lack of resources, market pressure, lack of diversity in the team and lack of infrastructure. And in addition to these factors, we also have the lack of investment by the State, which is perhaps the biggest problem of Portuguese agriculture and winemaking. It is important that these companies are aware of these factors and take steps to manage them effectively, promoting a healthy and productive work environment for their employees.

3.2. Target population and sample

The target population of the study was composed of employees of the four selected companies: Jerónimo Carola Associados Company, Agrovete Company, Adega Mayor Company and AgroLanternas. All these companies are in the agricultural or wine business and are in the interior of the country, a region that is known for facing various economic, social, and cultural challenges. Agricultural and wine companies, especially small and medium-sized enterprises, have faced many challenges in recent years. The lack of investment from the state and the lack of opportunities are some of the main factors contributing to the difficulty of these companies in growing and developing. In addition, companies in the agricultural and wine sector are subject to external factors, such as weather conditions, which can significantly affect productivity and profitability. Due to these challenges, companies in the interior of the country may be more susceptible to problems related to stress and conflict in the workplace. These problems can arise due to pressure to achieve goals and objectives, lack of resources and support, fierce competition, and uncertainty about the future of the company. To understand how these problems affect the employees of the selected companies, a survey was conducted with the application of an online questionnaire. The sample was composed of employees from all selected companies, and the selection of participants were randomly and stratified to ensure the representativeness of the sample. Participants answered a series of questions about stress and conflict in the workplace, including the sources of stress and conflict, the impact of these problems on physical and mental health, the strategies adopted by employees, and the effectiveness of measures taken by the company to reduce stress and conflict. The survey results indicated that employees of the selected companies face various problems related to stress and conflict in the workplace. Some of the main sources of stress and conflict identified by participants include pressure for results, lack of recognition and appreciation, fierce competition with other companies, and uncertainty about the company's future. In addition, research has revealed that stress and conflict in the workplace can significantly affect employees' physical and mental health. Many participants reported symptoms such as headaches, fatigue, anxiety, and depression, which can have a negative impact on employees' productivity and overall well-being. To deal with these problems, employees adopted several strategies, including the use of relaxation techniques, the search for social support and the practice of activities. Of the companies chosen, around 10 workers from each company were selected. Considering the small size of the companies chosen, the questionnaire was done in a comprehensive way in order to understand how companies in the interior of the country work and not just a specific company. Thus, we have that the primary objective of the questionnaire made to the employees of the companies was to collect the necessary data for the conclusions that we intend to draw in the most reliable way possible.

We cannot fail to point out that this questionnaire was not only answered by the employees of the companies, but also by their owners in order to have a greater perception of the problems that can cause pressure and discontent, both on the manager-employee and on the employee-manager side.

3.3. Data collection tools

To better understand how Stress and Conflict affect the daily lives of employees in a company, we used an online questionnaire in Google Forms as a data collection tool. This questionnaire was carefully designed with open and closed questions, addressing various aspects related to stress and conflict in the workplace. The questionnaire we used in our research addressed issues such as the sources of stress in the workplace, the frequency and intensity of stress and conflict, the impact of stress and conflict on the physical and mental health of employees, and the effectiveness of measures taken by the company to reduce stress and conflict in the workplace. From the results obtained with the questionnaire, it will be possible to identify the main factors of stress and conflict in the work environment and evaluate the impact of these factors on the health and productivity of employees. This information may be useful for the company to take effective measures to reduce stress and conflict in the workplace and promote a healthy and productive work environment for its employees. Finally, two questions were asked of free response to the collaborators, which were: "Do you like the profession you exercise" and "In your sector of activity there is a lot of rivalry with other companies". These questions were asked to have a better perception of whether companies are managing to deal with their problems and if they are resolving their conflicts well and also to understand if there is rivalry with other companies in the same industry and if there is how they deal with the subject. The question "Do you like your profession" is important in a questionnaire about stress and organizational conflict because job satisfaction can significantly affect the level of stress and conflict an individual experiences in the workplace. Employees who enjoy their profession may have a more positive attitude toward work and be more motivated to perform their tasks, which can reduce stress and conflict. In addition, employees who are dissatisfied with their work may be more likely to experience stress and conflict in the workplace, which can negatively affect their productivity and mental health. The question "In your industry there is a lot of rivalry with other companies" is important in a questionnaire about stress and organizational conflict because rivalry between companies can create a stressful and conflictual work environment. Rivalry can arise from several factors, such as competition for customers, resources, and business opportunities. This can lead to negative behaviours, such as gossip, sabotage, hostility, and verbal or physical aggression, which can increase stress and conflict in the workplace. By understanding the presence of rivalry in the industry, the company can take steps to reduce rivalry and promote a healthier and more productive work environment for its employees. For the accomplishment of this work as already mentioned above was used the Moodle platform for the realization of the questionnaires to obtain information in the most reliable way possible, but for the accomplishment of this work were used informal conversations with the owners of the Companies to be able to reach more pertinent information of how their company really works. We cannot fail to point out that all data collection made through questionnaires was done anonymously to safeguard the privacy of all respondents, and only the questionnaire served for the collection of statistical data.

4. PRESENTATION AND TREATMENT OF RESULTS

In the questionnaire, twenty questions were asked to employees of AgroVete, AgroLanternas, Adega Mayor, and Jerónimo Carola Associados. These companies accepted that their data be used for statistical analysis of how stress and conflict influence the performance of their functions.

First of all we would like to make a small introduction of these companies, AgroVete is a company of the agricultural branch specialized in the production of forage mixtures of seeds and fertilizers, AgroLanternas is also a company of the agricultural branch specialized in the planting and sale of products for consumption such as fruits and vegetables, the Adega Mayor is a company of the wine branch that sells high quality wine this company belongs to the Nabeiro Group that it also owns the well-known Delta. Finally, we have Jerónimo Carola Associados which has three branches of activity which is the purchase and sale of cattle (namely cows and sheep) and then has the part of selling seeds and forage mixtures (hay, wheat, barley, rye) and finally we have the most important part which is the harvest of olives to transform into olive oil. Thanks to the availability of the companies mentioned above, we were able to start from an initial problem that can trigger some not very positive factors, which is the Farmer, it is a sector of activity that depends a lot on the environment, always existing a great uncertainty for the following year. We were given the example of the Owner of the Company Jerónimo Carola who had last year a bad harvest year due to factors such as the severe drought that is felt in the Alentejo, this caused the loss of the money invested that year which leads to the demotivation of employees and the uncertainty of the following years. The Owner believes that to be in this branch of activity it is necessary not only to understand the field and all its particularities but also a good management is necessary that makes years of drought are not harmful at an economic level or that at least does not make itself felt in a very harmful way. The Technical-Commercial of Alto Alentejo, Bernardo Calheiro de Menezes, also helped to realize the difficulties felt in AgroVete, which are the lack of interest of the younger generations in going to the Alentejo and settling there, which makes there a very large lack of employees in certain regions of the Alentejo, which makes expanding the company more difficult, which creates many obstacles to the growth of national SMEs. Bernardo also gave us an example of how for some time they were looking to recruit people for the company, and it took almost 8 months to find someone who was willing to live in the Alentejo and perform the proposed functions, so we can understand the difficulty that is for entrepreneurs to find skilled workers who wanted to go live in the interior of the country. The Owner of AgroLanternas, Leonardo Lanternas touched on a point already mentioned above, which is the seasonality of the farmer and the difficulty of producing in years of drought or high temperatures. Leonardo also made known to us the difficulty of getting people to work in the field and the population of the Alentejo is increasingly aging, he believes that there should be more incentives from the State for a greater fixation of young people in the interior of the country. Doctor Leonardo to overcome the problems of finding people to work in the field has created a partnership with the Polytechnic of Portalegre more specifically with the Escola Superior Agraria de Elvas which consists of giving place to students at the end of the course the opportunity to work in his company for a few months to gain experience and become better at what he proposes, Thus, not only does he manage to have more workers, but he also helps students who often cannot find paid internships or with as good conditions as he offers. Finally, the Adega Mayor Company, belonging to the Nabeiro Group, reinforces all that is mentioned above and adds that at the beginning of this brand the difficulty was to detach itself from the idea that the Nabeiro Economic Group only made quality coffee, so with great difficulty they had to prove their merit and the quality of their products, being nowadays one of the best wines of the region, winning many quality awards. The example given by the larger Winery Company is the rivalry that is felt in the wine companies because there are already many brands in the market so when they decided to move forward with this project it was not easy but with many strategies and marketing and projects that were not only good economically but were good socially, because for the Nabeiro Group it is extremely important. After all these issues on the part of the companies so important for the region we can already draw some conclusions from problems that affect all of them, which is the lack of interest of the younger generations in living and

settling in the Alentejo which leads to the lack of qualified workers, the difficulty of making climate predictions that leads to uncertainty and fear of investment and we also have the lack of investment by the State in the Farmer Portuguese that leads to demotivation and the loss of interest of Portuguese investors in betting in the interior of the country. Once the initial conclusions were drawn, the next step was to create a questionnaire that was comprehensive to the four Companies, so that all these questions could be understood: how they deal with stress and conflict in this branch of activity so complex and with so many structural problems. Two initial questions were asked to understand the age and gender of the workers:
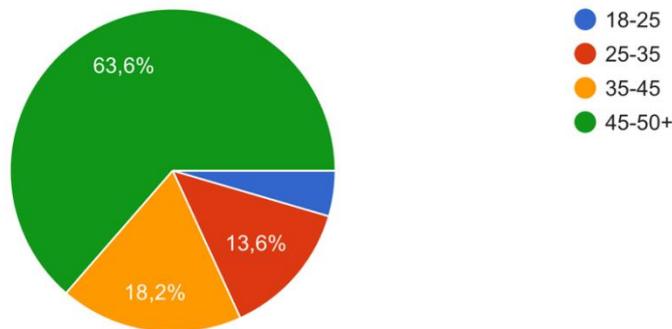
Figure 1: Age
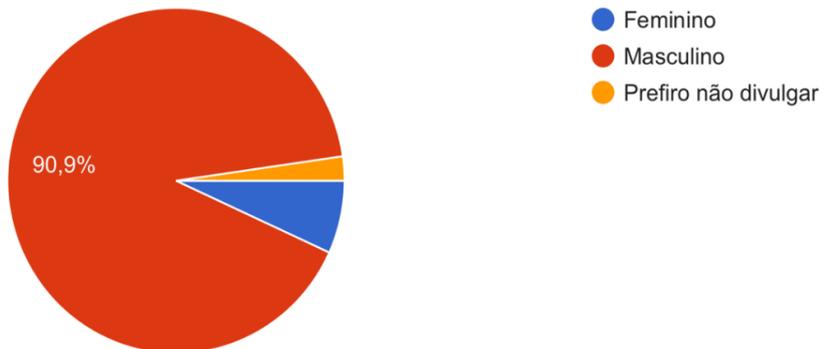
Figure 2: Gender (Feminine; Masculine; Rather not disclose)

With these first graphs we have already been able to draw some conclusions and existing problems in the companies that are: the population is increasingly aged, with the most voted age being 45-50+, which in the long run will become harmful if young people are not encouraged to work and live in the interior of the country. And then I have the problem of still believing that it is a job done for men which brings us to the second graph in which more than 90% of the people who voted are men, this problem is linked to the fact that in our society it is still not very common to see a woman working and developing projects in the field which leads to there being a lot of lack of women in this field who could lead to greater innovation and development of companies.

For these problems we believe that the solution cannot arise only from one side, that is, it cannot be only the State that creates incentives, but it must also be the young people who want to live in the interior of the country and fight for a better life with much more comfort and tranquillity than what they would have in a large metropolis like Lisbon or Porto.

The questions that followed were whether stress was present in the lives of workers and how it was felt:

O stress está presente no seu dia a dia?
44 respostas
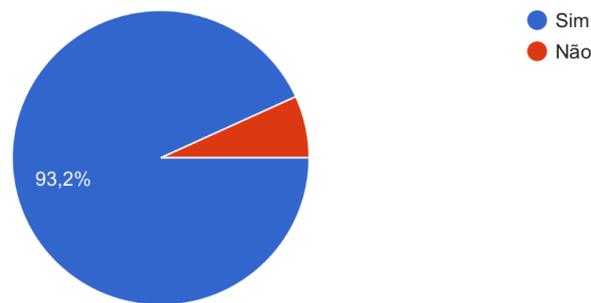
Figure 3: Is stress present in your daily life? (Yes; No)

Se sim, quais são os principais sintomas físicos ocasionados pelo stress que sente?
42 respostas
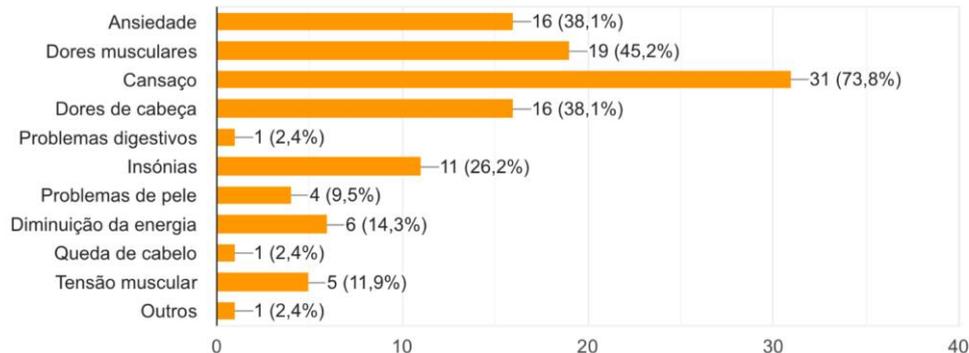
Figure 4: If so, what are the main physical symptoms caused by the stress you feel?
Options: Anxiety; Muscle pain; Tiredness; Headaches; Digestive problems; Insomnia; Skin problems; Decrease in energy; Hair loss; Muscle tension; Other.

With these two graphs we take the idea that stress is present in people's lives almost unanimously and that it affects people in many different ways, we have that the way stress is most expressed is in fatigue having 31 people voted for it, in second we have muscle pain with 19 votes, then anxiety and headaches with 16 votes each, then insomnia with 11 votes followed by decreased energy and muscle tension with 6 and 5 votes respectively and with fewer votes we have digestive and skin problems and hair loss. This has shown that stress for many people is something that is very present in their lives and that can have very negative influences on the lives of employees. For these problems we believe that more attention is needed from companies to the problems of workers, namely the provision of support to workers so that they feel more welcomed, because for a functional company it is necessary the satisfaction of employees.

Stress and its influence on productivity:

Sente que o stress influencia a sua produtividade e desempenho nas suas funções?
44 respostas
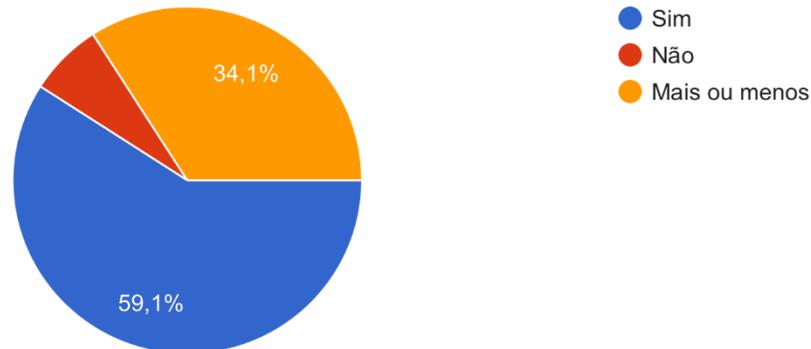
Figure 5: Do you feel like stress influences your productivity and performance in your duties?
(Yes; No; More or less)

O stress para uma parte da população pode ter algo positivo para um aumento de produtividade. Aplica-se no seu caso?
44 respostas
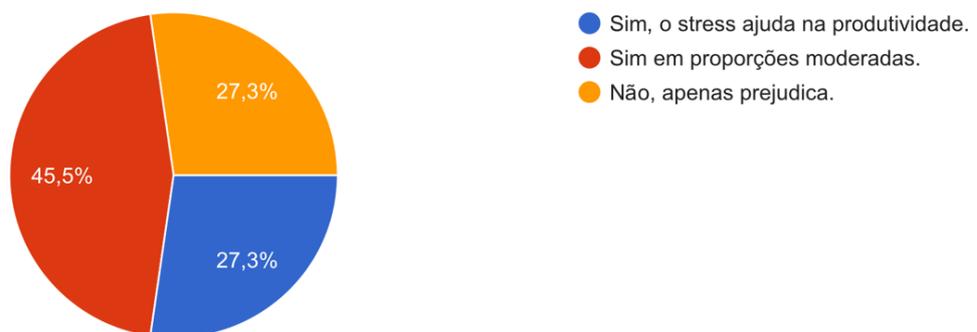
Figure 6: Stress for a part of the population can have something positive for an increase in productivity. Does in apply in your case? (Yes, stress helps in productivity; Yes, in moderate proportions; No, it only harms)

With these two graphs we concluded that productivity is greatly influenced by stress and pressure felt in the work environment, which for 45.5% of respondents is positive to a certain extent, while for 27.3% it is only harmful and for the remaining 27.3% stress helps a lot in productivity. We can see that this factor has nothing to do with the company, but rather in the people because it varies from personality to personality. What managers of companies have to do is an analysis of how they should deal with each personality in order to pressure the right people in order to have higher levels of productivity and can increase job satisfaction, since those who do not like to be pressured if they are pressured too much can become demotivated and cease to be as useful to the company as a person who only works well under pressure will have more need to always have someone to supervise their work to have a better performance.

Pressure in the workplace:

Acredita que pressionar os seus colaboradores ou ser pressionado pode levar a conflitos ou gerar divergências internas?

44 respostas
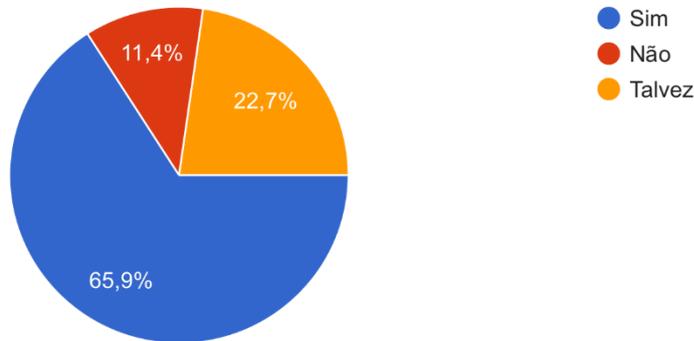
Figure 7: Do you believe that pressuring your coworkers or being pressured can lead to conflicts or generate internal disagreements? (Yes; No; Maybe)

Alguma vez procurou ajuda para lidar com o stress ou ansiedade causada pelo seu trabalho?

44 respostas
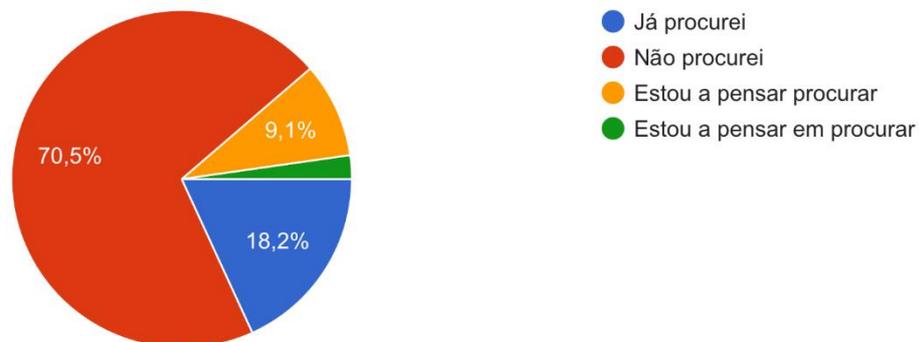
Figure 8: Have you ever looked for help to deal with the stress or anxiety caused by work? (I have already looked; I didn't look; I'm thinking of looking)

With the graphs above we can see that most workers do not feel well to be pressured so if the same happens can lead to internal divergence and generate conflicts of difficult resolution, with the second graph we can see that the vast majority of people do not seek help to deal with the stress and anxiety that often feel, For this same fact there may be many hypotheses of why they may be the stigma that is still felt by seeking psychological counselling, it may be due to economic factors or even a lack of belief in the results of this type of monitoring. To change people's mindsets a little, we believe that companies that could economically do so should provide psychological support to their workers, so that they can overcome the existing problems and failures.

The importance of companies in the interior of the country:

Acredita que se existissem mais incentivos por parte do Estado, os conflitos e stress, muitas vezes ligados a fatores económicos, deixariam de existir?

44 respostas
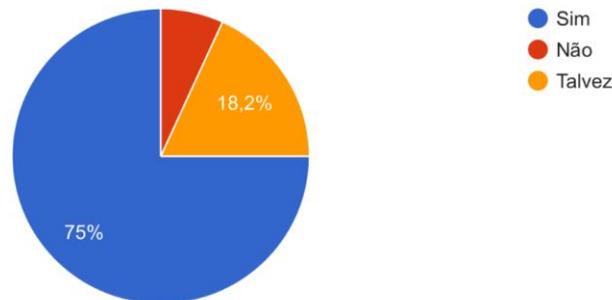
Figure 9: Do you believe that if there were more incentives from the Government, conflicts and stress often linked to economic factors, would cease to exist? (Yes; No; Maybe)

Acha que as empresas no interior do país são fundamentais para a economia portuguesa?

44 respostas
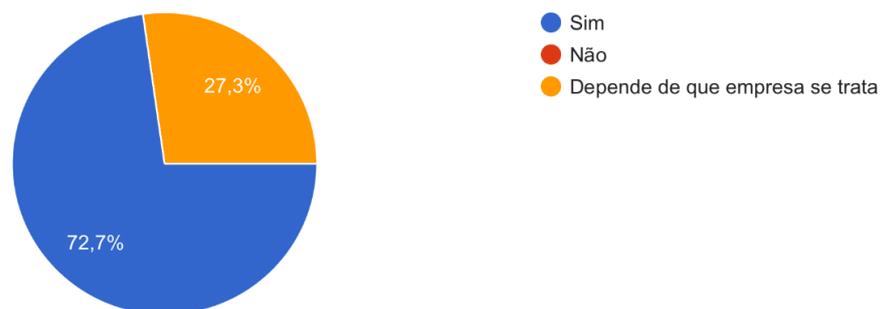
Figure 10: Do you think that companies in the interior of the country are fundamental to the Portuguese economy? (Yes; No; It depends on which company it is)

These three graphs are perhaps the most important because it reflects one of the biggest problems the lack of incentives from the State is one of the main factors of dissatisfaction and cause of stress since companies can never be sure if they will be helped or not in a time of greater difficulty, in conversation with the owners they believe that if the State were more active in farming the Portuguese economy would grow exponentially and the satisfaction and taste for work in the field would increase. It is almost unanimous that in the companies studied it is believed that the company from the interior of the country has an extreme importance for the Portuguese economy since it can be considered that agriculture and everything that involves it is the basis of any country. Unfortunately, the reality is that agriculture does not receive the recognition it deserves, which also ends up demotivating workers because they see that people do not give them their due value. One thing we would like to stress in this work is that agricultural and wine companies are essential for our country, and we must be grateful to all the workers who do not always have the best conditions and yet continue to move the Portuguese economy and give the final consumer the best possible products.

Se sim, acha que recebem o devido reconhecimento por parte da população como um todo?

43 respostas
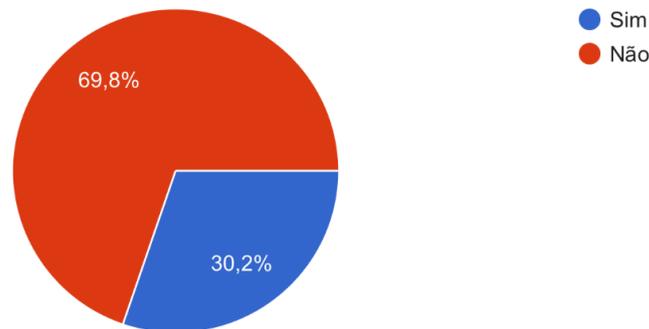
Figure 11: If so, do you think they receive proper recognition by the population as a whole? (Yes; No)

A pressão sentida no seu ambiente de trabalho pode influenciar a sua vida particular de uma forma negativa?

44 respostas
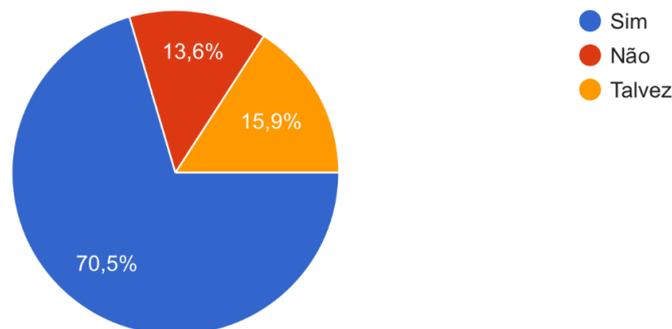
Figure 12: Can the pressure felt in your work environment influence your private life in a negative way? (Yes; No; Maybe)

Para si, qual é a melhor forma de resolver os conflitos?

44 respostas

Figure 13: For you, what's the best way to solve conflicts? (Collaborate and try to solve the existing problems; Share the conflicts for group resolution; Avoid conflicts; Collaborate to solve the conflicts)

Com o passar dos anos sente uma maior pressão para conseguir ser útil e produtivo?
44 respostas
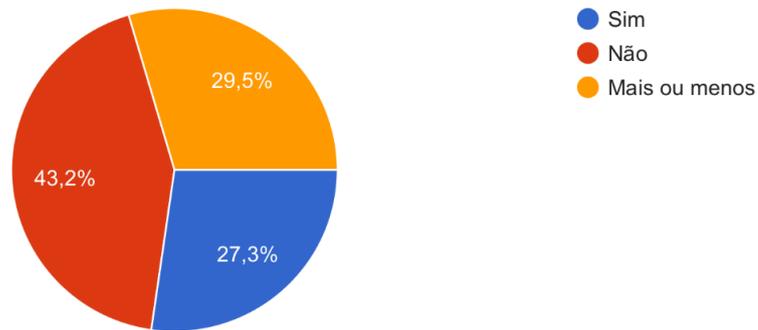
Figure 14: Over the years, do you feel more pressure to be useful and productive? (Yes; No; More or less)

A seu ver as gerações mais novas, estão interessadas em viver e trabalhar no interior do país?
44 respostas
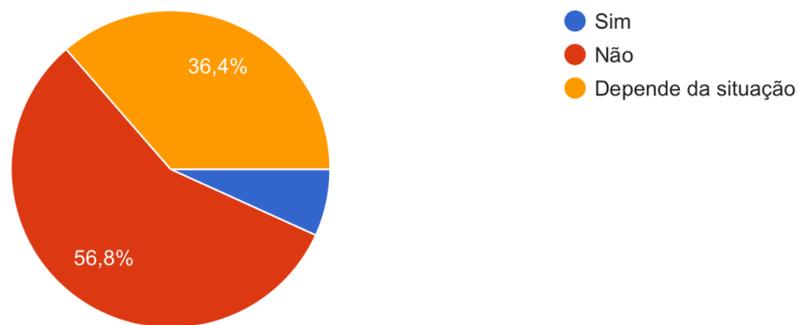
Figure 15: In your perspective, seeing the younger generation, do you think they are interested in living and working in the interior of the country? (Yes; No; It depends on the situation)

Como lida quando os projetos não estão a correr como planeado?
44 respostas
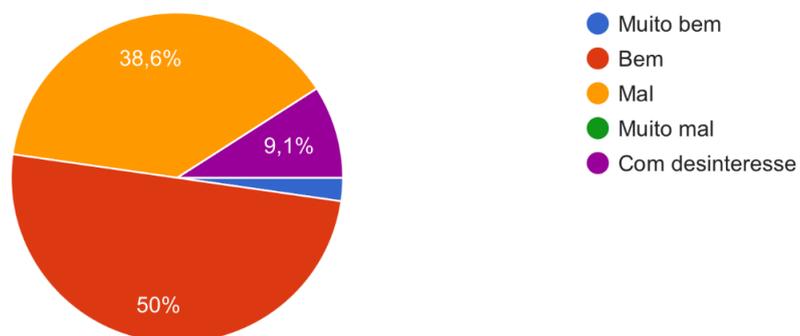
Figure 16: How do you deal when projects aren't going as planned? (Very well; Well; Badly; Very badly; With disinterest)

Gosta da profissão que exerce?

44 respostas
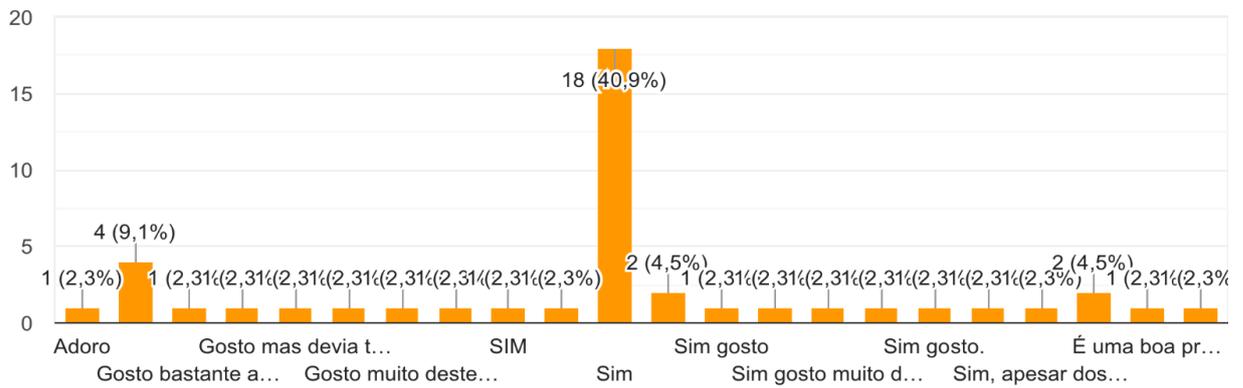
Figure 17: Do you like your profession? (It was an open answer)

Quando não está no seu local de trabalho, consegue "desligar" daquilo que tem para fazer ou pensa demasiado nisso?

44 respostas
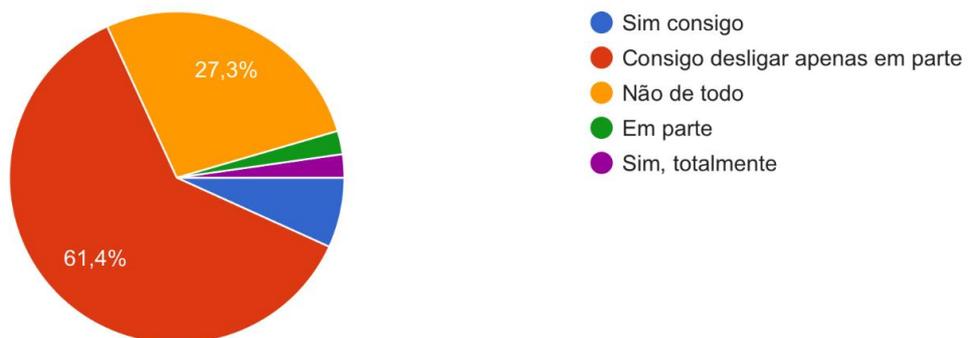
Figure 18: When you're not in your workspace, can you "switch off" of what you have to do or do you think too much about it?(Yes I can; I can "switch off" partly; I can't at all; Partly; Yes, totally)

Alguma vez se sentiu desmotivado por não ter o devido reconhecimento?

44 respostas
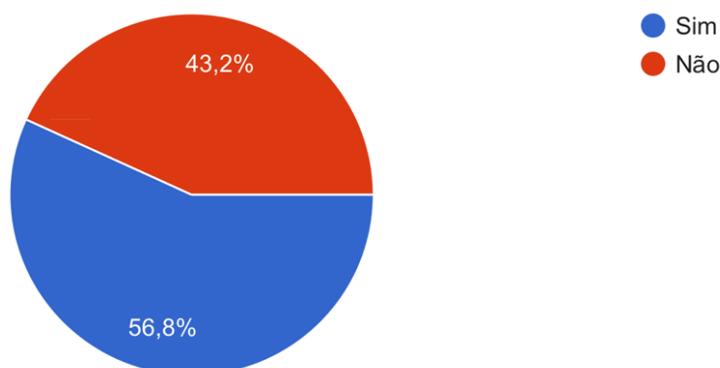
Figure 19: Have you ever felt unmotivated for not getting the proper recognition? (Yes; No)

No seu setor de atividade existe muita rivalidade com outras empresas?
44 respostas
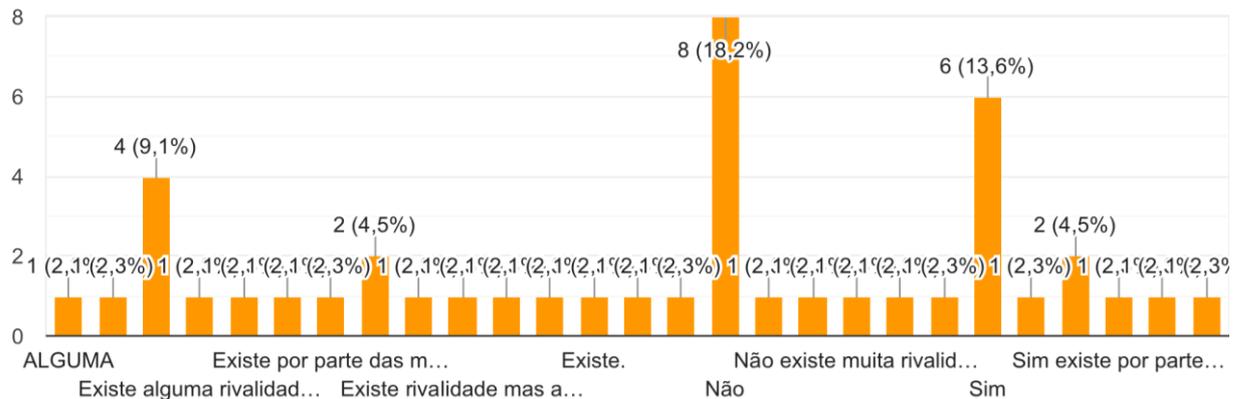
Figure 20: In your industry, is there a lot of rivalry with other companies?(It was an open answer)

With these last graphs we can draw some more specific conclusions of how workers see the company in which they work, to the question the pressure felt in the work environment can influence their private life in a negative way the majority (70.5%) of respondents answered that yes has a negative influence which can lead to family problems or unnecessary conflicts. In the question of how best to resolve conflicts there were many answers such as collaborating to resolve conflicts, sharing conflicts for group resolution, and avoiding conflicts. Over the years, workers feel more need to be useful and productive, and when things do not go as expected, the worker tends to deal well with them, with the frustration of not being able to solve problems immediately, this can be explained by many factors, one of them being the age of the employees, because as is a fact, over the years people tend to deal better with the problems and to find more solutions effectively. The employees were also asked if they see the younger generations interested in living in the interior of the country and the answer as expected was mostly that no, to solve this problem structural changes were needed that would go through more incentives for young people to move to the interior, this will not be easy and must be implemented in the long term, because, as has been analyzed, the Alentejo population is decreasing more and more, which is not only an economic problem, but also a social and cultural one that affects all branches of activity, but this one in particular. Workers have sometimes felt discouraged by not having the proper recognition, but what many claim is that in the company they are currently in this does not happen and they receive the proper admiration and recognition. Many of the workers even at home cannot stop thinking about work what happens in many branches of activity, but in agriculture this concern is added by a daily uncertainty, the owner of the company Jerónimo Carola Associados even confessed that for a few hours can have crops of thousands of euros ruined by climatic factors such as wind or rain, That said, he said it's hard not to think about work often. In the open answer question, like the profession you exercise, it was unanimous that yes, workers like what they do and especially like the company in which they work, we got very varied answers of how good it was to work in a company that gives us due value and how working in the field, even if difficult and tiring, brings many joys and it is very gratifying to see things go well. The workers feel satisfaction to see their importance and to see that, even if they do not have their value recognized, they are essential for the country and for the entire population. Finally in the question in your sector of activity there is a lot of rivalry there were two big answer groups, the first in which they believe that there is not much rivalry because as there are fewer and fewer people wanting to work in

the Alentejo companies have to unite to be able to phase the adversities, there is also another large group that says that there is a lot of rivalry, Not on the part of small and medium-sized companies, but on the part of large multinationals that do not respect small Portuguese businesses. Many responses included this same factor: that multinationals disrespect small and medium-sized Portuguese companies because they mostly buy at very low prices from small entrepreneurs and then sell at much higher prices, thus leaving very large profit margins harming small traders. In an appendix we provide all the questions and possible answers to the questionnaire carried out at AgroVete, AgroLanternas, Adega Mayor and Jerónimo Carola Associados.

5. CONCLUSION

With this work we elaborate a theoretical part in which we can understand what stress is, what conflict is, the various types of conflicts and how these aspects can be expressed. We conclude that stress is nothing more than like Professor Doctor Reis, Felipa (2023) stress as when we do not have adequate response capacity to the demands of satisfaction. It is the process of mismatch between the person and his surroundings, which brings negative consequences for the individual and for the company. Being the body's response to events that cause dementia in well-being. It is incited by any occurrence that is negative/positive, which forces the individual to change his behaviour. Then we conclude that conflict can happen when people work together in the company, work can occur naturally, just as it can happen in a troubled way. According to Griffin (2007, p. 450), the "conflict is the disagreement between two or more individuals, groups or companies", which, in a negative way, causes discord and antipathy and, in a positive way, motivates learning and the search for new challenges. Rahim (2001) admits that many companies do not accept the conflict, because it is considered as a negative situation. Robbins et al. (2010) approach conflict as a point of perception: the individual can oppose, interact, or not present the same principles or expectations, going beyond the limits. Chiavenato (2010) refers to conflict as a situation of distrust, disagreement and confrontation of ideals or opinions. Marras (2009) claims that the conflict is a dispute of personal x organizational interests and that only good communication between the parties can improve or reduce the consequences that the conflict can cause in the work environment, among them, the fall in productivity and motivation of those involved, the quality of results, climate and change in behaviour. Also, in relation to conflict, we observed that there are several types, namely: conflict of interests/goals, cognitive/judgment/intellectual conflicts, normative conflicts, resource conflicts, evaluative conflicts and affective/socioeconomic conflicts. To help us draw more specific conclusions we spoke to some of the owners in an informal conversation about how they really feel to be business owners in the interior of the country, they are very proud of everything they have built and how they have managed to make their work so impressive. What they often point out is that having a Company in this field is a very arduous and tiring task and that entails many responsibilities, and this leads to the theme of our work which is stress and conflict, which as they say and well is necessary and at certain times very positive to have a growth, Often in informal conversations there are conflicts of ideas that become mostly very well developed and highly successful projects. We can also not fail to look at the negative parts of agriculture and winemaking that we have managed to start from an initial problem that can trigger some not very positive factors that is a sector of activity that depends a lot on the environment and there is always a great uncertainty for the year that follows. There is also the problem of the lack of incentives from the State and the lack of interest of young people in living and working in the interior of the country. One factor that can be both positive and negative depending on how it is exploited is the rivalry that can arise from various factors, such as competition for customers, resources, and business opportunities.

This can lead to negative behaviours, such as sabotage, hostility, and verbal or physical aggression, which can increase stress and conflict in the workplace. By understanding the presence of rivalry in the industry, the company can take steps to reduce rivalry and promote a healthier and more productive work environment for its employees in organizations.

LITERATURE:

1. Cavanaugh, M. A., Boswell, W. R., Roehling, M. V., & Boudreau, J. W. (2000). An empirical examination of self-reported work stress among US managers. Journal of Applied Psychology, 85(1), 65-74.
2. Leka, S., Hassard, J., Jain, A., & Makrinov, N. (2015). The role of policy and practice in workplace stress, and well-being: The case of the UK. International Journal of Environmental Research and Public Health, 12(1), 579-589.
3. Reis, F. L. (2020). *Gestão das Organizações* Edições Silabo (2ºedição)
4. Spector, P. E. (2016). Industrial and organizational psychology: Research and practice. John Wiley & Sons.

APPENDIX

Questionário sobre o stress e conflito nas empresas agrícolas e vinícolas no interior do país

B *I* U ⊖ ✕̶

Este questionário foi realizado no âmbito da cadeira de Psicossociologia das Organizações, por alunos do curso de Gestão de Empresas, da Universidade Lusófona de Lisboa, no ano letivo de 2022/2023.

O objetivo deste questionário é obter informações sobre as consequências provocadas nos funcionários pelo stress vindo do meio empresarial em que estão inseridos, e de que forma esta afeta a

⊕ 🔖 T⊤ 🖼 ▶ ▤

Idade *
- ○ 18-25
- ○ 25-35
- ○ 35-45
- ○ 45-50+

---

*

O stress está presente no seu dia a dia?

B *I* U ⊖ ✕̶

- ○ Sim
- ○ Não

Sexo *
- ○ Feminino
- ○ Masculino
- ○ Prefiro não divulgar

Acha que as empresas no interior do país são fundamentais para a economia portuguesa? *

- ○ Sim
- ○ Não
- ○ Depende de que empresa se trata

Se sim, quais são os principais sintomas físicos ocasionados pelo stress que sente?

B *I* U ⊖ ✕̶

- ☐ Ansiedade
- ☐ Dores musculares
- ☐ Cansaço
- ☐ Dores de cabeça
- ☐ Problemas digestivos
- ☐ Insónias
- ☐ Problemas de pele

⊕ 🔖 T⊤ 🖼 ▶ ▤

Sente que o stress influencia a sua produtividade e desempenho nas suas funções? *

B   I   U   🔗   𝕏

◯ Sim

◯ Não

◯ Mais ou menos

Se sim, acha que recebem o devido reconhecimento por parte da população como um todo? *

B   I   U   🔗   𝕏

◯ Sim

◯ Não

O stress para uma parte da população pode ter algo positivo para um aumento de produtividade. Aplica-se no seu caso? *

◯ Sim, o stress ajuda na produtividade.

◯ Sim em proporções moderadas.

◯ Não, apenas prejudica.

Acredita que pressionar os seus colaboradores ou ser pressionado pode levar a conflitos ou gerar divergências internas? *

◯ Sim

◯ Não

◯ Talvez

Alguma vez procurou ajuda para lidar com o stress ou ansiedade causada pelo seu trabalho? *

◯ Já procurei

◯ Não procurei

◯ Estou a pensar procurar

A pressão sentida no seu ambiente de trabalho pode influenciar a sua vida particular de uma forma negativa? *

◯ Sim

◯ Não

◯ Talvez

Para si, qual é a melhor forma de resolver os conflitos? *

○ Colaborar e tentar resolver os problemas existentes

○ Partilhar os conflitos para uma resolução em grupo

○ Evitar conflitos

Como lida quando os projetos não *
estão a correr como planeado?

○ Muito bem

○ Bem

○ Mal

○ Muito mal

○ Com desinteresse

Quando não está no seu local de *
trabalho, consegue "desligar"
daquilo que tem para fazer ou
pensa demasiado nisso?

○ Sim consigo

○ Consigo desligar apenas em parte

○ Não de todo

Com o passar dos anos sente uma *
maior pressão para conseguir ser
útil e produtivo?

○ Sim

○ Não

○ Mais ou menos

A seu ver as gerações mais novas, estão
interessadas em viver e trabalhar no
interior do país?

○ Sim

○ Não

○ Depende da situação

Gosta da profissão que exerce?

Texto de resposta curta

Alguma vez se sentiu desmotivado por não ter o devido reconhecimento? *

B *I* U 🔗 ✕

◯ Sim

◯ Não

No seu setor de atividade existe muita rivalidade com outras empresas?

B *I* U 🔗 ✕

Texto de resposta curta

Acredita que se existissem mais incentivos por parte do Estado, os conflitos e stress, muitas vezes ligados a fatores económicos, deixariam de existir? *

◯ Sim

◯ Não

◯ Talvez

EMOTIONAL AND TRANSPARENT COMMUNICATION IN TIMES OF CRISES

Felipa Lopes Dos Reis
Universidade Lusófona de Humanidades e Tecnologia
Escola de Ciências Económicas e das Organizações, Lisboa, Portugal
p4338@ulusofona.pt

Carmen Ferreira
Universidade Lusófona de Humanidades e Tecnologia
Escola de Ciências Económicas e das Organizações, Lisboa, Portugal
a22200334@alunos.ulht.pt

Lucia da Silva
Universidade Lusófona de Humanidades e Tecnologia
Escola de Ciências Económicas e das Organizações, Lisboa, Portugal
a22207340@alunos.ulht.pt

Patricia Wilson
Universidade Lusófona de Humanidades e Tecnologia
Escola de Ciências Económicas e das Organizações, Lisboa, Portugal
a22207941@alunos.ulht.pt

ABSTRACT

As long as an organisation exists, there is information hierarchy and privileged access to information that may impact the wellbeing of workers, especially in a crisis context where employees may experience job insecurity. This work aims to understand the interaction between organisations and respective workers in a crisis context such as COVID-19, and how internal communication, transparency and trust resonates from top to bottom of the hierarchy. This study was built around both qualitative and quantitative methods. The first allowing to attain analysis on a broader perspective while the latter follows a questionnaire. The findings suggest it's necessary for companies to draw a contingency plan for crisis situations and avoid negative repercussions.
Keywords: Communication, Crisis, Emotional, Empathy, Transparency

1. INTRODUCTION

This work aims to understand the interaction between organisations and respective workers in a crisis context such as COVID-19, and how internal communication, transparency and trust resonates from top to bottom of the hierarchy. In the context of crises inside an organization, there may come a time where there's a need to grasp scope and understanding on the importance of communication, precisely, how it is carried out. How an organization acts facing a crises and the varied outputs of each and every affected employee impact must be based on a contingency plan to elevate communication and correspondence, and, for the purpose of this research, it'll be established how communication in context of a crisis is built, using the recent COVID-19 pandemic as a reference, as well as respective strategies to counter the ambiguity within a work environment in order to overcome uncertainty and misunderstanding. For this research, a study has been conducted to employees of the company Wunderman Thompson MAP to understand how several factors can trigger constraints in relationships that are established daily and have an impact on a company's credibility, competitiveness, and compassion.

2. THEORETICAL FRAMEWORK

In this segment, the impact of different communication techniques in crisis situations and communication management proposals within organisations will be researched. A literature review was carried out to better understand studies already carried out on the theme, and in this way, it was possible to determine common structures for resolving the topic. Between the assessment phases, models, strategies and auxiliary tools, the direction of this review is focused on designing effective practices for relating an organisation's performance and the commitment of the people who make it up.

2.1. Assessment phases

Before implementing strategic measures, any and every situation must be subject to an assessment and evaluation (Schoofs, et al, 2022). Folkman & Lazarus (1986) state that in communication there are primary and secondary measures that jointly measure the impact of person-environment interaction on well-being, determining the possibility of loss and damage, or gain and benefit, in a crisis context. A primary assessment considers how incidents impact the well-being of publics or organisations, while secondary assessment involves how organisations manage 5 demands of relational encounters and the viability of cooperation strategies (Pang et al., 2006). This primary and secondary assessment through empathy in a crisis context consists of two components: the first, empathy, involving cognitive perspective processes in communicators and tries to understand what affects them, how they're perceived and experienced (through understanding the other's perspective); the second, empathetic communication by the practitioners indicating that crisis communication involves a response that adequately relates to the expected mental state of stakeholders. Kim & Jin (2020), associated the primary assessment of situational demands that includes a assessment of hazard, uncertainty and the level of effort required by a situation, and a secondary assessment of resource requirements that includes a knowledge assessment, skill, time, finances and support from the dominant alliance (Pang & Cameron, 2012) for theories such as construal level.

2.2. Construal Level Theory

Construal level theory is the mental abstraction of events or objects constructed based on psychological distance, which is a subjective experience that we are close to or far from ourselves, here and now (Trope & Liberman, 2010). In relation to a crisis, this means that the public is less influenced to express a positive view of a high-level object rather than a low-level one (Trope, et al, 2007) and thus future and distant events are likely to be perceived more favourably than most recent events (Kim & Jin, 2020). This suggests that, in a crisis, it would be beneficial to communicate the situation and measures to be applied.

2.3. Theory of temporal distance of the crisis

The temporal distance theory of the crisis, explored in a study conducted by Kim & Jin (2020), shows that the influence of temporal distance from an organisation facing a crisis threat varies according to the result, and the temporal distance is associated with feelings of less negativity and behaviours of greater support for the organisation, despite the same study does not offer an empirical explanation of the direction of distance from a temporal crisis in public response, and suggests that further studies would be needed. Emotional crises, intention and behaviour supporting the organisation were highlighted as the consequence of the public's perception of crisis, and markers of effectiveness in an organisation with communication strategies in crisis situations (Pang et al, 2007; Lazarus, 1991).

2.4. Contingency Theory

In a study on the impact of contingency factors that were intended to impose a comfortable approach to internal communication during the Covid-19 health crisis, the risks of damage to the organisation's reputation, decreased engagement and employee commitment, health and safety, and the prescriptive factor of risk of economic harm to organisation. The study by Mazzei et al, (2022), based on the structure of Contingency Theory, was able to develop specific accommodation strategies internally and the identification of relevant contingency factors with reference to the context of the Covid-19 health crisis in Italy. Knowledge of internal crisis communication states that during a crisis the most important communication objectives are to give instructions, reduce uncertainty, and increase understanding, and for successful crisis management, it's necessary to develop internal strategies for crisis communication to reduce perceived uncertainty, sustain stakeholder engagement and promote employee support for the organisation. Mazzei et al. (2022), concludes that in crisis situations, communication must be delivered considering corporate security and plans along with a plan to demonstrate motivation and empathy through closeness and appreciation to employees, to their commitment and concern for their families.

2.5. Ethical Communication in Times of Crisis: Honesty and Authenticity

Developing theories that suggest that there is a basis for building contingency in crisis situations, a study conducted by Nhedzi & Gombarume (2021) found through interviews with professionals, two important categories for communication, way to complete contingency plans: authenticity and honesty on both sides when a mistake is made, or an implemented strategy does not go as planned. Regarding authenticity in times of crisis, it was identified that a strategy implemented for this purpose consists assuring authentic, ethical, honest, open and show an openness and ease of communicating with the organisation and interlocutor.

2.6. Emotional Communication in Crisis Situations

The development of an emotional bond brings belonging and involvement with an organisation, thus resulting in proximity and a desire for personal growth, linked to the success of the company itself (Harris et al., 2008), and this emotional bond, when established, translates into loyalty, delivery, commitment, and dedication (D'Aprix, 1996) and a company can communicate through deep acting, which can only work if genuine feelings are created and expressed, and through superficial actions, where the feelings shown and manifested are not truly and honestly felt. Quality interactions that are effective, clear, and targeted communication are key to reduce inefficient communication, conflicts and misinterpretations that may be harmful to the company's environment, Campbell et al, 1976, this way, emotional communication can be expressed verbally and through non-verbal expressions. Further regarding the employer-employee bond, desires, ambitions, emotions and feelings associated are translated into behaviours and attitudes in a daily basis (Martin Bruce, 1962) and the emotional bond is a complex, continuous and delicate process dependent on all of the involved parties (Batool, 2013). the dysfunctional behaviour from an employer may result in a discrepancy between the expressed and established feelings and rules, thus discouraging employees from demonstrating their needs and emotions, leading to tendencies to change or even hide them (Bagozzi, 2003) and negative emotional communication is directly and closely related to burnout, dissatisfaction, and employee withdrawal (Salovey et al., 1999). This brings out a special connection with the state of mind of both parties (employee and employer) which reveals to be a useful mechanism to uncover emotional performance, where emotional communication is understood as a different concept by both. These constructs differ depending on the entity and what they represent (Fairhurst et al., 2014), and workers who identify with the organization are more likely to support, identify and demonstrate dedication, contributing to a

resilient bond when facing a crisis where emotionally framed communication leads to a more positive reputation compared to a rational posture towards crisis communication. Studies suggest that showing sadness in a controlled way increases perceptions of sincerity and in turn this reduces the feeling of anger in the public, while showing too much sadness damages the credibility of spokespeople and consequently their reputation as they function as the public face of the organisation (Schoofs & Claeys 2021), extending to even a future post-crisis phase where competence will be less under public scrutiny and the presence of empathetic communication becomes a vital element, especially with a degree of demonstration of sadness that can be beneficial.

2.7. Transparent Communication in Crisis Situations

Unplanned organisational change can raise questions and uncertainties. In this way, they affect relationships between organisations and stakeholders, contributing to the organisation's poor reputation (Coombs, 2015, as cited in Schoofs & Claeys, 2021), which is "a collective construct that describes the aggregated perceptions of multiple stakeholders about a company's performance" (Fombrun et al., 2000, as cited in Schoofs & Claeys, 2021). When crisis have negative repercussions for the company they affect its credibility, sales performance, competitiveness and consumers' perception of the product's credibility (Schoofs & Claeys, 2021), and these reasons bring out the importance of controlling the perception of interested parties to minimize the negative impact, maximise the benefits and transform the situation into an opportunity (Schermenhorn et al. , 2003, as cited in Li et al., 2021). In a crisis, employee-organisation relationship (EOR), "the degree to which an organisation and its employees trust each other, agree about who has legitimate power to influence, experience satisfaction with each other, and commit to each other" (Men & Stacks, 2014, as cited in Li et al., 2021). It's crucial to mitigate possible damage as the employee can play an active role contributing to the company's reputation and how it's seen by customers. Emotional labour can be related to employee burnout, dissatisfaction, and withdrawal (Gong et al., 2020) and this becomes more complicated when the EOR isn't being correctly developed, as an example, the feeling of pride arises from group cohesion and team success (Swanson & Kent, 2017 as cited in Men & Yue., 2019), which can be used as a strategy to stimulate positive behaviours and emotions in employees, and, reflecting on the importance of transparent communication, strategy in an organisation's crisis communication is key when facing managerial, operational, and economic challenges, such as the ones observed during the pandemic, resulting in unemployment, changes in business and substantial modifications to work and management styles (Li et al, 2020) as observed in recent global situations such as the covid-19 pandemic. The lack of time, preparation, and lack of adequate communication increase the barriers to implementing these changes producing negative feedback from employees such as resistance, resentment, and disinterest, which can represent threats to organisations (Meaney Pung, 2008, as cited in Li et al, 2020). Transparent communication that provides appropriate information and adopts participatory practices that allow employees to express their opinions, facilitates acceptance of change and reduces uncertainty by increasing satisfaction with their companies/organisations (Li et al, 2020) .

2.8. Conclusions on the Literature Review

Literature suggests the objectives of crisis communication are to reduce uncertainty, provide instructions and increase understanding and it's considerations are the ambiguity of concepts of empathy, processes of cognitive perspective and the mental state of the receivers (of communication), and, as aids for the elaboration of containment strategies, there is the contingency theory, the construal level theory and temporal distance.

Transparency in organisational communication during crisis situations is essential for the trust that employees place in organisations as this will create positive feedback for them, benefiting the company not only internally, by allowing better implementation of change, but also externally, by contributing to better employee performance, providing relevant information to interested parties and, thus, contributing to the company's good reputation. Facilitating quality interactions between the employee and the employer in a spontaneous, sincere, and genuine way is a relevant factor for good leaderships and their development in the communication that is established. Emotional intelligence of organisational leaders are key to achieve success, growth, development, positioning and fulfil set goals of an organisation, whose success is no longer solely depending on capital and knowledge, but also the wellbeing and involvement of stakeholders at all levels.

3. STUDY METHODOLOGY

To carry out this research, both qualitative and quantitative methods have been used. Qualitative methods have been applied to analyse literature and quantitative methods to develop and analyse a questionnaire.

3.1. Population and Sample

The sample used for this investigation corresponds to workers from the company Wunderman Thompson MAP, where around 50 campaign specialists work in Portugal alone and there are in total, around 300 workers, which would be the total population of study in the targeted department scattered in international offices. The gathered sample is of 51 replies and the questionnaire was carried out only to campaign specialists, respecting the right to confidentiality of both employees and employer.

3.2. Hypotheses and Questionnaire

With the questionnaire carried out, we sought to evaluate whether it is possible to validate the following hypotheses:

- H1: The transmission of empathy by companies makes workers feel safer to communicate their problems and concerns.
- H2: When an emotional bond develops, workers increase the feeling of belonging to your company.
- H3: When a company discloses complete and useful information, they feel more recognized and involved with the company.
- H4: In a crisis, the transmission of emotion brings more trust and empathy to those workers.
- H5: When a company is transparent with the information shared, employees trust in changes implemented during a crisis.

To obtain the necessary information, the questionnaire was divided into 4 main parts and 8 subdivisions:

1) Emotional Communication: Regarding colleagues, regarding the work environment, regarding executive management and regarding supervisor relationship
2) Context of Crises
3) Transparent Communication
4) Emotional Communication: Regarding colleagues, work environment, regarding executive management and regarding supervisor relationship.

The instruments used to process the data collected were Stata and Excel. In table 1 the numbered questions, mean and standard deviation can be observed with the results from the company Wunderman Thompson MAP.

To be able to evaluate each question individually, a Likert Scale was set as option, from 1 to 5, where 1 means "totally disagree" and 5 "totally agree". With these results, it was possible to ascertain the following for each hypothesis:

	Emotional Communication	Mean	Std. Dev.
1	I get demotivated when my colleagues do not show a willingness to assist me.	3.254902	1.016723
2	I contribute to a supportive, rather than competitive, work environment.	4.313725	.882954
3	I have difficulty sharing my needs with colleagues.	2.490196	1.102226
4	I trust my colleagues.	3.568627	1.044125
5	I express strong emotions.	2.882353	1.259318
6	Regardless of the situation, I do not allow my feelings to show through.	3.176471	1.143781
7	I have difficulty sharing my needs with a supervisor.	2.588235	1.186195
8	I feel that my needs are not valid compared to my colleagues.	2.352941	1.277866
9	Showing emotions in the workplace is detrimental to my position.	2.627451	1.248371
10	Showing emotions in the workplace is beneficial to my position.	2.745098	1.230336
11	I feel my needs are taken into consideration when decisions are made.	3	1.113553
12	I feel that they understand the impact of the decisions implemented on less visible employees.	2.705882	1.082481
13	I feel that my interests are protected.	2.862745	1.020188
14	I feel that they consider me as an important piece for the smooth running of the company.	3.215686	1.331371
15	When my executive manager conveys emotions like sadness or worry, I feel more empathy with the company.	3.078431	1.213971
16	When my executive manager conveys emotions like sadness or worry, I feel more insecure.	2.54902	1.221699
17	The supervisor encourages us to make efforts toward fulfilling the company vision during the pandemic.	3.72	.8580947
18	The supervisors can understand my situation and give me encouragement and assistance.	3.490196	1.007423
19	When my supervisor conveys emotions like sadness or worry, I feel more empathy with the company.	3.196078	1.077397
20	When my supervisor conveys emotions like sadness or worry, I feel more insecure.	2.607843	1.132756
	In the company where I'm currently working, when facing organizational change during covid,	Mean	Std. Dev.
21	My work environment changed in an unpredictable manner due to COVID-19.	3.607843	1.415322
22	I was uncertain about how to handle my work during the COVID-19 outbreak.	2.686275	1.318942
23	For a time, I was unsure about how the COVID-19 outbreak would change my work.	3.372549	1.295543
24	I requested help from people who could do something for me.	3.019608	1.240809
25	My company really listened to what an employee like me had to say.	2.823529	1.178234
26	I feel my company was trying to maintain a long-term commitment to employees like me.	3.215686	1.254013
27	I was happy with my company.	3.509804	1.046376
	In the company where I'm currently working, when facing organizational change during covid,	Mean	Std. Dev.
28	I felt I was updated on the information in my company.	3.529412	1.137593
29	My company was open to criticism from its employees.	2.843137	1.405312
30	My company presented more than one controversial side caused by the pandemic.	2.877551	1.073015
31	My company was transparent with information that may be harmful.	3.294118	1.118823
32	My company offered information that could be compared to industry standards.	3.470588	1.026702
33	My company asked their employees' opinions regarding the quality of information.	3.117647	1.321318
34	My company dedicated time to understanding who the employees were and their needs.	2.921569	1.324283
35	It was preferable to maintain a good atmosphere in the workplace, even if it meant omitting information.	2.901961	1.315369
36	Transparency was a necessary condition for a well-functioning company, even if it meant a heavier work environment.	3.568627	1.170554
37	My company offered complete information.	3.27451	1.059782
38	My company provided information in a timely fashion to employees.	2.941176	1.156058
39	I accepted this situation because it was unchangeable.	3.490196	1.206193
40	I accept this situation because there was nothing, I can do to change it.	3.568627	1.153341
41	I tried not to be concerned about it.	3.333333	1.194432
42	I felt secure in my company.	3.313725	1.272638

Table 1: Questions from 1 to 42 with mean and standard deviation of the results

- H1: The transmission of empathy by companies makes workers feel safer communicating their problems and concerns.

The questions that were considered to be related to the transmission of empathy by the company studied are questions 11, 12, 13, 15, 18, 19, 33, 34. From these results it can be observed the majority of those questioned have a neutral position. For the hypothesis to be validated, the sample would need to disagree with questions 3, 6, 7, 9, but agree with questions 4, 5 and 10. The hypothesis has been validated.

- H2: When an emotional bond is developed, workers increase their feeling of belonging to their company.

It's possible to validate this hypothesis stating there is an increased feeling of belonging when the company develops an emotional bond with its workers as questions 8, 11, 14, 26 and 42, with 8 having to be mostly disagree with prove that the majority shares a feeling of belonging to the company.

- H3: When a company discloses complete and useful information, they feel more recognized and involved with the company.

To understand whether the company discloses or disclosed, during the Covid-19 pandemic, useful and complete information, the questions 28, 30, 31, 32, 33, 36, 37 and 38 were considered as a source of analysis, demonstrating a sentiment that's mostly neutral to positive. Regarding the feeling of belonging and recognition, the issues addressed and proven in Hypothesis 2 demonstrate this hypothesis can likewise be validated, affirming the company offers useful and complete information, and its workers share a feeling of belonging and recognition (question 14).

- H4: In a crisis situation, the transmission of emotion brings more confidence and empathy to workers.

To validate this hypothesis the sentiment towards questions 15 and 19 would need to be positive. These are related to the transmission of emotions by superiors, and the way in which this affects empathy and confidence in their work capabilities. It's possible to validate this hypothesis as the sentiment is neutral to positive in both parameters.

- H5: When a company is transparent with the information shared, employees trust the changes implemented during a crisis situation.

For this hypothesis, questions 22 to 24 would require a negative sentiment from the participants, 31 and 36 would require a positive agreement. According to the data, question 22 is situated at "partially disagree", 23 has had a neutral result where most participants scored "neither agree nor disagree", 31 and 36 directly linked to transparency offers a balanced result with 31 having a neutral rating, and as for 36, the majority partially agrees. This hypothesis inconclusive as the sample felt insecure and with uncertainty related to the changes linked to the pandemic. Thus, the participants are unsure whether transparency has been practiced and it's considered to be a necessary condition for the smooth functioning of the company (question 36). Nevertheless, in question 42 when asked whether they felt safe in their company, the result is equally inconclusive, the answers being divided between "I neither agree nor disagree" and "I partially agree". Answers 31, 36 and 42 do not offer relevant differences, however, a discrepancy can be observed between 22 and 23 with 22 being directly related to the uncertainty in how to deal with new ways of working during the period of crisis and 23 about how secure they feel about daily tasks and direction.

4. CONCLUSION

After analysing the data from the sample taken from the company Wunderman Thompson MAP, we were able to conclude that the hypotheses formulated were proven, with only one of the hypotheses being inconclusive. Therefore, it's possible to affirm that transmission of empathy by companies makes workers feel safer when communicating their problems and concerns; when an emotional bond is developed, workers increase their feeling of belonging to their company; that when a company discloses complete and useful information, they feel more recognized and involved with the company.

In a crisis situation, the transmission of emotion brings trust and empathy to workers, however, it remains inconclusive whether when a company is transparent with the information shared, whether employees trust more in the changes implemented during a crisis situation. Based on the findings, strategies to adopt when facing a crisis involve a contingency plan to avoid major negative repercussions within the organisation during a crisis situation, it's possible to conclude that it's important to contribute to a positive relationship between the employee and the organisation and all information transmitted must be clear, precise, unambiguous and extended to all employees who are part of it, whether positive or negative. Organisations must also consider that both communication and information are complimentary to a strong emotional and empathetic communication. Thus, in crisis situations, resistance to change and the reaction to it on the part of workers will be less harmful to the company.

LITERATURE:
1. Bagozzi, R. P. (2003). *Positive and negative emotions in organizations*. Positive organizational scholarship: Foundations of a new discipline, 12, 176-193.
2. Batool, B. F. (2013*). Emotional intelligence and effective leadership*. Journal of Business Studies Quarterly, 4(3), 84.
3. Bruce, M. M. (1962). *Employee Performance Appraisal*. New Rochelle, NY: Martin Bruce Ph.D. Publishers.
4. Campbell, A., Converge, P. E. & Rodgers, W. L. (1976). *The quality of American life*. New York: Russell Stage Foundation.
5. D'Aprix, R. M. (1996). *Communicating for change: Connecting the workplace with the marketplace*. Jossey-Bass.
6. Fairhurst, G. T., & Connaughton, S. L. (2014). *Leadership: A communicative perspective. Leadership*, 10(1), 7–35. https://doi.org/10.1177/1742715013509396
7. Fernandes, E., Maia, A. (2001). *Grounded Theory. Em E. M. R. P. Fernandes, L. S. Almeida (Eds.), Métodos e técnicas de avaliação: contributos para a prática e investigação psicológica* (pp. 49-76). Universidade do Minho. Centro de Estudos em Educação e Psicologia. https://hdl.handle.net/1822/4209
8. Folkman, S., & Lazarus, R. S. (1986). *Stress processes and depressive symptomatology*. Journal of Abnormal Psychology, 95(2), 107- 113. https://doi.org/10.1037/0021-843X.95.2.107
9. Gong, T., Park, J., Sen, K. (2020). C*ustomer Response Toward Employees' Emotional Labor in Service Industry Settings.* Journal of Retailing and Consumer Services, 52, 1-11. https://doi.org/10.1016/j.jretconser.2019.101899
10. Gong, T., Park, J., Sen, K. (2020). *Customer Response Toward Employees' Emotional Labor in Service Industry Settings*. Journal of Retailing and Consumer Services, 52, 1-11. https://doi.org/10.1016/j.jretconser.2019.101899
11. Harris, T. E., & Nelson, M.D. (2008). *Applied organizational communication: Theory and practice in a global environment.* New York: Lawrence Erlbaum.
12. Jin, Y., Pang, A., & Cameron, G. T. (2007). *Integrated crisis mapping: Toward a publics-based, emotion-driven conceptualization in crisis communication*. Sphera Publica, (7), 81-95.
13. Jin, Y., Pang, A., Cameron, G. T. (2006). *Strategic communication in crisis governance: Singapore's management of the SARS crisis*. Copenhagen journal of Asian studies, 23.1: 81. https://doi.org/10.22439/cjas.v23i1.693
14. Kim, S., & Jin, Y. (2020). *Organizational threat appraisal by publics: The effects of perceived temporal distance on health crisis outcomes.* International Journal of Communication, 14, 21.

15. Kim, S., & Jin, Y. (2020). *Organizational threat appraisal by publics: The effects of perceived temporal distance on health crisis outcomes*. International Journal of Communication, 14, 21.
16. Lazarus, R. S. (1991). Emotion and adaptation. Oxford University Press.
17. Li, Q. J., Sun, R., Tao, W., Lee, Y. (2020). *Employee coping with organizational change in the face of a pandemic: The role of transparent internal communication.* Public Relations Review. 47. https://doi.org/10.1016/j.pubrev.2020.101984
18. Mazzei, A., Ravazzani, S., Fisichella, C., Butera, A., & Quaratino, L. (2022). *Internal crisis communication strategies: Contingency factors determining an accommodative approach.* Public Relations Review, 48(4), 102212. https://doi.org/10.1016/j.pubrev.2022.102212
19. Men, L., & Yue, C. (2019). *Creating a positive emotional culture: Effect of internal communication and impact on employee supportive behaviors.* Public Relations Review, (45)3. https://doi.org/10.1016/j.pubrev.2019.03.001
20. Nehdzi, A., & Gombarume, C. (2021). *A 'moral compass' of the organisation during a crisis: Exploring the ethics roles of strategic communication practice*. African Journal of Business Ethnics, 15(1). https://doi.org/10.15249/15-1-275
21. Pang A., & Cameron, G. (2012). *Pre-crisis threat assessment: A cognitive appraisal approach to understanding of the faces and fabric of threats faced by organizations*, Pre Crisis Management: Preparing for the inevitable*, pp. 125-143.
22. Salovey, P., Bedell, B. T., Detweiler, J. B., & Mayer, J. D. (1999). *Coping intelligently. Coping: The psychology of what works*, 141-164.
23. Schoofs, L., Claeys, A. (2021*). Communicating sadness: The impact of emotional crisis communication on the organizational post-crisis reputation*. Journal of Business Research, (130), 271-282. https://doi.org/10.1016/j.jbusres.2021.03.020
24. Schoofs, L., Fannes, G., Claeys, A. (2022). *Empathy as a main ingredient of impactful crisis communication: The perspectives of crisis communication practitioners*. Public Relations Review. (48)1. https://doi.org/10.1016/j.pubrev.2022.102150 23
25. Trope, Y., Liberman, N. (2010). *Construal-level theory of psychological distance.* Psychological review, 117(2), 440. https://doi.org/10.1037/a0018963
26. Trope, Y., Liberman, N., & Wakslak, C. (2007). *Construal levels and psychological distance: Effects on representation, prediction, evaluation, and behavior*. Journal of consumer psychology, 17(2), 83-95. https://doi.org/10.1016/S1057-7408(07)70013-X

STRESS AND ORGANIZATIONAL CONFLICT - THE INFLUENCE OF THE ORGANIZATIONAL ENVIRONMENT ON THE EMPLOYEE'S LIFE: A STUDY IN THE LUSÓFONA UNIVERSITY (LISBON)

Felipa Lopes dos Reis
Portugal
p4338@ulusofona.pt

Carlota Martinho
Portugal
carlota.c.martinho@gmail.com

Carolina Canastra
Portugal
carolinacanastra2014@gmail.com

Daniela Vilares
Portugal
vddanielavilares@gmail.com

ABSTRACT

Nowadays, stress and conflict are very prevalent, whether they are individual or organizational. Stress can have negative effects on health, sometimes leading to burnout. On the other hand, it can also have positive effects on lives, as it represents a "fight" that makes us react, consequently used to achieve work goals, making us more productive. While conflict is not counterproductive, as it promotes individual development, often involving collaboration with many other people, and leading to effective management of existing conflicts. The elaboration of this theme is fundamentally within the scope of "Organizational Stress and Conflict," focusing on the question of "What is the influence of the Organizational environment on the employee's life?". For this purpose, the organization studied was the Lusófona University (Lisbon) which was answered by 56 employees. In this theme, four hypotheses were articulated, namely how organizational stress harms individuals' social life, how conflict can affect their productivity, as a third hypothesis, how the conflict can help build critical thinking, and finally, the question of what are the good conflict management methods that companies have acquired. This work will conclude that the majority of employees agree that often the organizational environment in which they are situated will directly affect their mental and physical well-being.
Keywords: *Stress, conflict, burnout, organization, psychosociology of organizations, productivity, organizational environment, conflict management*

1. INTRODUCTION

The topic addressed in this work was "Organizational Stress and Conflict," which will be further develop below and divided into three sections: theoretical contextualization, methodology, and data treatment. Beginning with a brief introduction to the concept and objective of psychosociology, followed by the first part of the work, which is divided into two topics. The first topic, "Stress in organizations", delves deeper into the concept of stress, the different types, how to cope with it, its influence on productivity levels, preventive measures, explaining the difference between stress and anxiety, factors contributing to organizational stress, and finally, its sources. For the second topic will focus on "Conflict in organizations", explaining what conflict is, its levels, processes, different perspectives on conflict, how to manage it, and its consequences.

In the second part of the work, four hypotheses will be presented, explained based on the theoretical contextualization and then followed by data analysis. Finally, in the third part, data analysis will be conducted based on the questionnaire we administered to the Lusófona University Center in Lisbon, which was answered by 56 employees/faculty members.

1.1. Concept of Psychosociology

Psychosociology is the science that studies life in its social manifestations or the aspects of psychic life that originate from the influence of an individual on others. Psychosociology can also refer to a specific thematic approach that emphasizes the theoretical and conceptual acquisitions from the fields of Psychology and Sociology, such as:

- Psychosociology of organizations (the corrent subject we are studying)
- Psychosociology of communication
- Psychosociology of education, etc.

Psychosociology is a hillside of social psychology that focuses on the study of groups and organizations as concrete entities. These groups are structured, managed, and transformed by individuals who serve as mediators in the lives of others. The psychosociology of work examines behavior and interactions in the professional world, companies, and organizations. This science brings back the role of the individual subject, the "social character," at the intersection with other levels of social reality. In doing so, it establishes connections with other fields of knowledge such as materialist-historical social psychology (through the study of categories like social representation, identity, social consciousness, among others) and psychoanalysis, as psychosociology values subjectivity. Therefore, psychosociology of organizations is an interdisciplinary field of knowledge (combining psychology, sociology, social psychology, and political sciences) aimed at understanding and managing people in the professional environment. The objective of Psychosociology is to provide the foundations for understanding psychological and behavioural processes, drawing primarily from the contributions of Social and Organizational Psychology. It offers:

- General knowledge about human behaviour in organizational situations.
- Skills to characterize behavioural issues within organizations (such as assessing perception problems, causal attributions, excessive team cohesion, communication barriers, or leadership obstacles).
- Abilities to organize scientific information to comprehend practical situations involving human processes.

2. THEORETICAL CONTEXTUALIZATION
2.1. Stress in Organizations
2.1.1. Definition of Stress
Stress is a natural response of the body to any demand or challenge. It is a feeling of emotional or physical tension that can arise from both positive and negative situations. While some level of stress is normal, excessive or prolonged stress can have adverse effects on an individual's health and well-being. It is a physiological and behavioural response to events in our daily lives that we perceive as threats and disrupt our balance. It is normal for our body's defenses to respond to a real or imagined danger. These reactions are normal responses to stress through automatic processes known as "fight/flight." In the initial stages, stress can be positive as it allows us to react. However, when exposed to long-term stress, it can have a negative impact on our lives and severely harm our health, mood, productivity, relationships, and overall quality of life. In other words, during extended periods of stress exposure, it can become chronic or reach a breaking point. Nevertheless, even short-term stress can impact the body.

The truth is that in today's daily life, it is generally demanding, filled with challenges, deadlines, and frustrations. For many people, stress has become so commonplace that it has almost become a way of life.

2.1.2. Types of Stress
There are two types of stress:
• Positive stress
• Negative stress.

Within negative stress, we have:
• Acute stress
• Episodic acute stress
• Chronic stress.

ACUTE STRESS:
• Acute stress results from the body's reaction to a new or challenging situation. It is the feeling we have when a deadline is approaching or when we narrowly avoid being hit by a car. We can even experience it, as a result of, something we enjoy, such as an exciting roller coaster ride or a remarkable personal achievement. Acute stress is classified as short-term. Usually, emotions and the body return to their normal state relatively quickly.

EPISODIC ACUTE STRESS:
• Episodic acute stress occurs frequently. This can be due to constantly tight work deadlines or frequent high-stress situations experienced by certain professionals, such as healthcare workers. With this type of stress, we don't have time to return to a relaxed and calm state, and the effects of high-frequency acute stress accumulate. Often, we feel like we are going from one crisis to another.

CHRONIC STRESS:
• It is the result of ongoing stress factors that persist for a long period of time. For example, living in a high-crime neighbourhood or being in constant conflict with your spouse. This type of stress seems never-ending, and we often have difficulty seeing a way to improve or change the situation that is causing our chronic stress.
• Sometimes stress can be beneficial, as it can motivate us to do our best at work and teach us how to work under pressure. Positive stress often helps us focus on a goal we want to achieve, such as a presentation, enhancing our concentration. It can even drive us to study for an exam when we are tired, preventing us from doing anything else but what is required of us.

2.2. Factors of Organizational Stress
Workplace stress is a common problem that affects many employees. It can be caused by a variety of factors, including job demands, lack of control, poor relationships with colleagues, and job insecurity.One of the main causes of workplace stress is job demands. When employees are expected to work long hours or complete tasks that are beyond their abilities, they can become overwhelmed and stressed. This can lead to burnout, decreased productivity, and even physical health issues.

Organizational stress can be triggered by various factors, such as:

1) Task Overload
   When we think about the causes of work stress, the primary cause that often comes to mind is task overload. Assigning too many tasks and responsibilities to a single employee can make them feel incapable of completing everything correctly and within deadlines, increasing their stress levels.

2) Excessive Competitiveness
   Promoting competitiveness in the work environment can be beneficial to encourage employees to achieve better results. However, if not managed properly, it can become excessive and create a negative atmosphere in the company, ultimately leading to organizational stress.

3) Unattainable Goals
   Setting unrealistic and unattainable goals contributes to increased stress at work. When employees are faced with a goal that clearly cannot be achieved, they may feel demotivated or ill-equipped to perform their duties, generating more concerns and increasing their stress levels.

4) Inadequate Distribution of Responsibilities
   Another factor that triggers stress at work is the improper distribution of responsibilities and tasks. Few things are as stressful for a professional as being assigned a role that has nothing to do with their education or experience.

5) Incompatible Compensation for Job Functions
   A professional who works hard but is inadequately compensated may feel that their efforts are not properly recognized. This can increase stress and lead to a decrease in motivation.

6) Lack of Flexibility
   All employees have a life outside of the company. When a company is rigid and inflexible regarding working hours and employee presence, it becomes more difficult for them to balance their professional and personal lives. This contributes to an increase in stress levels, as the employee ends up living almost solely for their work, which is unhealthy.

7) Problematic Infrastructure
   A company that does not provide good infrastructure conditions for its employees to perform their tasks and lacks effective conflict management contributes to a more stressful work environment.

8) Lack of Career Plan
   The absence of prospects for professional growth is also a cause of stress in the workplace. When an employee is in a company that does not offer a career plan or opportunities for advancement, they tend to feel more demotivated and stressed about their work routine and future in the company, as it creates a sense of instability.

2.3. The Stress Sources
In addition to organizational stress, there are broader sources that can cause stress, as it can be related to something external, not necessarily work-related. These sources can be divided into two groups: Personal/Internal causes and External causes.

ENVIRONMENTAL CAUSES:
- Environmental causes involve external and contextual factors that can induce stress. External causes, including work, are related to the environment and experiences in which the individual is immersed. They can include financial problems, significant lifestyle changes, family issues, among others.

PERSONAL CAUSES:
- Personal causes involve a variety of individual characteristics that predispose individuals to stress. Some people cope better with stress than others, and this relates to their individuality. Impatience, low self-esteem, poor health, sedentary lifestyle, and lack of sleep are factors that lead people to react negatively to stress, whether it comes from work or personal life. Individual stress factors, according to the same author, are associated with their own needs, aspirations, emotional stability, experiences, flexibility, self-esteem, and behavioural patterns.

2.4. Stress VS Anxiety
As previously explained, stress is something that is felt due to the existence of an event or situation that occurs when we have a lot to think and do. Subsequently, feelings arise as a reaction to pressure when we are asked to handle things that we find difficult. On the other hand, anxiety is the ongoing experience of stress that is disproportionate to the stressor or continues long after the stressor has disappeared. Although they are closely related, not everyone who experiences stress experiences anxiety. Properly managing and understanding the difference between stress and anxiety is a critical factor in preventing anxiety and a range of other problems that can lead to it. Anxiety has many symptoms, such as difficulty controlling worries, difficulty concentrating, sleep disturbances, physical symptoms, and so on. In other words, anxiety is part of the clinical picture of depression and is variably associated with mood changes, while stress can be considered merely a state of mind, an emotion.

2.5. Burnout
Burnout, also known as professional burnout syndrome, is defined as chronic stress derived from high professional responsibility and demands, as well as increased emotional involvement. Some symptoms of burnout include emotional exhaustion, decreased professional accomplishment, decreased motivation to perform job-related tasks, withdrawal from family and social life, general discouragement, and physical symptoms such as fatigue, sleep disturbances, and changes in blood pressure. This syndrome has consequences not only for the individual's professional life (such as job loss) but also for their personal life (for example, social withdrawal), affecting not only the affected person but also those around them. In an organizational environment, employee burnout can impact their performance due to decreased productivity or poor task execution. Burnout is one of the risks that most affects companies and is the second most reported work-related health problem in Europe, with an estimated cost of 3.2 billion euros per year in Portugal due to stress and burnout. More recently, during the COVID-19 pandemic, over half of healthcare professionals have shown signs of this syndrome, along with stress and/or anxiety. Some factors that contribute to the development of burnout situations include workload, lack of autonomy, low sense of purpose, conflicts and poor organizational climate, inability to solve professional or even personal problems with an impact on work, and difficulty balancing personal and professional life.

2.6. Different ways to Deal with Anxiety
Anxiety is a part of our lives, but in some cases, it can become a pathology. Many of us have experienced it at some point in life, with different intensities, durations, and causes. Anxiety is

a natural response of our body to stress, but when it occurs in a prolonged manner and starts affecting our personal, social, and work life, it takes the form of a pathology - anxious disorder or anxiety disorders. Among the ways to deal with anxiety, we highlight:

- Identifying what makes you anxious.
- Maintaining a positive attitude.
- Accepting that it is not possible to control everything.
- Focusing attention on relaxation activities.
- Practicing breathing exercises.
- Making physical exercise a habit.
- Sharing feelings and concerns.

Other precautions you should take:

- Eating a healthy and balanced diet, not skipping meals. Always have healthy snacks on hand that provide good energy.
- Limiting the intake of alcohol and caffeine, as they can worsen anxiety levels and contribute to panic attacks.
- Getting enough sleep. When we have high levels of stress, our body needs more rest and sleep.

2.7. How stress can influence an organization's productivity levels

By directly influencing the employee's state of mind and affecting their motivation and satisfaction in fulfilling their duties and obligations, stress can impact performance and promote a lack of commitment to team projects, reducing productivity and overall company results. Ineffective management or an abusive and unprepared boss can trigger stress, leading to demotivation and dissatisfaction among employees, which can be directly related to the work environment and limited career advancement opportunities. Excessive stress directly affects employees as it can arise from various factors related to the company's environment. The decline in productivity can be mainly caused by feelings of extreme fatigue, difficulty concentrating and remembering, decreased work performance, among many other factors. This can lead to burnout in more extreme cases. It can be concluded that the organizational climate directly affects individual productivity, departmental productivity, or even the entire company. A positive and supportive climate increases productivity as colleagues are more likely to help each other, have high morale, and are motivated to complete tasks and objectives. On the other hand, a negative climate can significantly reduce production, which also links workplace productivity to existing conflicts.

2.8. Conflict in organizations

2.8.1. Definition of Conflict

According to Berg (2012), the word "conflict" comes from the Latin term "conflictus," which means a clash between two things, a collision of people, or opposing groups fighting against each other. In other words, it is a clash between two opposing forces. Conflict arises when there is a need to choose between different perspectives in order to reach a solution. All conflict situations are antagonistic and disrupt action or decision-making on the part of individuals or groups, as not everyone may agree on the chosen path. We can say that conflict occurs when there is a common matter of interest between two or more people who hold divergent opinions on the subject and are unable to deal with the different opinions presented. This can create a situation that requires conflict management, as it can create a negative environment and have serious consequences if not handled properly. In a professional environment, the existence of conflicts is common because the business environment is composed of individuals with diverse opinions and personalities.

While conflicts have clear consequences, they can also be viewed from a perspective that brings certain advantages, such as when differences among professionals' benefit business activities. If well-managed, these conflict situations can present opportunities for growth and change, but effective conflict management is crucial. Conflict can bring innovation, allowing industry evolution and new ideas to achieve company objectives in different and creative ways.

2.8.2. Levels of Conflict
Conflict can be interpersonal, where there is the possibility to choose among various ways to resolve the conflict. It can be divided into:
- Attraction-Attraction: The individual is faced with pleasant alternatives.
- Repulsion-Repulsion: The individual is faced with unpleasant alternatives.
- Attraction-Repulsion: The individual is faced with alternatives that have advantages and disadvantages, requiring a decision to be made.

Characteristics of conflict levels:
- Internal
- Interpersonal
- Between groups
- Interpersonal and between groups
- Within the group
- Between departments
- Between organizations

2.8.3. Views of Conflict
There are three types of views of conflict:
- Traditional view of conflict - This view prevailed in organizations in the 1930s and 1940s. This simplistic view states that the behaviour of individuals generating conflict is harmful and seen as dysfunction resulting from communication failure and lack of trust among people. According to this view, conflict should be avoided. All these conditions lead to the failure of the entire group work system, resulting in organizational losses and group dysfunction.
- Human relations view - This view predominated from the late 1940s to the mid-1970s. It approaches conflict with a certain positivism because conflict can create benefits, such as increased performance of the parties involved, and in such cases, it should be accepted rather than avoided.
- Interactionist view - Not only does it accept conflict, but it also argues that it is necessary due to its benefits. This is the most recent approach to conflict, which advocates that organizations should encourage group leaders to maintain a minimum level of constant conflict.

2.8.4. Conflict Processes
The conflict process can be divided into five stages:
1) Stage 1: Antecedent Conditions (Beginning of the conflict process)
   - Communication: Conflict will increase both information overload and information scarcity.
   - Structure: The diversification of goals among groups within organizations is a source of conflict.
   - Personal Variables: Different value systems are among the most studied variables in the study of social conflicts.

2) Stage 2: Cognition (Phase where issues are defined)
- Perceived conflict: The awareness that an individual has of the existence of conditions that create opportunities for conflicts.
- Felt conflict: It is the emotional involvement in a conflict, which generates anxiety and tension.

3) Stage 3: Conflict Manifestation (Decision to act during the conflict)
- Competition
- Collaboration
- Avoidance
- Accommodation
- Compromise

4) Stage 4: Behavior (Resolution or suppression of the conflict occurs)

5) Stage 5: Consequences (Can be functional and dysfunctional)
- Functional consequences: They are constructive when they improve the quality of decisions.
- Dysfunctional consequences: They can undermine the effectiveness of groups, leading to communication breakdown.

2.8.5. Methods of Conflict Management

Conflict management is an area related to business management that involves reconciling two or more parties with opposing interests in order to achieve an advantageous solution for all involved. It is important to note that effective conflict management requires specific knowledge in people management, conflict mediation techniques, and methodologies. Depending on the type of business and the size of the company, it may be appropriate to hire a professional responsible for these requirements or even establish a department dedicated to resolving organizational disputes. Even without a dedicated department, contradictory ideas will always arise within companies, demanding the attention of HR staff, leaders, and others to resolve conflicts. Conflict management is essential for harmonious coexistence and for effectively managing a company's most valuable assets: its employees. Where there are businesses, there are people. Where there are people, there are emotions, and where there are emotions, there are conflicts. Conflict management is a process that involves different stages, including:

1) Avoiding: This involves both prevention and the avoidance of conflict by postponing its recognition and the possibility of resolution.
2) Smoothing: It is another form of temporary avoidance based on denying the conflict through appeasement.
3) Forcing: Describes an arbitrary solution that utilizes the power of leadership or one of the parties involved in the conflict. It imposes the most advantageous solution for oneself without considering the opinions of others.
4) Negotiating: It involves seeking a more balanced solution in which all parties make concessions to resolve the conflict.
5) Integrating: This technique aims to create a welcoming environment for different viewpoints, encouraging the exchange of ideas and arguments until a conclusion is reached that makes sense to everyone. It seeks to address problems in a way that prevents recurring conflicts.

Conflict management utilizes the last two options, with an emphasis on integration as the preferred approach for maintaining healthy work relationships. For the resolution of workplace conflicts and labor disputes, two things are necessary:
- Detecting the problem in time to prevent it from escalating.

- Having an action plan to ensure an effective and prompt response to conflict management in the workplace, preserving productivity.

In the action plan that the company has, it is necessary to record all strategies for resolving these disputes. Depending on the cause and the parties involved, it may be best to apply certain strategies over others. It is also recommended that the person responsible for conflict management in the workplace does not take sides: it is important to be as neutral as possible.

2.8.6. Consequences of Conflicts
There are several alternatives for resolving conflicts, such as:
- Win-Lose: One party in the conflict achieves the proposed objective, preventing the other party from doing the same. Success is achieved at the expense of eliminating the other party.
- Lose-Lose: Neither party achieves the objective. Alternatively, a third party ends the conflict by presenting a new solution to the initial problem.
- Win-Win: Both parties achieve their objectives, reducing the occurrence of future conflicts as they have reached a consensus.

The consequences of a conflict can also be divided into two groups: dysfunctional and functional.

Some examples of functional consequences are:
- Motivation to improve performance.
- Emergence of new ideas.
- Evaluation of the merits of ideas and arguments.
- Increase in the cohesion of individuals and groups.
- Enhancement of the quality of decisions.

In other words, these are the positive aspects that can be derived from conflict, which can sometimes be considered healthy as it is part of human nature, as stated by R. Marc Burbridge and Anna Burbridge.

Some examples of dysfunctional consequences are:
- Emotional exhaustion, frustration, hostility, and stress
- Irresponsible behaviours
- Deepening of differences as individuals and groups take extreme positions
- Degradation of cooperation among individuals and groups
- Diversion of attention and energy from main tasks and organizational goals

These are negative aspects that can arise when conflict is not managed effectively.

2.8.7. Consequences of organizational conflict
Digging deeper into organizational conflict, the negative atmosphere it creates can weaken a department or even make it impossible for certain individuals to work together. It can increase tension between groups and disrupt normal channels of cooperation. The health of employees is also at stake, as mentioned earlier, leading to stress, burnout, and other problems that can even manifest as physical issues. In extreme cases, conflict can lead to violence or termination of employment, and it can also prevent organization members from focusing on tasks and goals, thereby reducing productivity and causing overall costs to the company.

3. METHODOLOGY

The questionnaire about stress and conflict was administered to employees at Lusófona University (Lisbon), including the faculty, and obtained 56 valid answeres. The formulated hypotheses are as follows:

- Hypothesis 1: Organizational stress impairs individuals' social life.
  Some examples of stress factors include workload distribution, amount of working hours, working under pressure, organizational environment, work-life balance, among many others. Exposure to such work-related stressors can seriously affect an individual's mental health, and research has linked burnout to symptoms of anxiety and depression. These stress levels can also cause physical health problems such as cardiovascular diseases, Alzheimer's, and other autoimmune diseases. Both the mental and physical problems caused by stress will impact an individual's social life.

- Hypothesis 2: Conflict affects an individual's productivity.
  "Conflict is a disruptive reality in everyday organizational life. All factors intrinsic to life in organizations imply strong interaction and convergence of efforts oriented towards action and constitute potential sources of conflict" (Pettinger, 2000, Dimas Lourenço and Miguez, 2005) - quote taken from the work of Ricardo Moreira and Pedro Cunha in "Efeitos do conflito nas organizações: ameaça ou contributo para o desenvolvimento organizacional" (Effects of conflict in organizations: threat or contribution to organizational development). The emergence of conflicts among employees within the same organization can significantly alter the company's climate if not properly managed. One of the consequences is a decrease in productivity because by generating more problems due to conflict, we are diverting the workers' attention, and they will spend time and energy that could be used in their roles. The negative climate generated by the conflict can lead to stress, tension, low morale, and/or lack of motivation, which will not allow employees to be as productive as possible, thereby affecting the entire company.

- Hypothesis 3: Despite the negative aspects of conflict, it is indispensable in a company and contributes to the development of critical thinking.
  "…the increasing evidence suggests that conflict can be beneficial for performance in groups and organizations, and its avoidance and suppression reduce creativity, decision quality, product development, and communication between groups. Furthermore, stimulating conflict influences individual and organizational performance." (Dreu, 1997, p. 9) - quote taken from the work of Ricardo Moreira and Pedro Cunha in "Efeitos do conflito nas organizações: ameaça ou contributo para o desenvolvimento organizacional" (Effects of conflict in organizations: threat or contribution to organizational development). Conflict can be considered as a turning point, aiding in the innovation of organizations to adapt to the evolving world around them. For example, a mobile phone company needs to keep up with constant changes in the technology world, and conflict can bring forth new ideas.

- Hypothesis 4: Nowadays, companies have good conflict management methods.
  "Being able to recognize the existence of conflict is just part of the problem. You also need to know the severity of the conflict and be able to manage it properly." (Fraga, 1993, p. 69). Conflict resolution methods are a highly important topic in today's world. Organizations often tend to reach an agreement between the involved parties, leading to reconciliation. Mediation is also a common method, where a third person facilitates a dialogue that helps both parties reach an agreement. Another method of conflict management is self-composition, where two individuals reach a compromise that satisfies both parties.

Lastly, there is arbitration, where a neutral third party is chosen to reach an agreement between the conflicting parties. The data collection tool used was Excel, which helped us create the tables in the third part of the project.

4. PRESENTATION AND DATA ANALYSIS

In this section of the work, we present our data graphically, which was obtained through a questionnaire that we conducted for the faculty and other employees of our organization (Lusófona University Center of Lisbon) to respond to. These graphs aim to complement our work/study by providing us with more detailed information about the impact of stress and conflict in the organization. The source of the created graphs was the conducted questionnaire, and data analysis was performed using Excel.
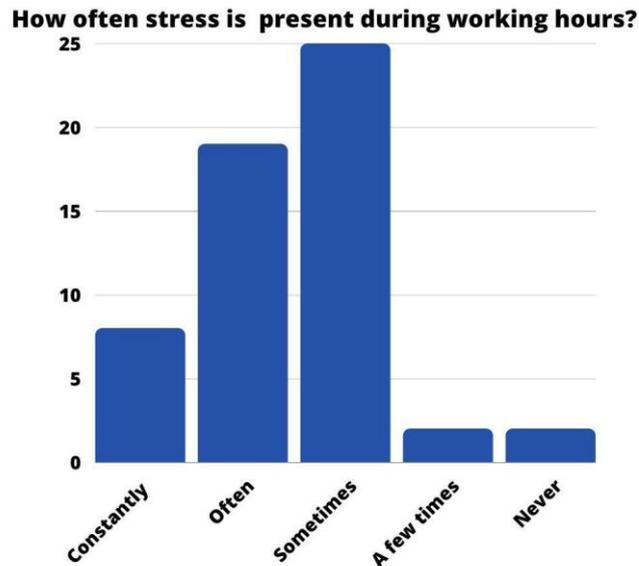
Graphic 1: Question 2
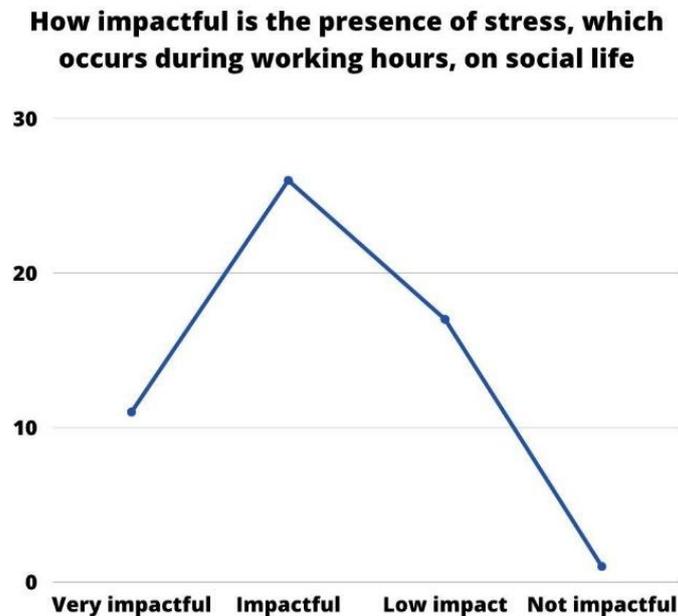
Graphic 2: Question 3
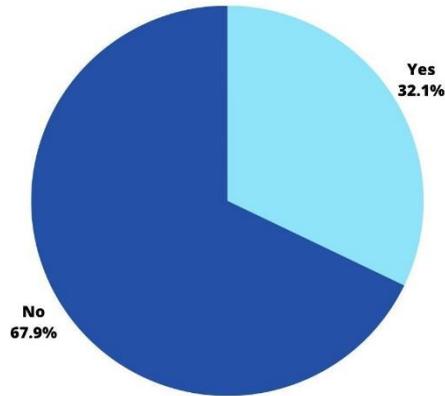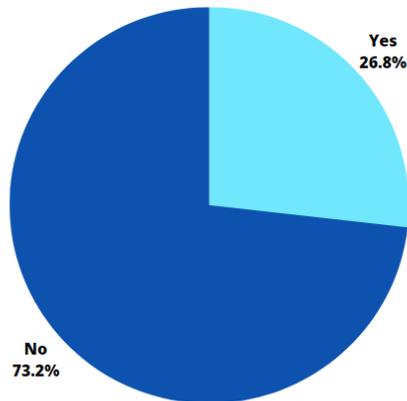
Graphic 3: Question 4

Graphic 4: Question 5
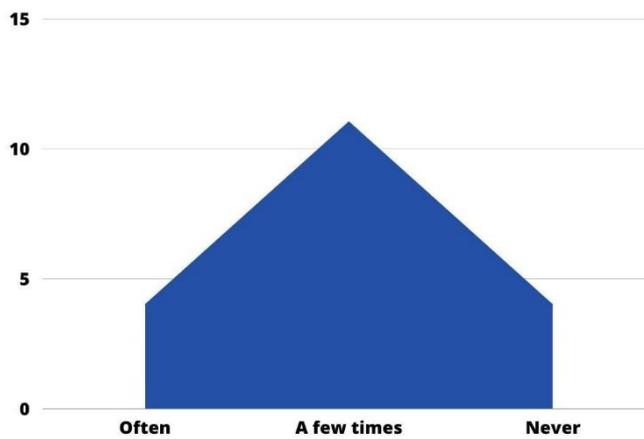
Graphic 5: Question 6

Do you think you can manage correctly when there are conflicts in the workplace?
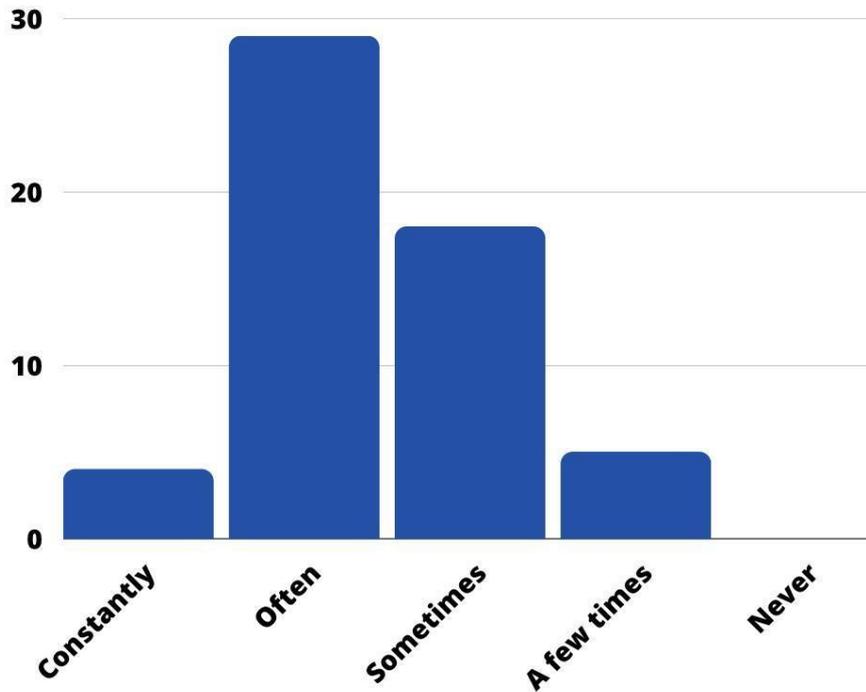
Graphic 6: Question 7

How frequent is the existence of conflicts in the workplace?
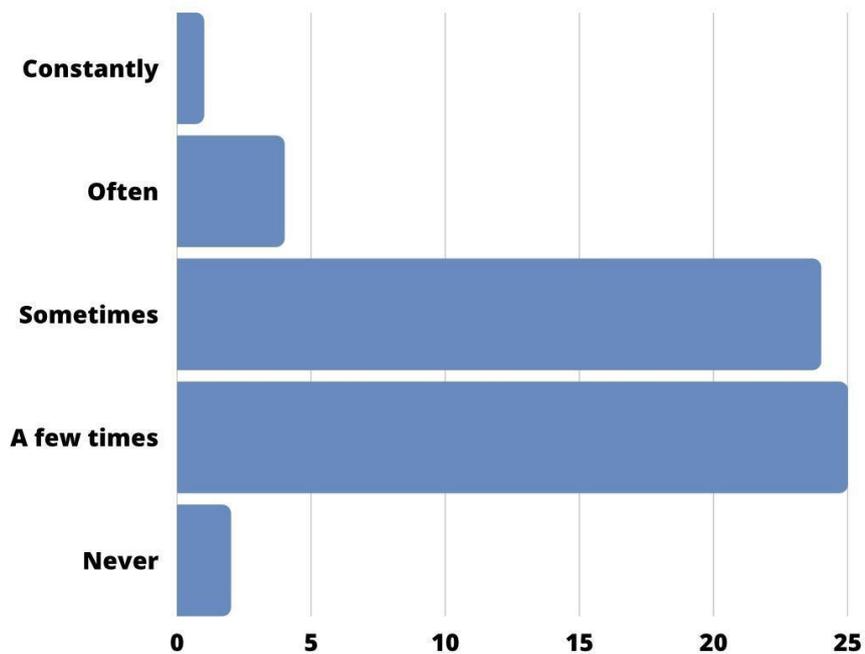
Graphic 7: Question 8
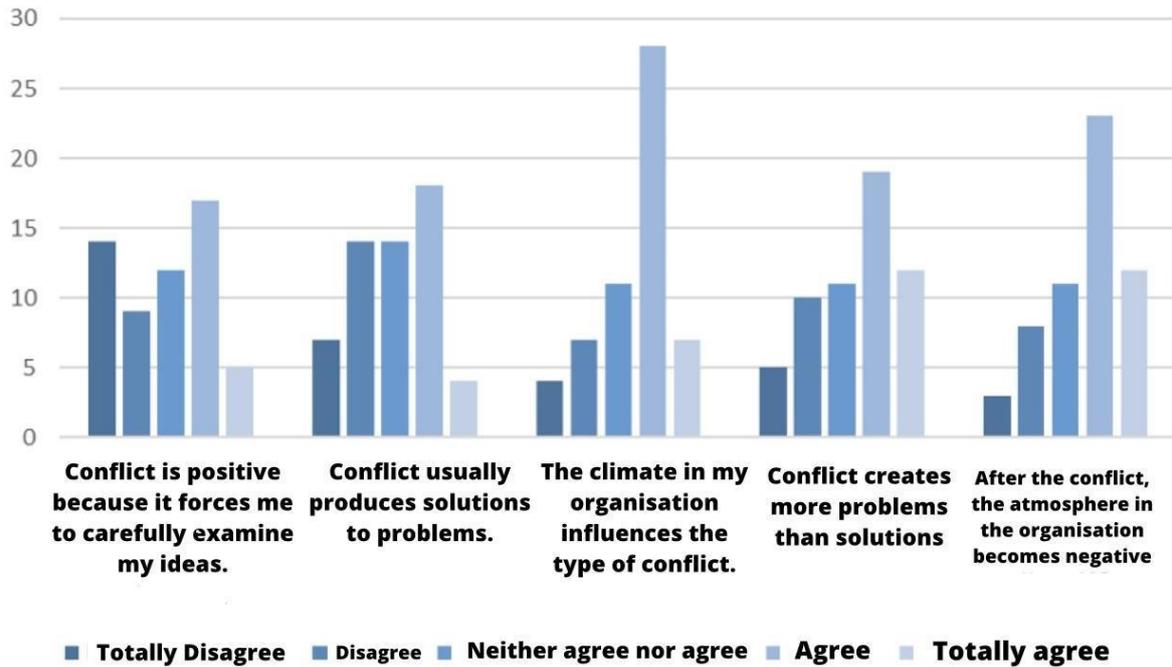
Graphic 8: Questions 9, 10 ,11, 12, 13

4.1. Validation of hypotheses

- Hypothesis 1:
  Through the conducted study, we were able to understand that work-related stress truly impacts the social life of the employees at Lusófona University who participated in this study. The majority, 66.7%, declared that it had a significant or very significant impact on their lives beyond their jobs. This indicates that, as seen in the theoretical background, work can be considered one of the main sources of stress. The fact that stress is usually present during working hours suggests that it can occur due to various factors described in the first part of the study, such as working hours, organizational environment, among others. However, work overload was not assessed as a triggering factor for chronic or episodic stress in the study, as 73.3% of the participants responded that they did not experience panic attacks due to work overload. Nevertheless, it can still be considered a common stress factor. However, through this study, this study provides data that may lead to belief that at the University Lusófona, employees are sometimes exposed to factors that can trigger professional burnout, as approximately 31.6% of people responded that they have experienced burnout, something that will have consequences in their professional as well as personal life, such as social distancing. Therefore, through the analysis of the data from questions 2 (graph 1, part 3), 3 (graph 2, part 3), 4 (graph 3, part 3), and 5 (graph 4, part 3) of the questionnaires, the hypothesis is validated.

- Hypothesis 2:
  According to the analysis of the questions related to the proper management of conflicts in the workplace and their frequency (graphs 6 and 7, part 3), in the target organization of the study, there is not a significant discrepancy in their occurrence. It was observed that 43.9% of the employees mentioned a low occurrence of conflicts, while another 43.9% reported that conflicts occur with some frequency. This indicates caution towards factors that generate conflicts and the presence of an open organizational climate with communication and mutual support. The majority of respondents stated that they handle workplace conflicts appropriately, which helps maintain a work environment that is not heavily affected by the

presence of conflicts, thereby preventing negative effects on employee work and productivity. Given that one of the key factors in ensuring productivity is a good working atmosphere and effective conflict management when conflicts do arise, we can conclude from this hypothesis that there is not a high occurrence of conflicts that consume a significant amount of time and energy for employees. This is because conflicts are generally well managed, and as a result, employee productivity is not greatly affected. However, the ideal situation would be the absence of conflicts due to the inevitable negative aspects they bring, creating a space for potential maximization of productivity. With this study, we were able to conclude that the hypothesis is valid based on the data presented at the beginning of Part 3, in graphs 2, 4, and 8, the hypothesis is validated.

- Hypothesis 3
  Based on the last graph in Part 3, it is observed that there was not a significant diversity of responses, with the number of responses in favour and against the existence of conflicts in the business environment being very similar. In the first point, "Conflict is positive because it forces me to carefully examine my ideas," there were 23 responses against and 22 in favour. In the second point, "Conflict typically generates solutions to problems," there were 21 against and 22 in favour. This indecision is likely due to the concept of the "opportunity cost" of conflict. The presence of conflict can bring its advantages but may eventually alter the organizational environment, affecting both productivity and the health of workers. Therefore, we conclude that it is of utmost importance to invest in effective conflict management to harness the potential advantages while avoiding the negative aspects of conflict. This investment can lead to innovations that promote organizational growth, including ideas that might not be discussed without the existence of conflict. It can be concluded that Hypothesis 3 is validated based on the results of questions 9 (Graph 8, Part 3), 10 (Graph 8, Part 3), 11 (Graph 8, Part 3), and finally, question 13 (Graph 8, Part 3).

- Hypothesis 4
  Regarding the fourth and final hypothesis, which is about the effective conflict management methods in the chosen organization, it can be understood that through various questions, including "How frequent is conflict in the workplace," it is evident that they have the same percentage of 43.9% (twenty-five employees), indicating that conflicts occur infrequently or occasionally in the organization. 7% selected "often," and 5% chose "never" and "constant." The second question addressed the correct way to manage existing workplace conflicts, with respondents providing the following percentage breakdown: 52.6% (thirty employees) answered "often," 31.6% responded "sometimes," 8.8% chose "rarely," and the remaining 7% answered "constantly." It can be concluded that Hypothesis 4 is supported by the results from question 7 (Graph 6, Part 3) and question 8 (Graph 7, Part 3).

5. CONCLUSION

Based on the data collected, it was possible to validate the hypotheses presented through a questionnaire distributed at Centro Universitário Lusófona de Lisboa (Portugal), specifically among its employees from various departments and its teaching staff, focusing on "Organizational Stress and Conflict" and, more specifically, on the question of "What influence does the organizational environment have on the employee's life?" This study concludes that stress and conflict are indeed prevalent in the day-to-day life of this organization. However, they are promptly resolved to ensure the well-being of the organization. Efforts are made to avoid a significant diversion of attention from tasks and objectives, believing that, as demonstrated in the third part, as shown in Graph 8 (question 13), conflict can sometimes create a negative atmosphere in which conflict may bring more problems than solutions to the

organization. Conflict occurs when there is a matter of mutual interest involving two or more individuals who hold divergent opinions on the topic at hand and are unable to accept the expressed opinions. Therefore, it is necessary to learn to manage conflict correctly, which in turn necessitates a third party to mediate, a topic related to proper organizational leadership. Stress, as presented, often occurs during working hours and can have a significant impact. Sometimes it is used as a positive way to complete tasks or work, considered as short-term stress. However, if it persists over the long term, it is considered negative, leading to conditions like acute stress, episodic acute stress, or even chronic stress. Therefore, it can sometimes lead to burnout, although in this study, it did not manifest in a high percentage. This study suggests that Lusófona does not tend to have many problems as an organization. It is noted that conflict often produces solutions to accompanying problems, as studied in Part 3, as indicated in Graph 8 (question 10). Consequently, productivity at work is not significantly impaired since conflicts are managed appropriately. This management ensures that there is no significant diversion of attention and energy from tasks and organizational objectives and resolves individual differences within the group, preventing their degradation and emotional wear and tear.

LITERATURE:

1. Caetano, J.; Neves, J (2020). Psicossociologia das Organizações, Edições Sílabo
2. Dubois, M.; Petit, F. (2020). Introdução à Psicossociologia das Organizações. Lisboa: edição: Instituto Piaget. .
3. Reis, F. L. (2022). *Investigação Cientifica e Trabalhos Académicos – Guia Prático,* 2ª edição Revista e atualizada, Edições Sílabo.
4. Silva, V.; Reis, F (2023). *Capital Humano*, 3ª edição, Edições Sílabo

EDUCATION AS AN EMPOWERMENT TOOL: COMBATING SCHOOL FAILURE IN CHILDHOOD

Catia Rosario
Universidade Lusófona de Humanidades e Tecnologias, Campo Grande, 1749-024 Lisboa, Portugal and Governance, Competitiveness and Public Policies (GOVCOPP); Universidade de Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal
rosario.catia@hotmail.com

Antonio Augusto Costa
Universidade Lusófona de Humanidades e Tecnologias,
Campo Grande, 1749-024 Lisboa, Portugal
aaugusto@ulusofona.pt

Manuela Helene Silva
Fundação Ajuda em Ação. Avenida da Liberdade nº38 - 4º Dto, 1250-145 Lisboa, Portugal
manuelahelene@hotmail.com

ABSTRACT

Education is fundamental for the formation of citizens and the transformation of society, being responsible for the multiplication of knowledge and the development of skills necessary for the individual's performance in the community. Using the Pordata Database of Contemporary Portugal database, organized and developed by the Francisco Manuel dos Santos Foundation, data were collected for the period from 2012 to 2021. The data was organized and treated as panel data referring to 7 regions (NUTS II) of Portugal: North, Center, Metropolitan Area of Lisbon, Alentejo, Algarve, Autonomous Region of the Azores and Autonomous Region of Madeira. The results of this study suggest that the main risk factors that affect academic success in the different mandatory study cycles in Portugal are the population's unemployment rate, crime, the population's education level and access to knowledge, here assessed by access to internet by households. The results obtained also highlight the importance of combating early school failure given that school failure in the 1st cycle of studies leads to higher retention and dropout rates in the 2nd and 3rd cycle of studies. In turn, school failure in the 2nd and 3rd cycle leads to higher levels of failure in secondary education, whether in the technological/professional field or in the general field.
Keywords: *Panel data, Risk factors, School failure, School success, NUTS II, Portugal*

1. INTRODUCTION

Education stands as a cornerstone of human development, shaping the future of individuals, societies, and nations alike. It is a powerful instrument that empowers individuals to reach their full potential, contribute to the betterment of their communities, and drive progress on a global scale. However, the quality of education imparted during the formative years of a child's life is pivotal in determining the trajectory of their educational journey. Early school years lay the foundation upon which the edifice of knowledge, skills, and socio-emotional development is built. Unfortunately, many children across the globe face the grim prospect of early school failure, an issue of immense concern that casts a long shadow on their lives and the societies in which they live. Early school failure, characterized by poor academic performance, high dropout rates, and a range of socio-economic and emotional consequences, presents a significant challenge that demands our immediate attention. As we delve into this critical issue, we are confronted by the stark reality that educational disparities persist, depriving countless young minds of their potential and impairing the collective progress of nations.

The importance of addressing early school failure is underscored not only by its devastating individual consequences but also by its profound implications for social inequality, economic development, and societal well-being. In this scientific article, we explore the multifaceted dimensions of early school failure, emphasizing the pressing need to prioritize and enhance the quality of our educational systems. We will delve into some factors contributing to early school failure, the ripple effects it creates in the lives of affected individuals, and the broader implications for societies and economies. The quest for a brighter future begins with nurturing young minds, providing them with the tools they need to flourish, and ensuring that no child is left behind. This article serves as a call to action for educators, policymakers, researchers, and all stakeholders committed to the welfare and progress of our global society. Together, we can build a world where every child, regardless of their circumstances, has the opportunity to receive a quality education, break free from the shackles of early school failure, and contribute meaningfully to a brighter, more equitable future for all.

2. SCHOOL SUCCESS AND FAILURE

School is the privileged space where citizens have access to knowledge and the development of skills that allow them to exercise their citizenship. It is in this space that students, the main actors, have access to different curricular contents, develop skills and carry out learning. Quality education can break the cycle of poverty, reduce inequalities and promote gender equality. It also allows people to lead more sustainable and healthy lives and is essential for promoting more peaceful and tolerant societies. A quality education is one that provides all students with the skills they need to become economically productive, develop sustainable livelihoods, contribute to peaceful and democratic societies, and improve individual well-being.

Advantages of Academic Success for Students:
- Academic and Professional Opportunities: Academic success provides students with the opportunity to advance in their studies, have access to quality higher education and expand their professional perspectives. Individuals with greater academic success are more likely to obtain well-paid jobs and pursue more prestigious professions (Costa, 2022).
- Skills Development: Academic success is associated with the development of essential skills, such as critical thinking, problem solving, communication and collaboration skills. The educational environment provided by academic success contributes to the formation of more capable citizens prepared to face the challenges of the contemporary world (Eurydice, 1995; Duarte, 2000).
- Self-esteem and well-being: Academic success is related to an increase in students' self-esteem and well-being. Recognition and appreciation of their academic achievements strengthens their confidence in themselves and promotes a positive image of themselves. Students who are successful at school have greater life satisfaction and face fewer mental health problems (Ramos, 2019).

Early school failure is a problem that generates social failure, as the level of education is a fundamental factor in social integration and professional, economic and personal stability. Portugal is the 2nd OECD country where the most 15-year-old students have failed in the 1st or 2nd cycle (17%). One of the causes of this problem is the socioeconomic and cultural context of the students and the inequalities inherent in an education system with an equal curriculum for all. The Minister of Education João Costa stated at a Meeting promoted by the DGE that "the main challenge continues to be that of equity because socioeconomic inequalities continue to be the main promoter of failure". James Heckman, renowned economist and researcher, is a fundamental author when it comes to addressing the importance of combating early school failure. In his work "The Lifecycle Benefits of an Influential Early Childhood Program" (2017),

Heckman highlights that investing in quality early childhood interventions can bring significant returns to society, including improvements in academic outcomes, reduced crime and increased opportunities of lifelong employment. Academic failure can be understood as the student's difficulty in achieving the learning objectives established by the school, whether due to not keeping up with the class, not achieving the minimum grades necessary to advance to the next year or failing in specific subjects. This situation implies a mismatch between educational expectations and the student's actual performance, which generates frustration not only for the student but also for teachers and family members. There are several factors that contribute to school failure and it is important to consider their complexity and interconnections. Among the main determinants of school failure, the following stand out:

- Socioeconomic Factors: Unfavorable socioeconomic conditions, such as low family income, limited access to educational resources and lack of family support are associated with a greater risk of school failure (European Commission, 2017).
- Family Environment: The family environment plays a crucial role in students' academic performance. The presence of parents or guardians, stimulating and involved in the educational process, can contribute to reducing school failure (Davis and Oliveira, 1994; Dessen and Polonia, 2001).
- Individual Characteristics: Individual characteristics of students, such as cognitive abilities, motivation, self-esteem and mental health, also influence their academic performance. Therefore, it is essential to consider the uniqueness of each student when analyzing school failure (Keijzer, van Schooten, van der Rijst and Admiraal, 2022).

School failure leads to a series of negative consequences for both students and society. In addition to the emotional impact and low self-esteem, students who face failure are more likely to leave their studies early, have fewer job opportunities and face difficulties in fully integrating into society. For society, school failure contributes to the reproduction of social inequalities, limiting economic development and the population's quality of life (Conselho Nacional de Educação, 2021). Academic success can be defined as the achievement of the learning objectives established by the school, demonstrated by satisfactory academic performance and compliance with curricular requirements. Academic success is not just restricted to grades and assessments, but also includes the student's active involvement in the learning process and the acquisition of essential skills and abilities (Cachia, Lynam and Stock, 2018). Early identification of learning difficulties is essential to combat school failure. Several recent studies have emphasized the need for systematic screening and assessment programs from early childhood, in order to identify children at risk of school failure early. Therefore, it is extremely important to identify behavioral problems and learning difficulties from the first cycle, to implement appropriate interventions (Martins-Silva, et al, 2023). An intervention to combat early school failure contributes to the fight against poverty, creating skills and abilities. Thus, when students reach adulthood they will have more opportunities to build solid jobs and live with dignity and well-being. Promotes awareness and respect for individual and collective rights, forming citizens more aware of their role in society. It strengthens democracy and citizenship through people with higher levels of education, who are therefore more sociable, critical and aware of their social rights, in addition to fulfilling their civic duties. It makes the economy grow (According to a UNESCO report, each year of schooling increases the annual average of a country's Gross Domestic Product (GDP) by 0.37%). More education allows for better jobs and higher wages, creating economic growth for the country; improves the quality of life because when it comes to the individual aspect, quality teaching helps to build a greater sense of purpose in students' lives, being able to decide with more security about their future, which results in personal satisfaction and improvement in quality of life (Academia Veni Vidi Vici, 2023).

With early intervention in the fight against academic failure, the learning acquired will now have repercussions on the process of building each person and choosing their future and, consequently, on society as a whole. Ultimately, a child is a great project on which the future of the entire society and humanity depends. It is crucial that they acquire key skills to improve their lives and the lives of those around them. We know that inclusion accompanies the development of societies, democracies and citizenship (Martins, 2017). Education is always an investment for the future, as it is an impetus and motivation to acquire learning. Children take ownership of what they learn and apply it in a constructive and sustainable way. They are the ones who invest their own knowledge in defining their professional life project, but above all they make an impact, which is also sustainable, on the social environment in which they operate. Early intervention contributes to improving mental health, which is essential for the good reception, monitoring and empowerment of children who are in a more vulnerable situation and therefore demand more from the adult/teacher/operational assistant. By achieving greater balance, adults at school will know how to welcome children better, therefore, teachers will be able to teach better and children will learn better. A value chain is created, often applied to the economy, but also in education (Borg, Winberg, and Vinterek, 2017). Early school intervention refers to strategies and programs implemented from the first years of a child's school life, with the aim of promoting their development and learning (Martins, 2017). This approach has been widely studied by several authors and there is a consensus that it brings a series of benefits to children, such as:

- Improving academic performance: Early school intervention can help improve children's academic performance by providing them with a solid foundation in basic reading, writing and math skills, translating into better educational outcomes throughout their lives.
- Socio-emotional development: Early intervention in schools can have a positive impact on children's socio-emotional development. It can help promote skills such as empathy, conflict resolution, self-control and cooperation, contributing to the establishment of healthy relationships and social skills throughout life.
- Reducing educational inequalities: Early school intervention has the potential to reduce educational inequalities by providing additional support to children in vulnerable situations, such as those from low-income families or those with learning difficulties. By identifying and intervening early on the educational needs of these children, it is possible to reduce educational disparities and promote equal opportunities.
- Preventing behavior problems: Early intervention in schools can also help prevent behavior problems and emotional difficulties. By providing a supportive environment and appropriate interventions, it is possible to identify and address behavioral issues early, decreasing the likelihood of these problems worsening in the future.
- Stimulating cognitive and creative development: Early school intervention can stimulate children's cognitive and creative development, promoting curiosity, exploration and critical thinking. This can contribute to the formation of more creative individuals, capable of facing the challenges of the contemporary world.

There is a relationship between social origin, academic performance and the respective consequences on life opportunities. Qualifications are a powerful instrument for training and promoting equal opportunities. It is urgent to value skills, knowledge and their use in social, personal and professional life, favoring access to knowledge and better living conditions.

3. METHODOLOGY AND SAMPLE CHARACTERIZATION
This study's general objective is to analyze whether there is a relationship between early school failure and school failure at different levels of compulsory education in Portugal. We also seek to identify possible risk factors that could influence school failure.

The data used in this study are annual, referring to the period from 2012 to 2021, collected from the Pordata database, Contemporary Portugal Database, organized and developed by the Francisco Manuel dos Santos Foundation. School education in Portugal includes basic education, which is universal, mandatory and free and comprises three sequential cycles: 1st Cycle (1st, 2nd, 3rd and 4th Years), 2nd Cycle (5th and 6th Years) and 3rd Cycle (7th, 8th and 9th Years). This is followed by secondary education, which is also mandatory and comprises a three-year cycle (10th, 11th and 12th years of schooling), divided into:

- General Secondary: Course lasting three academic years, structured into sets of general, specific and technical/artistic training subjects, with a view to continuing studies in higher education.
- Professional and Technological Course, where the Professional branch includes a time frame of three academic years, aimed at the initial qualification of young people, focusing on their insertion in the world of work and allowing them to continue studying. In turn, the Technological branch is preferably aimed at young people who wish to enter the world of work after the 12th year of schooling, however, having the possibility of entering higher education. Both branches award a secondary studies diploma and a level 3 professional qualification certificate.

Taking into account that compulsory education in Portugal is from the 1st to the 12th year and that the study cycles are divided in the manner previously described, data were collected on academic failure for each study cycle over 10 years (2012 to 2021). According to the General Directorate of Education and Science Statistics (DGEEC), school failure results from student dropout and/or retention. Withdrawal is a situation that occurs as a result of the temporary abandonment of students or trainees from attending teaching activities on a course, a training period or one or more subjects during an academic year. This includes abandonment, cancellation of enrollment and exclusion due to excessive absences. Retention is the situation that occurs as a result of the student's unsuccessful performance due to non-compliance with the requirements set out in current legislation for attendance in the school year following the one in which they are in (DGEEC, 2023). The additional variables chosen with the aim of analyzing their influence on academic success/failure in the different cycles are:

- Education of the population, measured through the proportion of individuals without completing secondary education. This is because parents' education is often seen as a determining factor in children's academic success. Children whose parents have a higher level of education are more likely to achieve higher academic performance. The presence of parents with a higher level of education is associated with a more conducive environment for learning, access to educational resources and greater cognitive stimulation (Salgado, Mata, Cardoso, Ferreira, Patrão, and Durão, 2011).
- Population unemployment rate. Given that Ruhm (2000) investigated the impact of unemployment on the health and academic performance of children in the United States and the results showed that the increase in the unemployment rate was associated with a decline in children's academic performance, especially in mathematics and reading. Furthermore, the study revealed that children from unemployed families were more likely to repeat a school year or leave school early.
- Crime, measured as total crimes per 1000 inhabitants. Children who live in violent neighborhoods are more likely to miss school and perform poorly at school. Constant concern for personal safety and fear of becoming victims of crime cause children to avoid school, thus missing out on learning opportunities (Laurito, Lacoe, Schwartz, Sharkey, and Ellen, 2019).
- Access to information, measured through the number of households with internet access. Accessing online resources can increase knowledge and understanding of different

disciplines. Furthermore, authors such as Prensky (2001) state that the internet allows children to have access to different perspectives and cultures, enriching their repertoire of knowledge. The internet also offers a wide variety of educational resources, such as tutorials, educational games, and learning platforms. Using these online resources can improve children's academic performance, especially in areas such as math and reading (Panagouli, Stavridou, Savvidi, Kourti, Psaltopoulou, Sergentanis, and Tsitsika, 2021).

- Household, measured through the number of single-parent families. In this case, a direct theoretical relationship between single-parent families and school success/failure is not identified. However, there is consensus that the presence of a committed and involved parental figure is a determining factor in children's academic success, regardless of family structure (Ackerman, Brown, and Izard, 2004).

The variables used in this study are:

RD1	Retention and abandonment rate in the 1st cycle
RD2	Retention and abandonment rate in the 2nd cycle
RD3	Retention and abandonment rate in the 3rd cycle
RDHST	Retention and dropout rate in High School in the technological and professional sector
RDHSG	Retention and dropout rate in High School in the general education branch
PwHS	Population without High school
UR	Population unemployment rate
TC	Crime: Total number of crimes
HwI	Number of households with internet access
SpH	Number of single-parent households

Table 1 presents the main descriptive statistics of the variables used in this study, noting that, in general, the dispersion of data in relation to the average is accentuated.

	Average	Minimum	Maximum	Standard deviation	C.V.	Bias	Kurtosis
RD1	4,330	0,700	12,900	2,315	0,535	1,209	2,161
RD2	7,867	1,100	17,600	4,340	0,552	0,340	-0,909
RD3	11,230	1,700	24,900	5,551	0,494	0,336	-0,549
RDHST	17,744	5,300	31,100	5,934	0,334	-0,220	-0,525
RDHSG	14,270	6,400	26,000	4,807	0,337	0,465	-0,452
PwHD	62,586	40,900	77,300	7,638	0,122	-0,581	0,069
UR	11,143	5,200	19,600	4,232	0,380	0,417	-1,223
TC	33,467	22,000	55,200	8,015	0,240	0,650	-0,569
HwI	74,089	48,800	93,200	10,939	0,148	-0,272	-0,821
SpH	62,691	8,000	153,800	55,434	0,884	0,543	-1,435

Table 1: Descriptive statistics

4. DATA ANALYSIS

The Pooled OLS regression models are presented below, based on panel data referring to the 7 regions of Portugal for the period 2012 – 2021. The software used was STATA version 18 and all models were statistically validated. Model 1 has academic failure in the 1st cycle as its dependent variable and possible risk factors for failure as explanatory variables. As can be seen, only the unemployment rate variable is statistically significant, and it can therefore be said that a higher unemployment rate contributes to an increase in school failure in the 1st cycle.

Model 1: Pooled OLS for the dependent variable RD1

	Coef	Erro padrão	t-stat	valor p
const	-12,11130	8,08944	-1,49717	0,18499
PwHS	0,12232	0,08067	1,51635	0,18022
UR	0,29055	0,06572	4,42076	0,00447
TC	0,07043	0,03721	1,89258	0,10727
HwI	0,05174	0,03895	1,32823	0,23239
SpH	-0,01024	0,00768	-1,33313	0,23087

Dependent Variable: RD1; N = 70; R2 = 0,7215; R2 adjusted = 0,6997; F-stat(5,6)=53,1806; P-value (F)=0,0001

In model 2, in addition to the previous explanatory variables, the Ins1 variable was also included as a dependent variable. As can be seen, early school failure has a positive impact on school failure in the 2nd cycle. It is also clear that lower educational levels of the population, higher unemployment rates and higher crime rates lead to greater academic failure among 2nd cycle students. The ease of access to knowledge and information, assessed here through the independent variable AcNet, indicates how much the number of households with internet access has a negative impact on the dependent variable, that is, it contributes to reducing failure.

Model 2: Pooled OLS for the dependent variable RD2

	Coef	Erro padrão	t-stat	valor p
const	21,09743	3,80572	5,54362	0,00145
PwHS	-0,18822	0,03928	-4,79122	0,00303
UR	0,30607	0,06153	4,97435	0,00252
TC	0,07979	0,02248	3,54973	0,01208
HwI	-0,16976	0,02058	-8,24982	0,00017
SpH	0,00133	0,00455	0,29325	0,77921
RD1	1,14614	0,13752	8,33461	0,00016

Dependent Variable: RD2; N = 70; R2 = 0,9527; R2 adjusted = 0,9482; F-stat(6,6)=67797,28; P-value (F)=0,0000

In model 3, it can be seen that school failure in the previous 2 cycles impacts school failure in the 3rd cycle. That is, higher failure rates in the 1st and 2nd cycle lead to higher levels of failure in the 3rd cycle. Once again, lower levels of education among the population lead to higher levels of school failure. Contrary to what was found in model 2, a greater number of households with internet access leads to an increase in school failure.

Table following on the next page

Model 3: Pooled OLS for the dependent variable DR3

	Coef	Erro padrão	t-stat	valor p
const	-23,95289	2,80989	-8,52449	0,00014
PwHS	0,23419	0,02158	10,85236	0,00004
UR	0,06216	0,06427	0,96714	0,37082
TC	0,02781	0,02484	1,11979	0,30562
HwI	0,12409	0,02478	5,00787	0,00243
SpH	0,00576	0,00344	1,67219	0,14552
RD1	0,00390	0,16435	0,02370	0,00186
RD2	1,18609	0,09494	12,49296	0,00002

Dependent Variable: RD3; N = 70; R2 = 0,9796; R2 adjusted = 0,9773; F-stat(7,6)=1,55E14; P-value(F)=0,0000

Models 4 and 5 have as dependent variables academic failure in technical/vocational (model 4) and general (model 5) secondary education. In general, with regard to risk factors, the unemployment rate stands out once again as a factor that contributes to higher levels of academic failure. We can also highlight that higher crime rates lead to higher school failure rates.

Model 4: Pooled OLS for the dependent variable RDHST

	Coef	Erro padrão	t-stat	valor p
const	5,98640	9,61570	0,62257	0,55648
PwHS	0,01373	0,07609	0,18039	0,86278
UR	-0,35502	0,12534	-2,83256	0,02986
TC	0,09569	0,02835	3,37596	0,01493
HwI	-0,02518	0,07529	-0,33444	0,74943
SpH	0,01048	0,00815	1,28541	0,24603
RD1	-0,08410	0,37621	-0,22354	0,83054
RD2	0,02813	0,20904	0,13457	0,00735
RD3	1,15794	0,21019	5,50913	0,00150

Dependent Variable RDHST; N = 70; R2 = 0,9001; R2 adjusted = 0,8870

Table following on the next page

Model 5: Pooled OLS for the dependent variable RDHSG

	Coef	Erro padrão	t-stat	valor p
const	-10,17197	11,82951	-0,85988	0,42288
PwHS	-0,04713	0,07741	-0,60884	0,56496
UR	0,46743	0,18419	2,53775	0,04422
TC	0,06383	0,05494	1,16174	0,28946
HwI	0,20752	0,07703	2,69415	0,03585
SpH	-0,02740	0,00841	-3,25643	0,01733
RD1	-0,60961	0,23275	-2,61914	0,18108
RD2	0,78037	0,51583	-1,51284	0,03963
RD3	1,35074	0,42997	3,14147	0,02003
Dependent Variable RDHSG; N = 70; R2 = 0,8411; R2 adjusted = 0,8203				

Once again and in both models, failure resulting from previous study cycles impacts on academic failure in secondary education. In both technical/vocational education and general secondary education, variables relating to retention or dropout rates of 2nd and 3rd cycle students lead to greater failure among secondary education students.

5. CONCLUSION

In conclusion, this article has highlighted the critical importance of combating early school failure. School failure during the early years of education can have long-term adverse effects on children's academic, social and emotional development. Through the literature review, it was evident that combating early school failure requires a multifaceted approach that involves the collaboration of educators, parents, health professionals and policymakers. The results suggest that early school failure has repercussions on school failure in subsequent study cycles, making it essential to implement early interventions, such as quality preschool programs, individualized support for students, early identification of learning difficulties and preventive actions. The results of this study also demonstrated that school failure is not limited to the educational sphere. There are other risk factors such as unemployment rate, crime rate, population education and access to information and therefore combating academic failure requires a holistic approach that considers social, economic and health factors. Integrated actions, such as public policies that aim to reduce socioeconomic inequality, guarantee equitable access to quality education and provide adequate psychosocial support, are essential to face this challenge effectively. In short, education plays a fundamental role in empowering future generations and promoting equal opportunities. Therefore, it is imperative that all sectors of society join forces to address early school failure and create an environment conducive to the educational success of all children. So, through comprehensive measures, effective policies and continued collaboration between everyone involved, we can overcome this challenge and ensure that every child has the opportunity to develop to their full potential. Combating early school failure is not just a responsibility of educational systems, but a responsibility shared by society as a whole.

LITERATURE:

1. Academia Veni Vidi Vici. (2023). Porque é importante ter um ensino de qualidade. Disponível em: https://www.academiavvv.com/porque-e-importante-ter-um-ensino-de-qualidade/
2. Ackerman, B., Brown, E. D. & Izard, C. (2004). The Relations Between Persistent Poverty and Contextual Risk and Children's Behavior in Elementary School. Developmental Psychology 40(3):367-77

3. Borg, F., Winberg, M. & Vinterek, M. (2017). Children's Learning for a Sustainable Society: Influences from Home and Preschool, Education Inquiry, 8:2, 151-172, DOI: 10.1080/20004508.2017.1290915

4. Cachia, M., Lynam, S. e Stock, R. (2018). Academic success: Is it just about the grades? Higher Education Pedagogies 3(1):434-439. DOI: 10.1080/23752696.2018.1462096

5. Comissão Europeia. (2017). Educação e formação na Europa: as desigualdades continuam a ser um desafio. Obtido em 31 de outubro de 2020, de Comissão Europeia: https://ec.europa.eu/commission/presscorner/detail/pt/IP_17_4261

6. Conselho Nacional de Educação. (2021). Efeitos da pandemia COVID-19 na educação: Desigualdades e medidas de equidade. Estudo solicitado pela Assembleia da República através da Deliberação nº 1-PL/2021, de 12 de maio, publicada em Diário da Assembleia da República, II Série-A, nº 131. ISBN: 978-989-8841-38-4

7. Costa, R. F. (2022). Gamificação em Ensino - Estudo preparatório em duas turmas de Ensino Profissional: Satisfação e sucesso escolar na educação. Instituto Superior de Tecnologias Avançadas de Lisboa.

8. Davis, C. e Oliveira, Z. M. R. (1994). Psicologia na educação. (2ª ed.). São Paulo: Cortez. Dessen, M.; Polonia, A. C. (2001). A Família e a escola como contextos de desenvolvimento humano. Disponível em: <http://www.scielo.br/pdf./paideia./v17n36/v17n36a03.pdf.>.

9. Direção-Geral de Estatísticas da Educação e Ciência – DGEEC, (2023), Indicadores Gerais da Educação. Disponível em https://www.dgeec.mec.pt/np4/278/

10. Duarte, M. I. R. (2000). Alunos e Insucesso Escolar: um mundo a descobrir. Instituto de Inovação Educacional.

11. Eurydice (1995). A Luta Contra o Insucesso Escolar: Um Desafio para a Construção Europeia. DEPGEF.

12. Heckman, J. (2017). The Lifecycle Benefits of an Influential Early Childhood Program. Policies for Action: Policy Research to Build a Culture of Health

13. Keijzer, R., van Schooten, E., van der Rijst, R. e Admiraal, W. (2022). Individual characteristics of students in vocational education moderating the relationship between school engagement and vocational identity. European Journal of Psychology of Education volume 37, pages1255–1283

14. Laurito, A., Lacoe, J., Schwartz, A. E., Sharkey, P., & Ellen, I. G. (2019). School Climate and the Impact of Neighborhood Crime on Test Scores. RSF: The Russell Sage Foundation Journal of the Social Sciences, 5(2), 141–166. https://doi.org/10.7758/rsf.2019.5.2.08

15. Martins-Silva, T., Bauer, A., Matijasevich, A. et al. (2023). Early risk factors for conduct problem trajectories from childhood to adolescence: the 2004 Pelotas (BRAZIL) Birth Cohort. Eur Child Adolesc Psychiatry. https://doi.org/10.1007/s00787-023-02178-9

16. Martins, H. (2017). Insucesso Escolar: Prevenção e Intervenção na Educação Pré-Escolar e no 1º Ciclo do Ensino Básico. Escola Superior de Educação de Paula Frassinetti

17. Panagouli, E., Stavridou, A., Savvidi, C., Kourti, A., Psaltopoulou, T., Sergentanis, T. N., & Tsitsika, A. (2021). School Performance among Children and Adolescents during COVID-19 Pandemic: A Systematic Review. Children (Basel, Switzerland), 8(12), 1134. https://doi.org/10.3390/children8121134

18. Ruhm, C. (2000). Are Recessions Good For Your Health? Quarterly Journal of Economics 115(2): 617-650.

19. Salgado, L., Mata, L. Cardoso, C., Ferreira, J., Patrão, C. e Durão, A. (2011). O aumento das competências educativas das famílias um efeito dos Centros Novas Oportunidades. Agência Nacional para a Qualificação, I.P. ISBN: 978-972-8743-71-0

HOW THE SYNERGY COULD WORK IN NEW ECONOMY: EXAMPLE OF SPORT AND TEXTILE INDUSTRY

Ivan Novak
Faculty of Textile Technology, University of Zagreb
Prilaz baruna Filipovića 28, 10000 Zagreb, Croatia
ivan.novak@ttf.unizg.hr

Katarina Bacic
Faculty of Economics and Business, University of Zagreb
Trg John F. Kennedy 6, 10000 Zagreb, Croatia
katarina.bacic@ingbiro.hr

Ivana Kovac
Faculty of Economics and Business, University of Zagreb
Trg John F. Kennedy 6, 10000 Zagreb, Croatia
ikovac@efzg.hr

ABSTRACT

This paper deals with the synergies between the Textile economy and the Sports sector. The textile segment in Sports is large and highly profitable, based on production of sports textile and equipment within technical textile subsegment. Requirements for sports textile and equipment are demanding and are pushing producers to pursue the direction of innovating in the advanced materials area via highly intense R&D. The advanced materials with superior properties are already in use, namely composites and the next generation textiles - smart textiles, irrevocably changing the face of the Textile economy. EU27 is ahead of competitors in the advanced textile production, investing heavily in R&D, innovation and new products. With the ongoing fast technological advancement, new opportunities appear for European entrepreneurs, in particular with the possibility of integrating digital components and electronics into smart textiles, a rather important feature in sports and human health sectors.
Keywords: *new economy, research and development, sport sector, synergy, textile industry*

1. INTRODUCTION

The Textile economy in Europe is strongly rooted in innovative directions based on research and development (R&D). One of the main market niches is technical textile; textile economy was pushed forward strongly in terms of innovation by demand for textiles and equipment in Sports and leisure, a market niche second only to military and defence industry (Dervojeda, Mark and Koonstra, 2017 based on Mordor Intelligence 2016). Within this segment, composite and smart textiles are on the rise. New business opportunities arise for European entrepreneurs. This paper deals with synergies between the Textile economy and Sports sector. Building on the findings from various sources, from the data previously gathered in surveys across Europe, we demonstrate the specifics and immense importance of Sports sector for advances in the Textile economy and vice versa. Also, we provide some illustrative examples of successful collaboration between Textile – Sports that has pushed frontiers of some textile producers and sportspeople in a small European economy. Innovation is recognised as the principal driver of firm competitiveness. Our concern is mostly the underlying economics of this relation rather than the detailed technical aspects of the innovative products in this market segment. One of the questions that arise in this context is, given the advancement in production of technical textile, what is the scope of the Textile economy in today's world?

The borders of the textile producers' activity are changing immensely as new technologies, materials, products, and product uses emerge. Business opportunities for textile producers are expanding in directions that were previously considered unconventional. It is challenging for official statistics to encompass the new activity across the appropriate product groups and uses efficiently. The paper is structured in few sections. After Introduction, methodologies employed and the goal of the analysis are outlined in the Methodological framework section. In the section Sports textiles and beyond we scope the Sport textiles niche by outlining the main product groups and requirements of the Sports market. We tackle future challenges standing before producers. In Market potential and challenges section we examine the position of European Union in the highly competitive world of textiles. The Textile economy' synergies with Sport section displays inspiring examples that are changing firms and is life-changing for sportspeople. Our paper ends with Discussion/Conclusions where we summarize our considerations.

2. METHODOLOGICAL FRAMEWORK
Methodological framework based on descriptive analysis and qualitative research methods was applied for in-depth analysis of the synergy between sports and textile industry. The aim of the analysis was to create an understanding of the economic trends and the linkages across the value chain in its innovation dimension. We have searched for relevant information using several data sources; publicly available data and anecdotal evidence. Our analysis is based on the data available from the open source scientific and expert papers and studies, media; business magazines, web pages, public disclosures as well as other relevant sources. We did investigate the potential and challenges of European textile market. Furthermore, our inferences are also based on the results of studies on sport and textile industry synergies, particularly in the smart textiles subsegment. Qualitative research approach, which puts emphasis on context, interactions and interpretations of data (as applied in our paper) is considered to be more appropriate than quasi-positivistic approach that relies on "facts" about cases published in the media. Data obtained from the media are sometimes biased. We have to mention that qualitative data can hardly be subject to systematic analysis and the inductive process of developing theoretical insights from individual cases is not itself easily understandable.

3. SPORTS TEXTILES AND BEYOND
The Textile economy's products created for the Sports sector are sports textiles, a strand of technical textile. Main product uses are sportswear, leisure wear and related goods and equipment. Within sportswear the most common products are jerseys or T-shirts, trousers, shorts, caps, footwear and accessories (Anandhakumar, 2021). Due to changes in lifestyle, there has also been growth in the active wear and sportswear market that had has a notable impact on the global textile industry. The use of sportswear extends beyond, to sportswear items being worn as everyday fashion items. In fact, estimates have shown that only 25% of sportswear is worn for active sports or during exercise (Stegmaier, Mavely and Schneider, 2005). In the sports' equipment of the textile economy segment, the examples of products are artificial turf, football/volleyball, sports net, ropes, gloves, pads, mats; and also helmets, tennis racquets, skies, balloon fabrics, parachute and paraglider fabrics and sailcloth etc. The fiber reinforced composite materials use in the equipment production had expanded greatly due to the light weight, high strength, large degrees of freedom of design, easy processing and forming characteristics (Zhang, 2015). More recently, the next generation textiles were developed, coined as smart textiles (Thakkar, 2022), known also as electronic textiles (e-textiles) or smart fabrics. Smart textiles refer to fabrics with special features that enable digital components and electronics to be embedded in them, which is possible due to the use of high-tech and smart textile technology.

Emphasis of smart textiles is placed on the seamless integration of textiles with electronic elements like microcontrollers, sensors and actuators, thus they should be distinguished from wearables. More specifically, based on signals received and analysed, smart textiles can respond. This response can be electrical, thermal, mechanical, chemical, magnetic or from another source (Thakkar, 2022). The number of these products launched to the market is growing continuously as most major sports are already started taking advantage of the growing use of technology (Dervojeda, Mark and Koonstra, 2017). Thus, trends show that smart textiles have strong market potential.

Providing necessary features in sports textiles is challenging for producers as the there are many requirements to be satisfied, the list being quite extensive as provided by Anandhakumar (2021):
- adaptability, easy to wear, easy handling;
- the ability to transport heat and moisture i.e., fast drying and cooling function;
- high electrical conductivity, i.e. anti-static performance;
- resistance to anti-microbial;
- protection from ultraviolet rays;
- be good air and water permeability; low water absorption of the layer of clothing facing the skin;
- absorb moisture quickly to help keep the skin dry;
- strong, durable and lightweight;
- to feel cool in summer and warmer in winter;
- better level of defense than natural and man-made fibers;
- block UV-A and UV-B rays;
- easy care, smart and functional design.

BSI (the Association of the German Sporting Goods Industry) (2021) has carried out research among its members as to the types of materials used in among German producers of sporting goods in the segments of textile sector and sports and outdoor clothing as well as future trends. The results are of interest as German producers are among the leading in this segment and can point to important future trends. In the light of Environmental and social responsibility, companies are considering the implementation of alternative fibers (biobased, recyclable), but also, they point to certain difficulties in implementation. In the coming 5-10 years, companies expect that durability will remain the most desired performance quality, followed by recyclability.

4. MARKET POTENTIAL AND CHALLENGES
European Textile Market is potent with its estimated at 179,64 billion USD in 2023 and potential to grow to 212,60 billion USD in 2028. The market is expected to expand at a compound average growth rate of 3,43%. The textile industry in Europe is one of major contributors to the economy, employing nearly 6% of the working class in total manufacturing (Mordor Intelligence, 2023). EURATEX – the European Apparel and Textile Confederation systematically publishes data on the European textile and clothing industry. Given the difficulty of encompassing the new niches of textile industry, it is unclear whether data are fully representative in terms of the new producers and new niches across the value chain. EURATEX data show that the number of employed in the European textile and clothing industry has been decreasing steadily from 1,507,234 in 2014 to estimated 1,298,119 in 2021. Sharper declines were observed throughout COVID pandemic, obviously a challenging time due to market disruption.

Productivity, key to producer competitiveness, has increased at the same time. In 2014 value added per employee was at 27 thousand EUR, while in 2021 it was estimated at 34.1 thousand EUR per employee (Figure 1). Certainly, a part of this increase can be explained with gains in efficiency, but also with strong investments in R&D and the related entry into higher value-added niches.
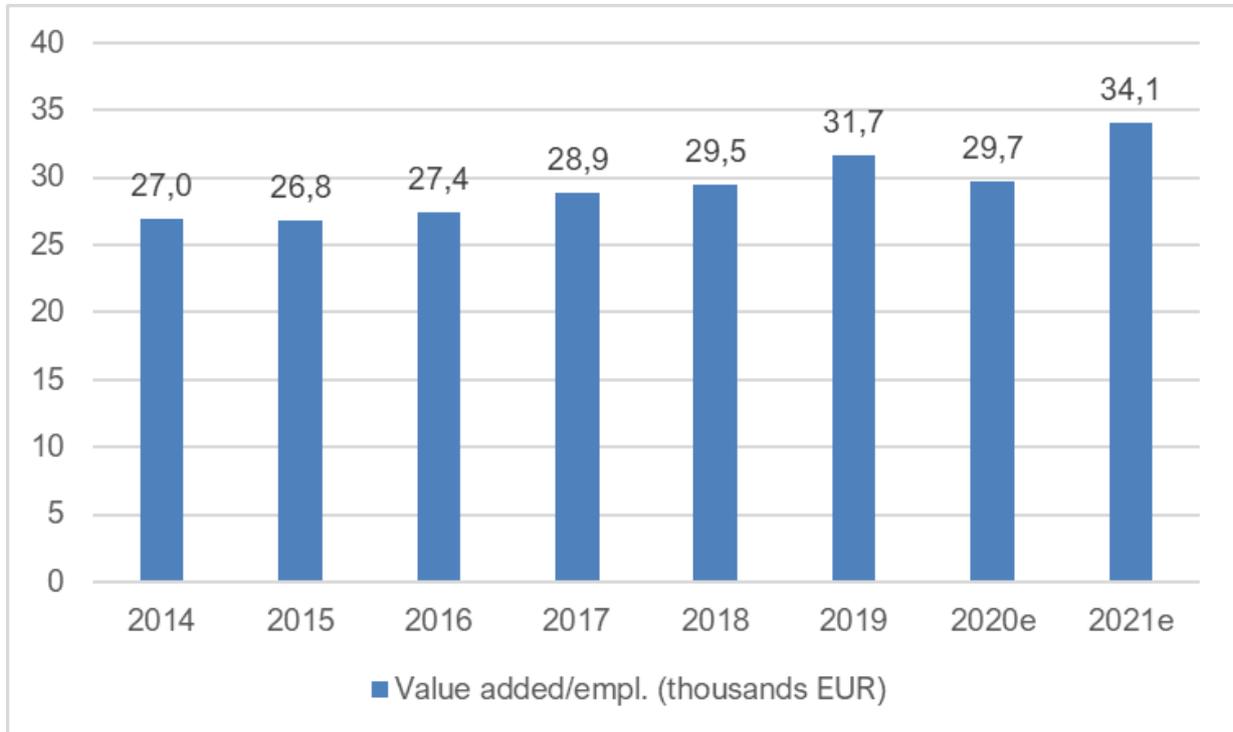
Figure 1: Labour productivity in the Textile and clothing industry during 2014-2021 period in EU 27
(Source: EURATEX based on members' data and EUROSTAT, 2022, page 10)

As pointed out, technical textiles are a success story in Europe. Demand for technical textiles is growing, based on applications in various industries such as healthcare, agriculture, construction, sportswear, automotive, etc. In sportswear design and material technology are the key. EURATEX statistics are illustrative of the good dynamics of the technical textiles: its share has grown from 24% in 2011, gradually to 29% in 2020 (Figure 2). Furthermore, technical textile is immensely potent in terms of export: it is by importance in EU exports third product group[1], right after Womens' clothing and Other garments knitted and woven. Both exports and imports of technical textiles have been growing continuously over the years. Investments in textile manufacturing would create lucrative growth prospects for the Textile market across the region (Mordor Intelligence, 2023).

Figure following on the next page

---

[1] Excluding woven fabrics
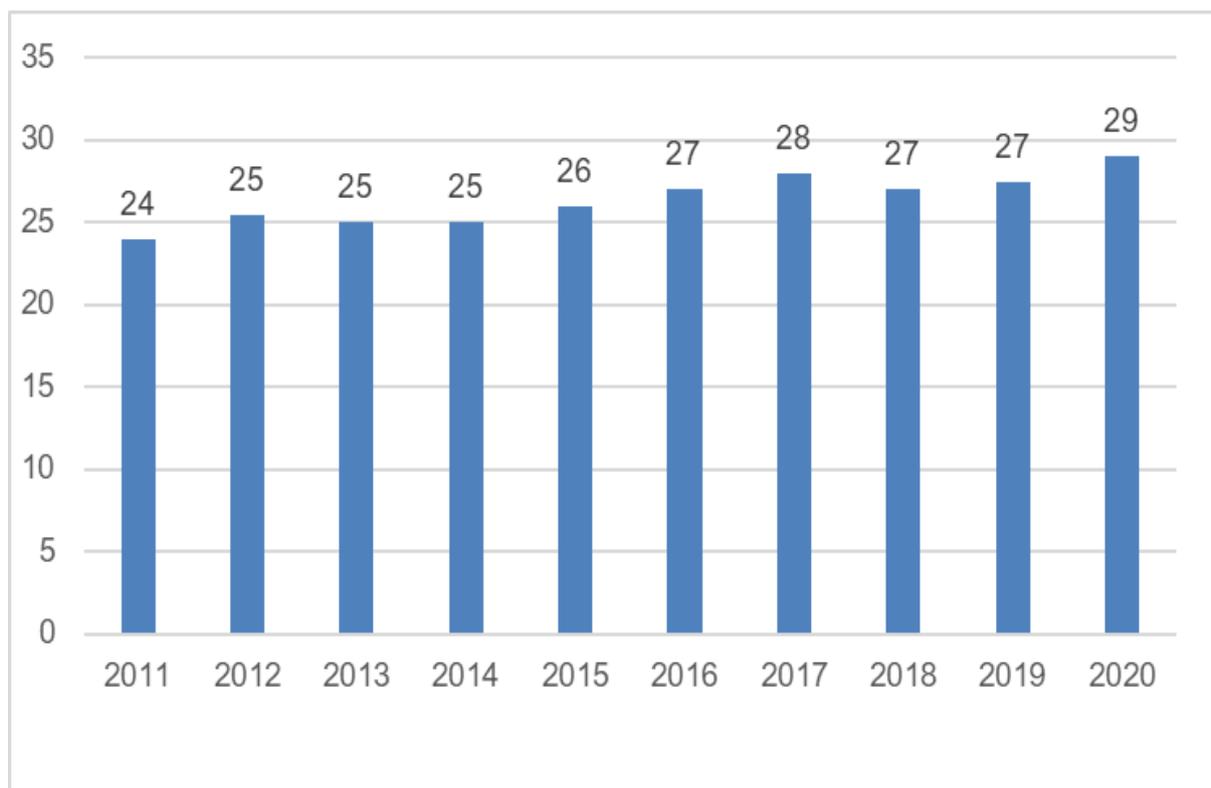
Figure 2: Share of technical textiles in total textile production EU27 (2011-2020 evolution, % based on values)
(Source: EURATEX based on Eurostat, 2022, page 13)

EU27 has strongly rooted its competitive position internationally through strong investment into textile research and innovation. This is evident from the country data on patents and industrial design provided by EURATEX. In the period 2015-2019, EU27 has filed 7,700 patents, followed by the Republic of Korea, USA, China and Japan as prominent competitors. The number of industrial design applications filed by EU27 in 2019 is astounding – 209,000, while USA as runner up has several times less applications filed than EU27.

5. THE TEXTILE ECONOMY' SYNERGIES WITH SPORT– EXAMPLES FROM A SMALL EUROPEAN COUNTRY

The Croatian economy, a small European economy, has a longstanding tradition in textile, apparel and footwear production. Throughout the 1990es onward, this sector's competitiveness has been deteriorating. Today, the presence of many producers' own final products is confined to the local market alone, while at the same time European cooperation across the value chain is present. Slowly, new initiatives are emerging in this sector, propelling competitiveness of innovative entrepreneurs, as well as some foreign investment. Some of these initiatives, including one from a sportsman, are presented in this section. Wingsuits invention is one of inspiring examples where sportspeople have pushed their own boundaries and boundaries of their disciplines. In 1998, the first commercial wingsuit was launched to the market by Robert Pečnik, a Croatian skydiver who turned also to entrepreneurship. In simple words, the product is enabling man to fly with artificial wings. Pečnik established a company, produced and tailored a number of wingsuits. A new discipline in recreation emerged, "proximity flying" as a practice of flying a wingsuit close to the faces and ridges of mountains. Pečnik first design was revolutionary, in particular in the field of safety.

The wingsuit flyer was, thanks to the quick wing release system, provided with the option to quickly and safely detach the wings in case of an emergency. The jumper could thus continue his jump like a regular skydive by allowing complete movement of the arms (Phoenix Fly, 2023).Kelteks is a high-tech manufacturer of innovative technical textiles made of glass, carbon or basalt fibers employing 250 technical experts. Production from three factories based in Croatia is supplied to industrial customers in more than 30 countries. In Sports and leisure, the company's clients use composite reinforcement fabrics. Kelteks' glass, carbon or basalt fibre-reinforced composites are part of professional and amateur sport and leisure equipment. An illustrative example of the use of Kelteks innovative technical textile made of glass fibers is the production of skis, where it is used with the goal of strengthening skis (Kelteks, 2023). Adoption of principles of the Circular economy has inspired RGNC group, a Croatian holding company that grew out of the traditional carpet production established in 1954, to expand to the production of a new material within on of its own company Regeneracija non-wovens. This company deals with the production of technical non-woven textiles from recycled textile materials. Textiles are collected from citizens, as well as industrial textiles and waste which is then transformed into fiber for the production of felt, which is used for finishing works in the construction industry, through the process of fiberization, drawing and needling (Večernji list, 2023).

6. CONCLUSION

In the word of growing demand for technical textiles, the European textile production has found an excellent niche. The application of technical textiles is wide across industries such as healthcare, agriculture, construction, sportswear, automotive. Relevant textile industry reports point to the sub-sector of technical textiles as one of the most dynamic that is accounting for a growing share in the EU Textile production. Sport is also one of the sectors in requirement of technical textiles, with growing demand for these products, especially in the light of emergence of new advanced materials. The traditional definitions of the scope of the textile economy do not apply in today's world. Recycled, non-traditional materials are entering the conventional apparel market, while entirely new technical textiles have entered into the production as well, in particular composites and smart textiles. The future for these materials seems very promising as they provide new or better features in products. This is particularly interesting for the Sports sector where pushing the boundaries of disciplines and the performance of sportspeople is important, while maintaining safety and standards. This market segment is thus highly competitive and the success of the sports textile producers is largely based on R&D and hi-tech production. Europe is ahead in this market segment, but also challenged with the future requirements in the light of environmental responsibility i.e. the issues of sustainability. The requirements for sport textiles products are very demanding. A question that arises also in this context is the one on the scope of the Textile economy and textile production i.e. what is now encompassed in this production and what lies ahead? In a fast-changing world of sophisticated materials, hi-tech production, digitalisation and electronics, we can assume that the future will be highly R&D-intensive for producers of sports textiles and equipment and that cooperation of the textile producers with various other sectors in innovating will be growing in importance. Bringing together software producers, research organisations, electronics companies and various other specialised organisations/business is a route to new materials/products based on contribution of more highly specialised actors in this process, each taking a part in the relevant phase of the innovation process.

LITERATURE:

1. Anandhakumar, J. (2021). Technological developments in sports textiles. Retrieved 2.10.2023. from https://textilevaluechain.in/in-depth-analysis/technological-developments-in-sports-textiles/
2. BSI - Bundesverband der Deutschen Sportartikel-Industrie e.V. (2021). Market Study on Materials Used in the Textile and Sport Industry. Retrieved 4.10.2023. from https://glaukos-project.eu/wp-content/uploads/2021/07/Market-Study-on-Materials-Used-in-the-Textile-and-Sport-Industry-BSI.pdf
3. Dervojeda, K., Mark L., A. Koonstra (2017). Smart textiles for sports, Report on promising KETs-based products nr. 1, European Union. Retrieved 30.10.2023. from https://ati.ec.europa.eu/sites/default/files/202005/analytical_report_nr1_smart_textiles_for_sports_final.pdf
4. EURATEX - Facts & key figures 2022 of the European textile and clothing industry. Retrieved 5.10.2023. from https://euratex.eu/wpcontent/uploads/EURATEX_FactsKey_Figures_2022rev-1.pdf
5. Kelteks, Sport and Leisure. Retrieved 7.11.2023. from https://kelteks.com/category/sports-and-leisure/
6. Mordor Intelligence, Textile industry in Europe, Size & share analysis - growth trends & forecasts (2023-2028). Retrieved 4.10.2023. from https://www.mordorintelligence.com/industry-reports/europe-textile-industry
7. Stegmaier, T., Mavely, J., Schneider, P. (2005). High-performance and high-functional fibres and textiles. In *Textiles in sport* (pp. 89-119). Woodhead publishing. Retrieved 4.10.2023. from https://www.sciencedirect.com/book/9781855739222/textiles-in-sport#book-description
8. Thakkar, H. (2022). Innovations and Developments in Smart Textiles, *Journal of Textile Science and Engineering,* 12 (6), pp 1-5. Retrieved 6.10.2023. from https://www.hilarispublisher.com/open-access/innovations-and-developments-in-smart-textiles.pdf
9. Phoenix Fly, The Origin, https://phoenix-fly.com/about/ (accessed 6 September 2023)
10. Večernji list, *Regeneracija non-wovens: Kako smo uspjeli riješiti tekstilni otpad i koristiti energiju iz održivih izvora (How we managed to solve textile waste and use energy from sustainable sources*), (30 August 2023). Retrieved 7.10.2023. from https://www.vecernji.hr/vijesti/regeneracija-non-wovens-kako-smo-uspjeli-rijesiti-tekstilni-otpad-i-koristiti-energiju-iz-odrzivih-izvora-1705760#
11. Zhang, L. (2015). The application of composite fiber materials in sports equipment. In *2015 International conference on education, management, information and medicine* (pp. 450-453). Atlantis Press. Retrieved 8.10.2023. from https://www.atlantis-press.com/proceedings/emim-15/21459

IS THE FUTURE SMART? THE SMART CITY CHALLENGE FOR LISBON

Liliana Fernandes Mendes
University of Madeira, Funchal, Portugal
2013022@student.uma.pt

Maria Margarida Santos Gomes
University of Madeira, Funchal, Portugal
2056521@student.uma.pt

Rodrigo Goncalves Santos
University of Madeira, Funchal, Portugal
2067922@student.uma.pt

Eduardo Manuel de Almeida Leite
OSEAN, CiTUR, ESTG, University of Madeira, Funchal, Portugal
eduardo.leite@staff.uma.pt

Sandra Raquel Pinto Alves
OSEAN, CEOS.PP; ESTG, Polytechnic Institute of Leiria, Portugal
raquel.alves@ipleiria.pt

Humberto Nuno Rito Ribeiro
GOVCOPP; ESTGA, University of Aveiro, OSEAN, Portugal
hnr@ua.pt

Elvio Camacho
ESTG, University of Madeira, Funchal, Portugal
elvio.camacho@staff.uma.pt

ABSTRACT

A smart city is described as an innovative city that uses communications and information technologies, among other innovative resources, to increase the efficiency of operation and improve urban services and competitiveness, ultimately improving people's quality of life. In this way, it seeks to simultaneously meet the needs of present generations, without sacrificing future generations, with regard to economic, social, environmental and cultural aspects. Literature suggests that smart cities favour economic development, while positively affecting the living conditions of residents and enhancing visitors experience. Following this thread of thought, the main objective of this research is to examine this topic, using the case of the city of Lisbon, as a way of illustrating such views, by the means of the analysis of diverse strategies, which are currently being implemented in the Portuguese capital, while aiming to making the city an intelligent tourist destination, inferring not only the strengths, but also the weaknesses. To achieve this objective, an exploratory-descriptive investigation was carried out based on the analysis of smart city indicators, namely: City in Motion Index Report (CIMI) and the IMD-SUTD Smart City Index Report, for the last 5 years. From the analysis made, it is concluded that for the city of Lisbon to become one of the top smart cities worldwide, as it aims, it has to improve its main weaknesses, which are essentially characterized by the lack of innovation in the field of economic policies (action planning in the areas of affordable housing for its citizens and lower unemployment), as well as the lack of transparency in governance (fighting

corruption), and urban planning and technology (improving road congestion and public transport).
Keywords: *Smart Cities, Smart Tourist Destinations, City of Lisbon, Cities in Motion Index (CIMI), IMD-SUTD Smart City Index*

1. INTRODUCTION

Cities are considered the centers of innovation that drive the world's economic development (Currid, 2006). Currently, the population of cities has been growing steadily, and it is projected that, by 2030, more than 60% of the world's population will live in cities (United Nations, 2014). However, the uncontrolled growth of cities could have adverse effects on the environment, its resources, the efficiency of its operations and the quality of life of its citizens (Annez & Buckley, 2009) and (Degbelo, Bhattacharya, et al., 2016). Therefore, cities will present innumerable sustainability challenges, both in their infrastructures and in the environment (Dodman, 2017; Estevez et al., 2016; Han et al., 2017). In the United Nations 2030 Agenda for Sustainable Development, the 17 Sustainable Development Goals (SDGs) are listed, which challenge society in various ways. Goal number 11 suggests the goals to "make cities and human settlements inclusive, safe, resilient and sustainable". Meeting this goal has been a major challenge for cities, which are a key element of global sustainability policies (Koch & Ahmad, 2018). Some of these challenges are already being addressed through the development of smart technologies (Castán et al., 2016; Degbelo, Granell, et al., 2016; Vinod Kumar & Dahiya, 2017). However, many of these smart solutions are not aligned with sustainability goals, thus generating the concept of smart sustainable cities (Ahvenniemi et al., 2017). The word "intelligent" has become widely known in recent years to describe technological, economic and social developments that rely on sensors, big data and new communication methods such as the Internet of Things (Gretzel et al., 2015). A smart sustainable city is an innovative city that uses information and communication technologies (ICTs) and other means to improve the quality of life, the efficiency of operation and urban services and competitiveness, while ensuring the supply of the needs of present generations. and future with regard to economic, social, environmental and cultural aspects (UNECE, 2017). Smart cities are undoubtedly the engines of global prosperity and innovation, but they involve a large number of prodigious challenges (Bibri, 2021; Yigitcanlar et al., 2020). However, in doing so, smart cities can play a leading role in overcoming these challenges and achieving a new tourism sustainability paradigm that embraces inclusion, accessibility and innovation (Albino et al., 2015; Okafor et al., 2022; Rucci et al., 2018). These authors claim that smart cities, in addition to the adoption of technology, must encompass people and communities, information, infrastructure and social equity. Tourism is a social, cultural and economic phenomenon that involves the movement of people to countries or places outside their usual environment for various purposes (UNWTON, 2015). Given the information-intensive nature of tourism, the concept of "intelligent" is being applied to the phenomena that encompass tourism. The Smart City concept covers a variety of industries, including the tourism industry (Guo et al., 2014a). The theoretical article by Buhalis & Amaranggana (2015) addressed the concept of building Smart Tourist Destinations in the concept of Smart Cities. Bringing intelligence to tourist destinations requires destinations to facilitate the exchange of information between stakeholders, which can improve their decision-making process (Buhalis & Amaranggana, 2015). Ultimately, this will help tourism service providers to provide new and improved services to tourists (Schaffers et al., 2011). Currently, most cities worldwide are making efforts to become smart, with the aim of being able to develop strategies focused on the main dimensions of urban life, such as: economy, human capital, social cohesion, environment, governance, urban planning, international projection, technology and mobility and transport; in order to make cities smarter and offer greater benefits to their residents and new, smarter

experiences to their visitors. In this context, this text approaches in a descriptive and exploratory way the concepts of smart cities, smart tourist destinations, referring to the case of the city of Lisbon. The objective is to deepen and analyze the strategies that are currently being implemented in the city of Lisbon, with a view to being a smart city and tourist destination. For this purpose, an exploratory-descriptive investigation was carried out based on the analysis of smart city indicators: City in Motion Index Report (CIMI) and the IMD-SUTD Smart City Index Report. Previously, a literature review was carried out on the concept of smart city in a broad sense, in order to discuss the results, conclude and suggest aspects to be considered in future investigations.

2. THE SMART CITY CONCEPT

The term "smart city" is becoming more and more popular, however, there is no specific definition for the concept. Studies carried out by Jasrotia & Gangotia (2018) managed to synthesize the definitions generally accepted by most academics, which are listed below in Table 1.

Definition	Source
A city is smart when investments in human and social capital and traditional (transport) and modern (ICT) communication infrastructure drive sustainable economic growth and a high quality of life, with wise management of natural resources, through participatory governance.	Caragliu, A., Del Bo, C., & Nijkamp, P. (2009). Smart Cities in Europe, Series Research Memoranda 0048. VU University Amsterdam, Faculty of Economics, Business Administration and Econometrics.
A city that performs well in a forward-looking manner in economy, people, governance, mobility, environment and life, built on the intelligent combination of endowments and activities of self-decided, independent and aware citizens.	Rudolf, G., Fertner, C., Kramar, H., Kalasek, R., Pichler-Milanovic, N., & Meijers, E. (2007). Smart cities-ranking of european medium-sized cities. Rapport technique, Vienna Centre of Regional Science.
A city that monitors and integrates the condition of all its critical infrastructure, including roads, bridges, tunnels, rails, subways, airports, seaports, communications, water, energy, even large buildings, can better optimize its resources, plan its prevent maintenance activities and monitor security aspects while maximizing services to your citizens.	Hall, R. E., Bowerman, B., Braverman, J., Taylor, J., Todosow, H., & Von Wimmersperg, U. (2000). The vision of a smart city (No. BNL67902; 04042). Brookhaven National Lab., Upton, NY (US).
A city connecting physical infrastructure, IT infrastructure, social infrastructure and business infrastructure to leverage the collective intelligence of the city.	Harrison, C., Eckman, B., Hamilton, R., Hartswick, P., Kalagnanam, J., Paraszczak, J., & Williams, P. (2010). Foundations for Smarter Cities. IBM Journal of Research and Development, 54(4).
A medium-sized, interconnected and sustainable technology community that is comfortable, attractive and secure.	Lazaroiu, G.C., Roscia, M. (2012) Definition methodology for the smart cities model, Energy, Vol.47, No. 1, pp. 326-332.
Being a smart city means using all available technology and resources in an intelligent and coordinated way to develop urban centers that are at the same time integrated, livable and sustainable.	Barrionuevo, J.M., Berrone, P. & Ricart, J. E. (2012) Smart Cities, Sustainable Progress. IESE Insight, Vol. 14, pp. 50-57.
A smart city, according to ICLEI, is a city that is prepared to provide conditions for a healthy and happy community life under the challenging conditions that global, environmental, economic and social trends may bring.	Guan, L. (2012) Smart Steps To A Battery City. Government News, Vol. 32, No. 2, 24-27.
The application of information and communications technology (ICT) with the role of human capital/education, social and relational capital, and environmental issues is often indicated by the notion of a smart city.	Lombardi, P., Giordano, S., Farouh, H., Yousef, W. (2012) Modelling the smart city performance, Innovation: The European Journal of Social Science Research, Vol. 25, No. 2, pp. 137-149.
The use of Smart Computing technologies to make critical infrastructure components and city services that include municipal administration, education, health, public safety, real estate, transportation and public services smarter, interconnected and efficient.	Washburn, D., Sindhu, U., Balaouras, S., Dines, R. A., Hayes, N., & Nelson, L. E. (2009). Helping CIOs understand "smart city" initiatives. Growth, 17(2), 1-17.
Smart cities will leverage the communications and sensor capabilities sewn into city infrastructures to optimize electrical, transportation and other logistical operations that support daily life, thereby improving the quality of life for all.	Chen, T. (2010). Smart grids, smart cities need better networks [Editor's Note]. IEEE Network, 24(2), 2-3.

Table 1: Definitions of "Smart City"
(Source: Adapted from Jasrotia & Gangotia (2018))

Additionally, smart cities are also called Digital Cities, Cyber Ville and Connected Cities, as urban areas where data is collected from devices, assets and citizens in order to manage available resources more efficiently (Paola & Rosenthal-Sabroux, 2014). Smart cities use information and communication technology applications to increase innovation and knowledge, reduce costs, optimally use resources, improve life and work, and facilitate communication between the government and the people who live and work in the city (Šurdonja et al., 2020). According to Habeeb & Weli, 2020, the benefits of developing smart cities are based on four dimensions: environmental sustainability, economic sustainability, social sustainability and governance. Smart city application planning includes eight basic elements: smart education, sustainable smart environment, smart tourism, smart transportation, smart healthcare, smart industry and smart happy life. The basic elements that a smart city has are detailed below in Figure 1. These elements have the ability to solve problems in an intelligent way and provide facilities for its citizens to build a smart society.
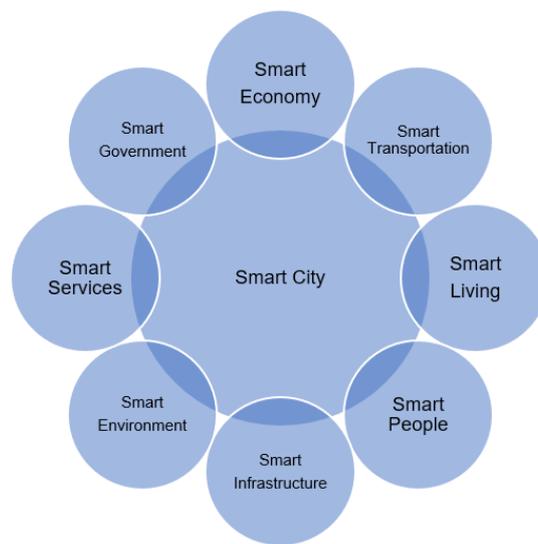
Figure 1: Basic Elements of the Smart City
(Source: Habeeb, N. J., & Weli, S. T. (2020))

Smart infrastructure is represented by the use of smart sensors and network technologies in order to gain access to smart infrastructure, such as energy resources, water networks, streets, buildings, etc. Intelligent transport provides transport networks with real-time technological control systems. Smart environment includes the protection and supervision of natural resources using smart technology, such as waste management systems and environmental pollution control, etc. Smart services provide health, education, tourism and other services using smart technology. Smart governance provides good governance that has the ability to adapt to new changes. The smart people element means investing in creativity and innovation introduced by people themselves. The smart living element provides quality of life for residents and visitors and includes all aspects of life, including tourist attractions. In the smart economy, the use of technology and innovation in business leads to the rise and growth of the economic side of the smart city. The main feature that made these elements described as intelligent is the optimized use of resources and improved performance (Habeeb & Weli, 2020).

3. SMART TOURISM DESTINATIONS

The literature on smart tourism destinations shows that touristic destinations use ICT to improve the development and production of tourism processes (Wang et al., 2013). Buhalis & Amaranggana, (2015) in the article "Smart tourist destinations" specified that to bring

intelligence to the tourist destination it is important to connect the interested parties through a common platform. Guo et al. (2014b), Wang et al. (2013) e Zhu et al. (2014) explained that smart tourist destinations can be defined as destinations that use technologies to co-create value, pleasure and experiences for tourists. Therefore, smart tourism destinations need to constructively engage with local stakeholders to ensure community involvement. Studies by Habeeb & Weli (2020) show that smart tourism is a multidimensional technology consisting of infrastructure and communication systems. The development of smart tourism is based on the collection, exchange and processing of data generated through the components of the smart tourism system. The building blocks include smart experience, smart business and smart destination as shown below in Figure 2. Smart tourist destinations are based on three pillars of information and communication technology, which are the Internet of Things, cloud computing and end user internet. Cloud computing provides three basic services which are the server hardware infrastructure services and computer resources. Online platform services and software services. These services make the work of smart tourist destinations easier.
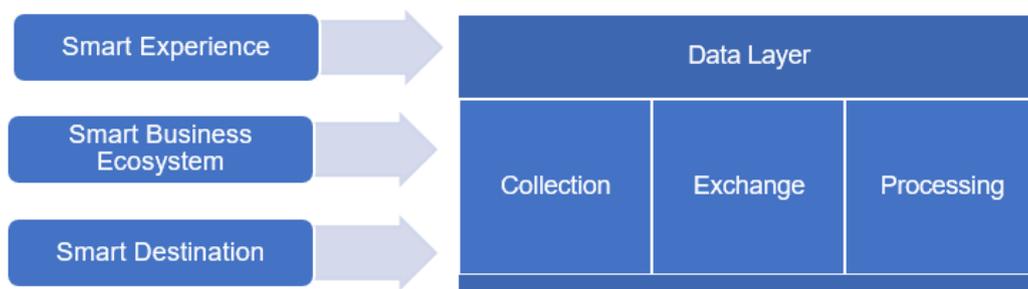
Figure 2: Smart tourism components and data layer
(Source: Adapted from Habeeb & Weli (2020))

In turn, Buhalis (2000) defined that smart tourist destinations as a combination of products and are initiated from smart cities. Huang et al. (2012) mentioned that the real meaning of smart tourist destinations is to focus on and take care of the personal needs of the tourist, combining ICT with casual culture. Ultimately, this increases the quality of service at the destination and improves tourism management at the destination (Buhalis & Amaranggana, 2015) developed a model that shows how smart tourism can contribute to the tourist experience model in Figure 3.
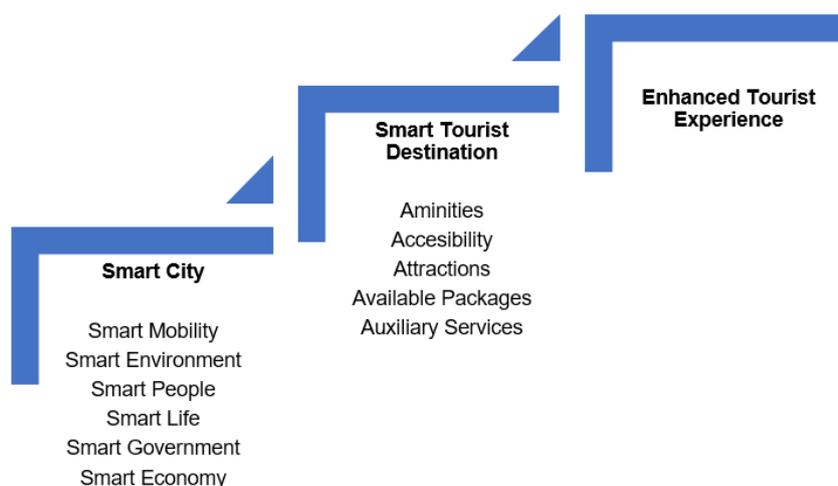
Figure 3: Improving the customization of tourist experience services
(Source: Buhalis, & Amaranggana (2015))

Buhalis & Amaranggana (2015) praise the '6A's of tourist destinations that contribute to success as being: Landmarks (1) Attractions (physical landmarks, culture, parks); (2) Accessibility (transportation services); (3) Amenities (leisure, accommodation, food); (4) Available packages (service packages); (5) Activities; (6) Ancillary services (postal services, banks, hospitals). The tourism industry is an important component and an effective factor in building smart cities. The concept of smart tourism is a product of the concept of smart cities. It is a part of smart life, which is one of the smart city elements. That's why it is playing an important role in smart city strategy. Therefore, smart tourism requires knowledge and awareness of tourism information such as tourism, economy, activities and events, and the participation of tourists to achieve adjustment in order to obtain tourist information at the right time and in the right place through the use of Internet tools (Habeeb & Weli, 2020).

4. SMART CITIES FOR SMART TOURIST DESTINATIONS

A smart city must apply sustainable solutions to overcome difficulties and involves the use of sophisticated technology developed by the private sector (Jasrotia & Gangotia, 2018). Although the main objective of smart cities is to increase the quality of life of its citizens, it is necessary to associate it with tourism, as it is a powerful source for generating profit and prosperity for many cities; In other words, smart tourist destinations are cities or places that take advantage of available technological tools and innovations to enable pleasant and pleasant experiences for tourists and, at the same time, are sources of profit for organizations and destinations (Jasrotia & Gangotia, 2018). According to Dameri et al. (2020) the relationship between smart city and smart tourism can be briefly illustrated in Figure 4.
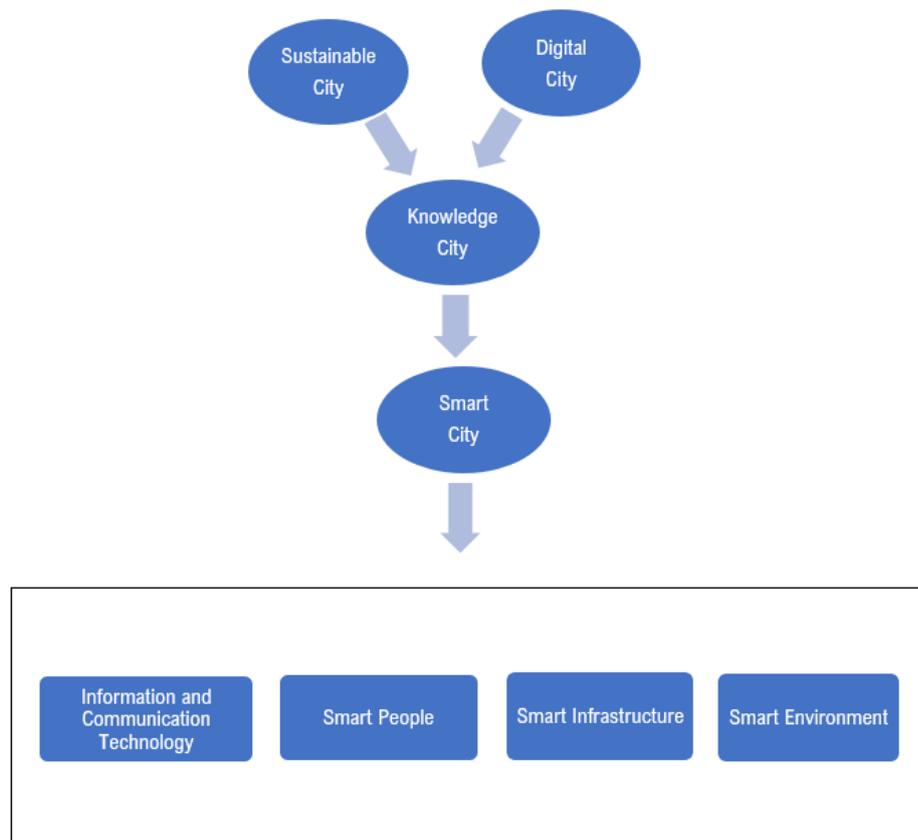
Figure 4: The relationship between a smart city and smart tourism
(Source: Dameri, Benevolo & Garelli (2020))

Finally, providing cultural experiences to tourists helps to create an innovative knowledge city, able to attract tourists and the establishment of intelligent means of transport to support travel and provide facilities for travelers. Furthermore, the availability of green tourism favors the preservation of the urban environment, attracting more tourists. All these factors help in building a smart tourism city (Habeeb & Weli, 2020).

5. LISBON'S SMART CITY

Lisbon's smart city has been built for years, using technology as its main smart city strategy, putting the needs of its citizens first and incorporating this into the city's infrastructure. Indeed, since 2013 the city of Lisbon has started to implement smart community programs, with the aim of generating integrated mobility management systems (smart transport) and energy saving management systems. For example, in order to improve existing technologies and systems, the city of Lisbon managed to include integrated real-time traffic and parking systems, fully integrated route guidance information systems, a traffic management system oriented towards air quality and Integrated payment for mobility services. Lisbon also focuses its strategies so that its citizens can live sustainably, by reducing CO_2 emissions, energy consumption and water consumption. Although Lisbon is working on new innovation, creativity and sustainability strategies to boost and leverage its smart city credentials and try to lead the ranking of smart cities in the world, in reality they still need to focus their efforts on reformulating and planning new strategies to achieve the desired standards and positioning. Currently, there is a large number of researchers who analyze the different dimensions that make up smart cities and evolve them in a worldwide ranking, as is the case of professors Pascual Berrone and Joan Enric Ricart, coordinators of the Center for Globalization and Strategy (IESE Business School), which annually investigate the degree of development and capabilities as Smart Cities of 174 cities in 80 countries worldwide, compiling the smartest cities index. The Cities In Motion Index (CIMI) was created by these experts with the intention of helping the public and governments to recognize the performance of a city based on nine dimensions that offer a comprehensive view of each city based on different fundamental dimensions of urban life. These dimensions created in a single indicator include a) economy, (b) human capital, (c) social cohesion, (d) environment, (e) governance, (f) urban planning, (g) international projection, (h) technology and (i) mobility and transportation. With regard to the particular case of the Intelligent City of Lisbon, researchers Berrone and Ricart determined that from 2016 to 2020 it is in the top 100 of the Cities In Motion Index, floating in the ranking between position 62 and 44 on the list of 174 smartest cities worldwide, as shown in Table 2.

Year	Ranking CIMI	Economy	Human Capital	Social Cohesion	Environment	Governance	Urban Planning	International Projection	Technology	Mobility and Transport
2020	52	96	74	61	11	78	111	26	71	37
2019	44	71	77	70	14	73	76	26	49	76
2018	52	88	66	77	9	74	95	33	41	93
2017	52	71	99	60	44	92	58	22	86	110
2016	62	72	79	71	33	86	106	38	102	44

Table 2: CIMI Index Ranking and Indicators by dimension of the Smart City of Lisbon in recent years
(Source: Adapted from Berrone & Ricart (2017, 2018, 2019, 2020). Cities in Motion Index Report (2017-2020))

Professors Berrone & Ricart (2020) concluded that the City of Lisbon had improved its efforts from 2016 to 2019 to improve all its strategies and thus make It is a smarter and more attractive city both for its residents and for its visitors, but in 2020 it presented a break in its growth in the ranking by 8 positions basically due to the lack of new economic policies, governance, urban planning and technology. The most significant growth that year was focused on the investment and implementation of mobility and transport strategies, as shown in Table 3.

Year	2016 - 2017	2017- 2018	2018 - 2019	2019 - 2020
Ranking CIMI	↑ 10	→ 0	↑ 8	↓ -8
Economy	↑ 1	↓ -17	↑ 17	↓ -25
Human Capital	↓ -20	↑ 33	↓ -11	↑ 3
Social Cohesion	↑ 11	↓ -17	↑ 7	↑ 9
Environment	↓ -11	↑ 35	↓ -5	↑ 3
Governance	↓ -6	↑ 18	↑ 1	↓ -5
Urban Planning	↑ 48	↓ -37	↑ 19	↓ -35
International Projection	↑ 16	↓ -11	↑ 7	→ 0
Technology	↑ 16	↑ 45	↓ -8	↓ -22
Mobility and Transport	↓ -66	↑ 17	↑ 17	↑ 39

Table 3: Evolution of the CIMI Index and Dimension Indicators of the Smart City of Lisbon for 5 years
(Source: Adapted from Berrone & Ricart (2017, 2018, 2019, 2020) Cities in Motion Index Report (2017-2020))

On the other hand, researchers Bris et al. (2021) evaluated the city of Lisbon in their IMD-SUTD Smart City Index, placing it for three consecutive years between position 75 and 95 out of 118 cities in the world. This city's ranking was calculated from the city's performance relative to other cities in the group based on 15 dimensions: a) Affordable housing, b) Road congestion, c) Corruption, d) Public transport, e) Unemployment, f) Health services g) Air pollution, h) Satisfactory employment, i) Security, j) Social mobility, k) Recycling, l) Citizen engagement, m) Green spaces, n) School education and o) Basic amenities. Despite all efforts to implement policies and strategies for the city of Lisbon to become a smart city with a privileged position worldwide, it must focus its new action planning on the areas of affordable housing for its citizens, road congestion, policies to abolish corruption, improvement in public transport and the development of new policies to reduce unemployment, as shown in Table 4. As can be seen, the city of Lisbon in the last year decreased it by 20 positions with respect to the year 2020 (Table 5); such an abrupt decrease could be a consequence of the health crisis faced by the COVID pandemic (Bris et al., 2021).

Table following on the next page

Year	2019	2020	2021
Ranking IMD	76	75	95
Affordable House	79.5%	77.3%	81.9%
Road Congestion	60.7%	55.6%	54.4%
Corruption	49.2%	44.8%	45.9%
Public Transportation	45.9%	41.2%	42.9%
Unemployment	41%	41.2%	41.3%
Health Services	39.3%	40.8%	38.2%
Air Pollution	31.1%	38.3%	37.7%
Satisfactory Employment	26.2%	35.2%	31.7%
Security	21.3%	27.6%	26.3%
Social Mobility	18.9%	17.2%	16.7%
Recycling	16.4%	16%	15.3%
Citizen Engagement	16.4%	15.6%	15.1%
Green Spaces	15.6%	15.6%	12.8%
Schooling	13.9%	14.8%	11.1%
Basic Amenities	6.6%	8%	8.2%

Table 4: Ranking IMD-SUTD Smart City Index Report and Indicators by dimension of the Smart City of Lisbon in the last 3 years
(Source: Adapted from Bris et al. (2019, 2020, 2021).IMD-SUTD Smart City Index Report (2019-2021))

Year	2019- 2020	2020- 2021
Ranking IMD	↑ 1	↓ -20
Affordable House	↓-2.2%	↑ 4.6%
Road Congestion	↓-5.1%	↓-1.2%
Corruption	↓-4.4%	↑ 1,1%
Public Transportation	↓-4.7%	↑ 1,7%
Unemployment	↑ 0.2%	↑ 0.1%
Health Services	↑ 1.5%	↓-2.6%
Air Pollution	↑ 7.2%	↓-0.6%
Satisfactory Employment	↑ 9%	↓-3.5%
Security	↑ 6.3%	↓-1.3%
Social Mobility	↓-1.7%	↓-0.5%
Recycling	↓-0.4%	↓-0.7%
Citizen Engagement	↓-0.8%	↓-0.5%
Green Spaces	→ 0	↓-2.8%
Schooling	↑ 0.9%	↓-3.7%
Basic Amenities	↑ 1.4%	↑ 0.2%

Table 5: Evolution of the IMD-SUTD Smart City Index Report of the Smart City of Lisbon in the last 2 years
(Source: Adapted from Bris et al. (2019, 2020, 2021). IMD-SUTD Smart City Index Report (2019-2021))

6. CONCLUSIONS

Cities are considered the economic development engines of a country, for this reason it is of paramount importance that they develop policies and action plans that make them smarter and thus offer the best living conditions to their residents and memorable experiences to their visitors. Smart cities not only have positive impacts on their residents and visitors, but also have a positive impact on the environment and natural resources, through the reduction of harmful CO_2 emissions and the excessive and unnecessary use of resources such as energy, water and gas, between others. Smart cities use technologies to achieve efficient, sustainable economies to offer security and high-quality living conditions and experiences.

Currently, researchers and academics are focusing their investigations on the evaluation of the smartest cities worldwide through indicators, which assign a classification, ranking, to these cities, based on the perception of their citizens on dimensions such as health, safety, mobility, activities, opportunities (work and school), affordable housing, corruption rates, air pollution, recycling, green spaces and governance, among others. In this context, we focused our analysis on two indicators of smart cities, namely: City in Motion Index Report (CIMI) and the IMD-SUTD Smart City Index Report. From their analysis, we conclude that urban populations are giving more and more importance to dimensions in the area of housing, health and the environment. In fact, worldwide the number one concern is access to affordable housing, followed by access to better air quality and health services, particularly since the pandemic motivated by covid-19. In the specific case of the city of Lisbon, in the last 5 years it has risen to the Top 100 of the smartest cities worldwide, both in CIMI and in the IMD-SUTD Report. Based on the conclusions obtained in the study of the City in Motion Index Report (CIMI) of the year 2020, the citizens of Lisbon considered that the most critical dimensions to be resolved are the following: urban planning, economy, governance and human capital. The points where there are opportunities for improvement are technology and social cohesion. Finally, citizens consider that the most favorable dimensions are the environment, international projection, mobility and transport. With regard to the conclusions obtained in the study of the IMD-SUTD Smart City Index Report for the year 2021, the citizens of Lisbon considered that the most critical dimensions to be resolved, in order of priority, are the following: affordable housing, road congestion, corruption, public transport and unemployment. Regarding the points where you have opportunities to introduce improvements, they are: health services, air pollution, rewarding employment and security. Finally, citizens consider that the most favorable dimensions are social mobility, the process used for recycling, the involvement and commitment of citizens, the number of green spaces, the schooling opportunities of its inhabitants and basic amenities. Despite the fact that the city of Lisbon has a good international projection, it needs to improve its main weaknesses, which are essentially characterized by the lack of new economic policies (action planning in the areas of affordable housing for its citizens and reduction of unemployment), governance (abolishing corruption), urban planning and technology (improving road congestion and public transport); in order to become one of the main smart tourist destinations. Fundamental part of smart cities, smart tourist destinations are perceived as cities when they provide technological tools and innovations to improve the experience, making it memorable for the visitor, maximizing the profit for organizations and destinations. Therefore, it follows from international reports that it is essential that the city of Lisbon implements sustainable government plans and policies based on good urban planning, smart infrastructure, smart business and integrates the role of information and communication technologies (ICT) and inherent technologies to the concepts of smart cities in their daily lives. Indeed, only then will they be considered, both by locals and by tourists, as an attractive and interesting destination, respectively to live and visit. With this paper, an attempt was made to systematize the aspects in which the city of Lisbon presents its critical success factors, as well as its weaknesses, thus allowing it to constitute an instrument for the diagnosis and reassessment of existing policies, with a view to establishing new ones. strategies that boost its capacity for continuous improvement. Due to limitations of time and economic resources, this study is based on secondary data obtained from investigations by companies dedicated to evaluating smart cities, which is why it constitutes a limitation. Thus, it would be very useful for future investigations to carry out more holistic work on the perceptions, both of residents and visitors, with regard to the most critical points mentioned in this paper, contributing to the knowledge of best practices in smart cities.

LITERATURE:

1. Ahvenniemi, H., Huovila, A., Pinto-Seppä, I., & Airaksinen, M. (2017). What are the differences between sustainable and smart cities? Cities, 60, 234–245. https://doi.org/10.1016/J.CITIES.2016.09.009
2. Albino, V., Berardi, U., & Dangelico, R. M. (2015). Smart Cities: Definitions, Dimensions, Performance, and Initiatives. Undefined, 22(1), 3–21. https://doi.org/10.1080/10630732.2014.942092
3. Annez, P., & Buckley, R. (2009). Urbanization and Growth: Setting the Context.
4. Berrone, P., & Ricart, J. (2017). Cities in Motion Index (CIMI) 2017. IESE Business School. https://blog.iese.edu/cities-challenges-and-management/2017/05/25/164/
5. Berrone, P., & Ricart, J. (2018). Cities in Motion Index (CIMI) 2018. IESE Bussines School. https://blog.iese.edu/cities-challenges-and-management/2018/05/23/iese-cities-in-motion-index-2018/
6. Berrone, P., & Ricart, J. (2019). Cities in Motion Index (CIMI) 2019. IESE Business School. https://blog.iese.edu/cities-challenges-and-management/2019/05/10/iese-cities-in-motion-index-2019/
7. Berrone, P., & Ricart, J. (2020). Cities in Motion Index (CIMI) 2020. IESE Business School. https://www.forbes.com/sites/iese/2020/07/08/these-are-the-10-smartest-cities-in-the-world-for-2020/?sh=67a1685012af
8. Bibri, S. E. (2021). Data-Driven Smart Eco-Cities of the Future: An Empirically Informed Integrated Model for Strategic Sustainable Urban Development. Https://Doi.Org/10.1080/02604027.2021.1969877. https://doi.org/10.1080/02604027.2021.1969877
9. Bris, A., Koom Hean, C., & Lanvin, B. (2019). Smart City Index 2019. IMD. https://www.imd.org/research-knowledge/reports/imd-smart-city-index-2019/
10. Bris, A., Koom Hean, C., & Lanvin, B. (2020). Smart City Index 2020. IMD. https://imd.cld.bz/Smart-City-Index-2020/64/
11. Bris, A., Koom Hean, C., & Lanvin, B. (2021). Smart City Index 2021. IMD. https://imd.cld.bz/Smart-City-Index-2021
12. Buhalis, D. (2000). Marketing the competitive destination of the future. Tourism Management, 21(1), 97–116. https://doi.org/10.1016/S0261-5177(99)00095-3
13. Buhalis, D., & Amaranggana, A. (2015). Smart Tourism Destinations Enhancing Tourism Experience through Personalisation of Services. Information and Communication Technologies in Tourism, 735–747. https://www.academia.edu/10985885/Buhalis_D_Amaranggana_A_2015_Smart_Tourism_Destinations_Enhancing_Tourism_Experience_through_Personalisation_of_Services_in_Tussyadiah_I_and_Inversini_A_eds_ENTER_2015_Proceedings_Lugano_Springer_Verlag_Wien_ISBN_9783319143422_pp_377_390

14. Castán, J. A., Martínez, S. I., Menchaca, J. L., Berrones, M. G. T., Cobos, J. P., & Rocha, E. C. (2016). Improving Vehicular Mobility in Urban Traffic Using Ubiquitous Computing. Journal of Computer and Communications, 04(10), 57–62. https://doi.org/10.4236/JCC.2016.410006

15. Currid, E. (2006). New York as a Global Creative Hub: A Competitive Analysis of Four Theories on World Cities. Http://Dx.Doi.Org/10.1177/0891242406292708, 20(4), 330–350. https://doi.org/10.1177/0891242406292708

16. Dameri, R., Benevolo, C., & Garelli, R. (2020). Smart city strategies for sustainable tourism: Definitions and taxonomy. Proceedings of the International Conference on Tourism Research, 27–34. https://doi.org/10.34190/IRT.20.096

17. Degbelo, A., Bhattacharya, D., Granell, C., & Trilles, S. (2016). Toolkits for Smarter Cities: A Brief Assessment. Undefined, 10070 LNCS, 431–436. https://doi.org/10.1007/978-3-319-48799-1_47

18. Degbelo, A., Granell, C., Trilles, S., Bhattacharya, D., Casteleyn, S., & Kray, C. (2016). Opening up Smart Cities: Citizen-Centric Challenges and Opportunities from GIScience. ISPRS International Journal of Geo-Information, 5(2), 16. https://doi.org/10.3390/IJGI5020016

19. Dodman, D. (2017). Environment and Urbanization. International Encyclopedia of Geography: People, the Earth, Environment and Technology, 1–9. https://doi.org/10.1002/9781118786352.WBIEG0623

20. Estevez, E., Lopes, N., & Janowski, T. (2016). Smart Sustainable Cities: Reconnaissance Study. http://egov.unu.edu

21. Gretzel, U., Sigala, M., Xiang, Z., & Koo, C. (2015). Smart tourism: foundations and developments. Undefined, 25(3), 179–188. https://doi.org/10.1007/S12525-015-0196-8

22. Guo, Y., Liu, H., & Chai, Y. (2014a). The embedding convergence of smart cities and tourism internet of things in China: An advance perspective. Undefined.

23. Guo, Y., Liu, H., & Chai, Y. (2014b). The embedding convergence of smart cities and tourism internet of things in China: An advance perspective. Undefined.

24. Habeeb, N. J., & Weli, S. T. (2020). Relationship of Smart Cities and Smart Tourism: An Overview. HighTech and Innovation Journal, 1(4), 194–202. https://doi.org/10.28991/HIJ-2020-01-04-07

25. Han, J., Meng, X., Zhou, X., Yi, B., Liu, M., & Xiang, W. N. (2017). A long-term analysis of urbanization process, landscape change, and carbon sources and sinks: A case study in China's Yangtze River Delta region. Journal of Cleaner Production, 141, 1040–1050. https://doi.org/10.1016/J.JCLEPRO.2016.09.177

26. Huang, X. kai, Yuan, J. zheng, & Shi, M. yu. (2012). Condition and Key Issues Analysis on the Smarter Tourism Construction in China. Communications in Computer and Information Science, 346, 444–450. https://doi.org/10.1007/978-3-642-35286-7_56/COVER

27. Jasrotia, A., & Gangotia, A. (2018). SMART CITIES TO SMART TOURISM DESTINATIONS: A REVIEW PAPER. Journal of Tourism Intelligence and Smartness, 1(1), 47–56. https://dergipark.org.tr/en/pub/jtis/issue/39024/446754

28. Koch, F., & Ahmad, S. (2018). How to Measure Progress Towards an Inclusive, Safe, Resilient and Sustainable City? Reflections on Applying the Indicators of Sustainable Development Goal 11 in Germany and India. 77–90. https://doi.org/10.1007/978-3-319-59324-1_5

29. Okafor, C. C., Aigbavboa, C., & Thwala, W. D. (2022). A bibliometric evaluation and critical review of the smart city concept – making a case for social equity. Journal of Science and Technology Policy Management, ahead-of-print(ahead-of-print). https://doi.org/10.1108/JSTPM-06-2020-0098/FULL/XML

30. Paola, D. R., & Rosenthal-Sabroux, C. (2014). Smart City How to Create Public and Economic Value with High Technology in Urban Space. Smart City How to Create Public and Economic Value with High Technology in Urban Space, VIII, 238. http://www.springer.com/series/10440
31. Rucci, A. C., Porto, N., & Ciaschi, M. (2018). Tourism accessibility competitiveness. A regional approach for Latin American countries. Undefined.
32. Schaffers, H., Komninos, N., Pallot, M., Trousse, B., Nilsson, M., & Oliveira, A. (2011). Smart cities and the future internet: Towards cooperation frameworks for open innovation. Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), 6656, 431–446. https://doi.org/10.1007/978-3-642-20898-0_31/COVER
33. Šurdonja, S., Giuffrè, T., & Deluka-Tibljaš, A. (2020). Smart mobility solutions – necessary precondition for a well-functioning smart city. Undefined, 45, 604–611. https://doi.org/10.1016/J.TRPRO.2020.03.051
34. UNECE. (2017). Collection Methodology for Key Performance Indicators for Smart Sustainable Cities | UNECE. https://unece.org/housing-and-land-management/publications/collection-methodology-key-performance-indicators-smart
35. United Nations. (2014). World urbanization prospects: The 2014 Revision, Highlights (ST/ESA/SER.A/352). United Nations. https://doi.org/10.4054/DemRes.2005.12.9.
36. UNWTON. (2015). Glossary of tourism terms. https://www.unwto.org/glossary-tourism-terms
37. Vinod Kumar, T. M., & Dahiya, B. (2017). Smart Economy in Smart Cities. 3–76. https://doi.org/10.1007/978-981-10-1610-3_1
38. Wang, D., Li, X., & Li, Y. (2013). China's "smart tourism destination" initiative: A taste of the service-dominant logic. Undefined, 2(2), 59–61. https://doi.org/10.1016/J.JDMM.2013.05.004
39. Yigitcanlar, T., Desouza, K. C., Butler, L., & Roozkhosh, F. (2020). Contributions and Risks of Artificial Intelligence (AI) in Building Smarter Cities: Insights from a Systematic Review of the Literature. Energies 2020, Vol. 13, Page 1473, 13(6), 1473. https://doi.org/10.3390/EN13061473
40. Zhu, W., Zhang, L., & Li, N. (2014). Challenges, Function Changing of Government and Enterprises in Chinese Smart Tourism.

THE COVID 19 PANDEMIC AND SOCIO-EMOTIONAL COMPETENCES IN CONSUMERS OF PSYCHOACTIVE SUBSTANCES

Ana Luisa Serafim
University of Salamanca, Spain
anaserafim87@gmail.com

Claudia Miranda Veloso
GOVCOPP; UNIAG; ESTGA; Aveiro University, Polytechnic Institute of Bragança, Portugal
claudiiamiranda@ipb.pt;cmv@ua.pt

Sara da Veiga Fernandes
University of Salamanca, Spain
katharina.dvf@gmail.com

Jesus Rivera-Navarro
Department of Social Sciences, University of Salamanca, Salamanca, Spain
jrivera@usal.es

ABSTRACT

Nowadays people increasingly deal with stress in their day-to-day and the way they adapt involves intrapersonal (emotional relationship), interpersonal and environmental factors, when this adaptation develops in a negative way it can lead to the consumption of psychoactive substances, hence the relevance of the study's theme. The objective of this investigation is to know the profile of emotional competence in consumers of psychoactive substances, making use of an anonymous and confidential questionnaire applied to consumers of psychoactive substances, divided into two parts: the first part, considering variables of sociodemographic and professional character and one second part consisting of the "Veiga Scale of Emotional Competence" (EVCE) (Veiga-Branco, 2005, 2011, 2015, 2016, 2017, 2018). The sample is made up of 78 consumers of psychotic substances, of whom 48 were female, most of the respondents are over 30 years old, are single, have no children, have higher education, live with the family and have a social life. The results obtained reveal that there is no influence of sociodemographic variables nor on the characteristics of substance use on the profile of emotional competence or on the dimensions of the same of consumers of psychoactive substances.
Keywords: Emotional competence, consumers, psychoactive substances, dependencies, emotions

1. INTRODUCTION

According to Veiga-Branco (2019), Emotional Competence is estimated after having had several behaviors that recognize each behavior and only exists when the achievement reaches an intended level, this achievement being emotional, that is, it is the knowledge that is studied and is used about emotion. Torres, Chagas and Ribeiro (2008) state that the use of substances is a way of exchanging emotional need, which is not correctly manifested at the "cognitive and emotional level". Formigoni, Kessler, Pechansky, Baldisserotto and Abrahão (2017) also add that substance dependence can be understood as brain modifications incited by the action of continued use of a drug, with these variations being persuaded by "social, cultural, educational, behavioral and genetic". The consumption of psychoactive substances by adolescents in Portugal is a current and disturbing reality.

The study of "attitudes" as a factor that relates to conduct is relevant for understanding the contexts that lead to consumption, and providing precautionary clues based on a "scientific basis" and actions focused on demarcated groups of subjects, in individual contexts (Rocha, 2011). Santos (2009) states that a broader knowledge of emotions and the phenomenon of consumption is relevant, realizing the possibility of the relationship between the two, a greater understanding of the way they influence each other should be promoted in order to promote a more adapted intervention in drug addiction . Gonçalves (2008) also adds that drug addiction influences the recognition of emotions, due to the experience that the subject has of them, however, we will not always be able to draw any safe conclusion regarding this influence, given the instability of the consumption process. The purpose of this work is to study the emotional competence profile of consumers of psychoactive substances, using a random and non-probabilistic sample and a convenience sample. This investigation involves reflecting on the way in which sociodemographic and consumer variables influence emotional competence in general, as well as the different dimensions that comprise it, empathy, emotion management, self-motivation, relationship management and self-awareness in consumers of psychoactive substances. The study's data collection instrument is a confidential and anonymous questionnaire that is distributed in two parts: the first part, composed of questions produced by the researcher, covering sociodemographic and professional variables (Age; Sex; Educational Qualifications; Civil Status; Affiliation; Profession; Social interactions; Age of initiation of consumption; Initial substance of consumption; Regular substance of consumption; Initial context of consumption; Satisfaction with consumption; Subjective feeling of satisfaction; Period without consumption (abstinence); Duration of abstinence; Reason for which he abstained; Most frequent emotions/feelings; Justification of the choice of these emotions/feelings), the second part formed by a scale related to emotional competence ("Veiga Scale of Emotional Competence" (EVCE) (1999)) that integrates 86 items to instrument the five dimensions of emotional competence. This work is divided into six parts, introduction, theoretical construct, methodology, discussion and to conclude the conclusions of the study.

2. THEORETICAL FOUNDATION
2.1. Socio-emotional Competences

Emotional competence does not develop during childhood, nor is it something inherent to the subject, it develops throughout life through lived experiences (Goleman, 1995). Veiga-Branco (2004) also adds that the concept of emotional competence appears similar to that of emotional intelligence, however, each of the concepts has different points of view on the skills referred to with emotion, different methods of development and use and also different tools for collecting data and studying results, individuals with high emotional competence also have an understanding of what they "can or cannot control". As Bisquerra and Pérez (2007) indicate, emotional competence is the combination of knowledge, skills, competencies and actions to understand, manifest and adequately regulate "emotional phenomena", and which comprises, among other dimensions, "emotional awareness ", regulating impulsivity, working in groups, being able to take care of oneself and others. Harmonizes evolution in life situations such as learning methods, interpersonal relationships, problem solving, adaptation to the context. According to Duarte (2019), we can refer to three distinct models of emotional intelligence, the model proposed by Mayer and Salovey (1997) is based on the ability to reflect on four interconnected areas: "the perception of emotions, the control of emotions for personal growth, the use of emotion as a facilitator and the understanding of emotions". The model presented by Bar-On (1997) is composed of 10 factorial constituents, namely: "self-respect, emotional self-awareness, assertiveness, empathy, interpersonal relationships, stress tolerance, impulse control, reality testing, flexibility and resolution of problems."

Goleman's model that divides the concept of emotional intelligence into five distinct dimensions: Self-awareness, Emotion Management, Self-motivation, Empathy and Management of relationships in groups. Self-awareness "is the primacy of the emotional quotient and underlies most other emotional dimensions". Empathy is the ability to recognize emotions in others, but people are not educated to express emotions through oral communication but through gestures and conduct (Veiga-Branco, 2004). Self-motivation is seen as the ability to motivate ourselves, that is, to use our own tools to achieve our goals and make decisions. Emotion management is the ability to deal with emotions appropriately and "arises from self-knowledge" and manifests itself in the way the subject calms himself, "managing negative emotions". The management of group relationships is based on the ability to manage the emotions of others Goleman (1999).

2.2. Consumption of Psychoactive Substances

Santos (2009) states that a broader knowledge of emotions and the phenomenon of consumption is relevant, realizing the possibility of the relationship between the two, a greater understanding of the way they influence each other should be promoted in order to promote a more adapted intervention in drug addiction . Gonçalves (2008) also adds that drug addiction influences the recognition of emotions, due to the experience that the subject has of them, however, we will not always be able to draw any safe conclusion regarding this influence, given the instability of the consumption process. The increasing consumption of psychoactive substances in recent years, in line with the increase in associated effects, results in concern worldwide, meaning that the concept of legal and illicit drugs differs from the legislation applied in each country (Sousa, 2014). Therefore, we can classify psychoactive substances, based on the effect they have on individuals, namely psychoanalytic or stimulant substances, disturbing or psychodyslectic substances and depressants or psycholeptic substances (Loureiro, 2012). Regarding the former, the activation of brain function is observed, increasing the individual's state of alert, such as amphetamines, cocaine, crack and caffeine, on the other hand, depressants decrease brain function, causing loss of concentration, drowsiness and relaxation. , namely tranquilizers, alcohol, opiates, barbiturates and benzodiazepines. Finally, the disturbing substances that alter the notion of reality and the individual's cognitive, behavioral, physiological and emotional functioning, such as marijuana, hashish, ecstasy, mushrooms and LSD (Biça, 2014 & Loureiro, 2012 & Sousa, 2014). Dependence can be translated as the incorrect use of psychoactive substances, linked to the difficulty of stopping consumption, simultaneously with the existence of permissiveness, compulsive craving and manifestations of deprivation, thus existing different degrees from mild to intense dependence and leading to disorders significant (Batista, Almeida, Fadel & Bressan, 2008). Excessive consumption of psychoactive substances can lead to intoxication, manifesting itself mainly in the form of behavioral disorders (acute effects), or can seriously harm the body (chronic effects). The effects differ depending on the type of drug consumed, the quantity, the route of administration, previous consumption, predisposition, consumption environment, among others (IDT, 2006). As Miguel (1997) indicates, the subject dependent on psychoactive substances reveals himself to be focused on consumption and does not demonstrate skills to maintain internal well-being and cope with day-to-day routines or interpersonal relationships. According to Ferreira (2019), when the subject regularly consumes the same amount of substance, the body adjusts to the effects it incites, leaving the subject unable to feel the pleasure he or she experienced first, thus having the need to increase the amount of substance consumed. The study carried out by Marques-Teixeira (2001) indicates that consumers have their own "psychophysiological and emotional" profile, which distinguishes them from non-consumers and presents three factors in terms of conclusion, that drug addicts exhibit distinct "emotional profiles" from those who do not. drug addicts due to a triggering of emotions within the scope of "self-blame"; These reporters appear only when the

"emotionogenic" incentive is special to the individual and that particular emotion exhibits a particular degree of mediation between the "environmental context" and the "neuro-cerebral structures". According to Galduroz, Noto and Carlini (1997), drug consumption can be classified as follows, "lifetime use" (when the subject has tried/consumed psychoactive substances at least once in their life), "monthly or recent use " (when the subject consumed psychoactive substances in the last thirty days), "use in the year" (when the subject consumed psychoactive substances at least once in the last twelve months), "frequent use" (when the subject consumed psychoactive substances six or more times in the last thirty days), "risky use" (when the subject occasionally or repeatedly consumes psychoactive substances, but the effects are not yet significant) and "harmful use" (a pattern of consumption that is harmful to health). Santos (2009) states that a broader knowledge of emotions and the phenomenon of consumption is relevant, realizing the possibility of the relationship between the two, a greater understanding of the way they influence each other should be promoted in order to promote a more adapted intervention in drug addiction .

3. METHODOLOGY

This research deals with the socio-emotional skills of consumers of psychoactive substances, and aims to understand some of the determinants that influence consumption and how they perceive these determinants. The main objective of the study is: To understand the profile of Emotional Competence in Consumers of Psychoactive Substances. The specific objectives are: To understand the influence of sociodemographic variables on the profile of each of the dimensions of Emotional Competence of Consumers of Psychoactive Substances; Know the relationship between the profile of each of the dimensions of Emotional Competence and the subjective feeling of satisfaction due to the consumption of psychoactive substances; Analyze the relationship between the consumption of psychoactive substances in relation to the Emotional Competence profile in general of consumers of psychoactive substances; Analyze the relationship between the consumption of psychoactive substances in relation to each particular dimension of the Emotional Competence of consumers of psychoactive substances.

To respond to the main objective, the following research questions (IQ) were established:
- **Question 1:** Is there an influence of sociodemographic variables on the Emotional Competence of Consumers of Psychoactive Substances?
- **Question 2:** Is there a relationship between the profile of each of the dimensions of Emotional Competence and the subjective feeling of satisfaction due to the consumption of psychoactive substances?
- **Question 3:** Is there a relationship between the consumption of psychoactive substances and the general Emotional Competence profile of consumers of psychoactive substances?
- **Question 4:** Is there a relationship between the consumption of psychoactive substances in relation to each particular dimension of the Emotional Competence of consumers of psychoactive substances?

Statistical analysis of data relating to the study developed was carried out using the computer program – SPSS for Windows, version 23.0. Initially, with the aim of describing and characterizing the sample under study, a descriptive analysis of the data was prepared depending on the nature of the variables under study. Statistical measures were used: absolute frequencies, relative frequencies, mean, standard deviation, bar graphs and diagrams of extremes and quartiles in order to describe the characteristics: socio-demographic; professionals and the dimensions and emotional competence of individuals. To analyze the internal consistency of the dimensions of emotional competence used, Cronbach's alpha coefficient was used.

For Cronbach's alpha values between 0.7 and 0.8 the internal consistency is reasonable, values between 0.8 and 0.9 the consistency is good and values above 0.9 the consistency is very good (Pestana, 2014). Subsequently, to carry out the statistical inference necessary to investigate the proposed hypotheses, parametric tests were applied whenever possible. If the assumptions were not verified, non-parametric tests were used. Therefore, to compare the average values of two independent samples, the recommended parametric test is the t test, which assumes large samples (minimum 30 elements) or small samples from normal populations. To test normality in samples with less than 30 elements, the Kolmogorov Smirnov test was used. If it is possible to apply the t-test, it is still necessary to verify the equality of variances between samples, using the Levenne test, which allows determining whether the samples come from the same population (when the condition of equality of variances is validated). In the event that it was impossible to apply the t test, the non-parametric Mann-Whitney test was used. To compare three or more independent samples, the Anova parametric test was used, whose assumptions are: the distribution of errors normally distributed with zero mean and constant variance (homogeneity of variances) and random. If it is not possible to apply Anova, the non-parametric Kruskal-Wallis test is used, which allows three or more independent samples to be compared. In order to study the association between variables, crossing tables and the application of the Chi-square test of independence were used, whenever the assumptions of this test were not met (large samples and at least 80% of the cells with frequency expected value greater than or equal to five) Fisher's exact test was used. A questionnaire divided into two parts was used, the first with sociodemographic, consumption and discontinuation characterization and the second with the "Veiga Emotional Competence Scale" (EVCE) (Veiga-Branco, 2005, 2011, 2015, 2016 , 2017, 2018) according to Veiga-Branco (2018) is composed of 86 items/statements, to operationalize the five dimensions of emotional competence: Self-awareness - 20 items; Emotion Management - 19 items; Self-motivation - 21 items; Empathy - 12 items; Management of Social Emotions - 14 items. These items are constituted as ordinal variables, measured by a Lickert-type temporal frequency scale (1 to 7, with 1 - "never", 2 - "rarely", 3 - "rarely", 4- "As a rule", 5 - "frequent", 6 - "very frequent" and 7 - "always"), where participants can choose how often they experience the situations described. Psychometrics: From the point of view of descriptive statistical analysis, the ECVS / EVCE cutoff point is 4. To measure the EC profile, we consider three levels of EC: the low level between 1 and 3.49; the moderate level between 3.50 and 5.45 and the high level between 5.46 and 7. Among the total of 86 EVCE items, there are some that must be assumed inverted. From the point of view of factor analysis: items related to each dimension of Emotional Competence must be submitted to Main Component Analysis with varimax rotation, to extract factors that add a certain profile in each dimension of Emotional Competence (Veiga-Branco, 2005, 2011, 2015, 2016, 2017, 2018).

3.1. Sample and Variables

The population is all consumers of psychoactive substances. Part of the sample is probabilistic random (obtained through social networks) and the rest is for convenience (obtained by going to places of consumption in the city) with the inclusion criteria being the consumption of psychoactive substances and the spontaneous approval of the data collection instrument. data and acceptance of responses to a semi-structured interview.

Figure following on the next page
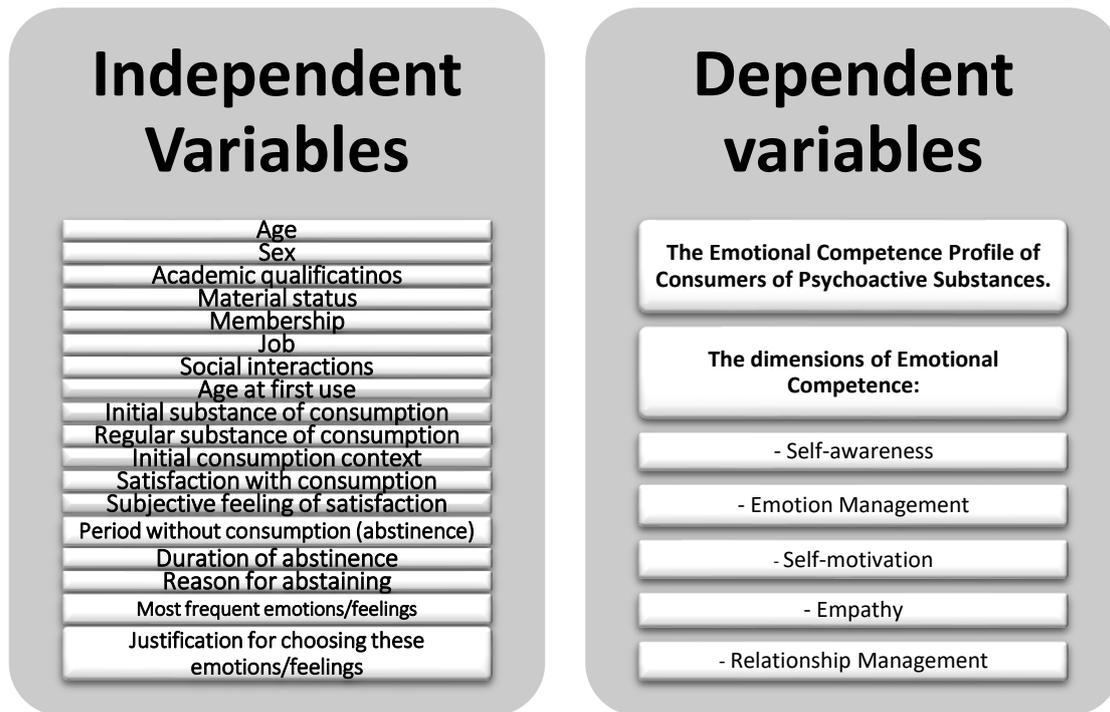
Figure 1: Variables under study
(Source: Prepared by the authors)

4. PRESENTATION AND ANALYSIS OF RESULTS

4.1. Sociodemographic Characterization

78 individuals were interviewed, of which 61.5% (48) were female and 38.5% (30) male. As for age, it appears that it varied between a minimum of 19 years and a maximum of 62 years, with an average of 32.32 years and a standard deviation of 8.26 years, which is why it was found that 44.9% (35) of Individuals were up to 40 years old and 55.1% (43) were over 43 years old. It is observed that the majority of respondents, 62.8% (49) were single and 70.5% (55) did not have children. Regarding educational qualifications, it was observed that 44.9% (35) had a bachelor's degree and 19.2% (15) a master's or doctorate. The majority of respondents, 57.5% (45) lived at home with their family, 16.7% (13) stated that they lived alone in their own home and 19.2% (15) did not answer this question. As for social interaction, the majority, 73.1% (57) stated that they had a social life independent of consumption and 17.9% (14) stated that it was limited to the group of friends.

4.2. Characterization of Substance Consumption

It is observed that the majority, 53.6% (42), made their first consumption before the age of 16. Regarding the substance of initial consumption, it is observed that 43.6% (34) opted for cannabis; 41.0% (32) for alcohol and 14.1% (11) for tobacco. Currently 25.6% (20) consume alcohol; 35.9% (28) cannabis; 11.5% (9) consume tobacco; 6.4% (5) use cocaine and 20.5% (16) do not currently use any substance. As an initial consumption context, 33.3% (26) reported that it was with friends; 44.9% (35) stated that it was at parties/gatherings; 7.7% (6) said it was to try it out and 14.1% (11) said it was for the sake of well-being and anxiety control. Regarding the degree of satisfaction when consuming the majority, 64.1% (50), feel at least satisfied. In terms of subjective feeling of satisfaction, 38.5% (30) referred to social disinhibition, 17.9% (14) focused on fun and 43.6% (34) on relaxation.

4.2.1. Characterization of Substance Consumption Discontinuation

Regarding the discontinuation of substance consumption, it was observed that the majority, 89.7% (70) stated that they had already been without consumption. Of these, 57.1% (40) had been without consumption for less than a year and 42.9% (30) for more than a year. Regarding the reason for stopping consumption, of the 70 respondents who had already stopped, 31.4% (22) stated that they consume sporadically/without dependence; 17.1% (12) did so for health reasons; 7.1% (5) for family reasons; 8.6% (6) for professional and monetary reasons and 35.7% (25) voluntarily, as shown in table 3. Regarding the characterization of the subjective feeling of satisfaction, we can mention some open answers that are also relevant, such as: "Feeling that my state of mind was elevated, I was relaxed but at the same time I couldn't enjoy the high because I started to think how harmful it was. the health"; "Increasing skills"; "Pleasure. Intrusive state of pleasure compared to sex, in smoked cocaine, via ganza the sensation is longer lasting and less intense and is more inspiring, hashish consumption is safer because it is less addictive than cocaine. A person who only smokes hashish controls their consumption in financial terms, not with cocaine"; "Hangover escape, inner peace" and "Cognitive stimulation and psychological calming". Figure 2 shows the most frequent emotions/feelings during a lifetime of consumption. Joy stands out, mentioned by 78.21% (61) of respondents and Interest by 29.49% (23) of respondents. The most relevant justifications for Joy were: "Because it develops my imagination"; "Because alcohol relaxes the mind"; "I don't feel negative emotions when I consume cannabis"; "Since alcohol disinhibits, in my case, it acts as a stimulant for happiness"; "I feel fulfilled and happy"; Cannabis makes me relaxed, therefore happy"; "Consumption provides disinhibition, I talk more openly and this leads me to feel joy and happiness"; "When I consume my goose I feel relaxed and when I consume white, my brain works better" and "The emotional state changes for the better, you feel euphoria and a state of peace and pleasure that ends up being inexplicable" . The most relevant justifications for Interest were: "Interest, out of doubt in what it causes to other people around me"; "Exacerbation of emotional states"; "It increases my creativity and consequently I feel more interested in my work, obtaining better results, which gives me more joy"; "I feel good, without remorse…I don't think about anything and rest"; "Interest in the various aspects of cannabis and joy in consuming it" and "During the time of consumption there were times when I was better emotionally and others worse where feelings of sadness and joy were awakened. There were moments when they allowed me to reflect and think more about certain issues in a systematic way."

Figure following on the next page
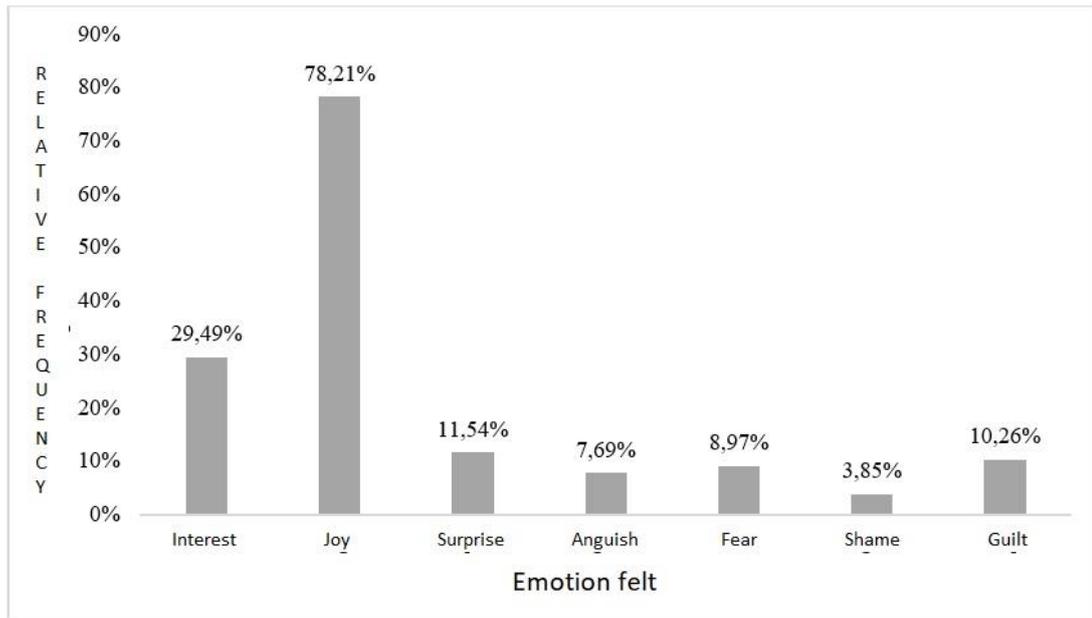
Figure 2: Characterization of the most frequently felt emotions
(Source: Prepared by the authors)

4.3. Characterization of dimensions and Emotional Competence

Table 1 presents the characterization of the dimensions and emotional competence. In terms of internal consistency, it is observed that the emotion management dimension is reasonable (α=0.697) and in the other dimensions and emotional competence the consistency is good or very good, as the Cronbach's Alpha coefficient varies between 0.853 and 0.928. In average terms, it is observed that in all dimensions and emotional competence the average values obtained are above the expected theoretical value and are all in a moderate classification. The empathy and self-awareness dimensions stand out with the highest average values, 4.88 and 4.81, respectively. On the other hand, the emotion management dimension recorded the lowest average value, 4.44. There is greater dispersion in the dimensions of self-awareness, empathy and relationship management.

Dimensions	Cronbach's alpha	Minimum	Maximum	Average	Standard deviation
Self-awareness	0.853	2.55	6.80	4.81	0.85
Emotion Management	0.697	2.84	5.95	4.44	0.67
Self motivation	0.819	2.57	6.29	4.77	0.73
Empathy	0.813	2.67	7.00	4.88	0.80
Relationship Management	0.854	2.29	7.00	4.65	0.80
Emotional Competence	0.928	2.81	6.21	4.70	0.59

Table 1: Characterization of dimensions and emotional competence
(Source: Prepared by the authors)

Figure 3 shows the diagrams of extremes and quartiles of the distributions of dimensions and emotional competence. In general, symmetry is observed in all distributions, with a greater concentration of results in emotion management and relationship management.

It should be noted that in all dimensions and emotional competence, with the exception of relationship management, more than 75% of respondents scored above four.
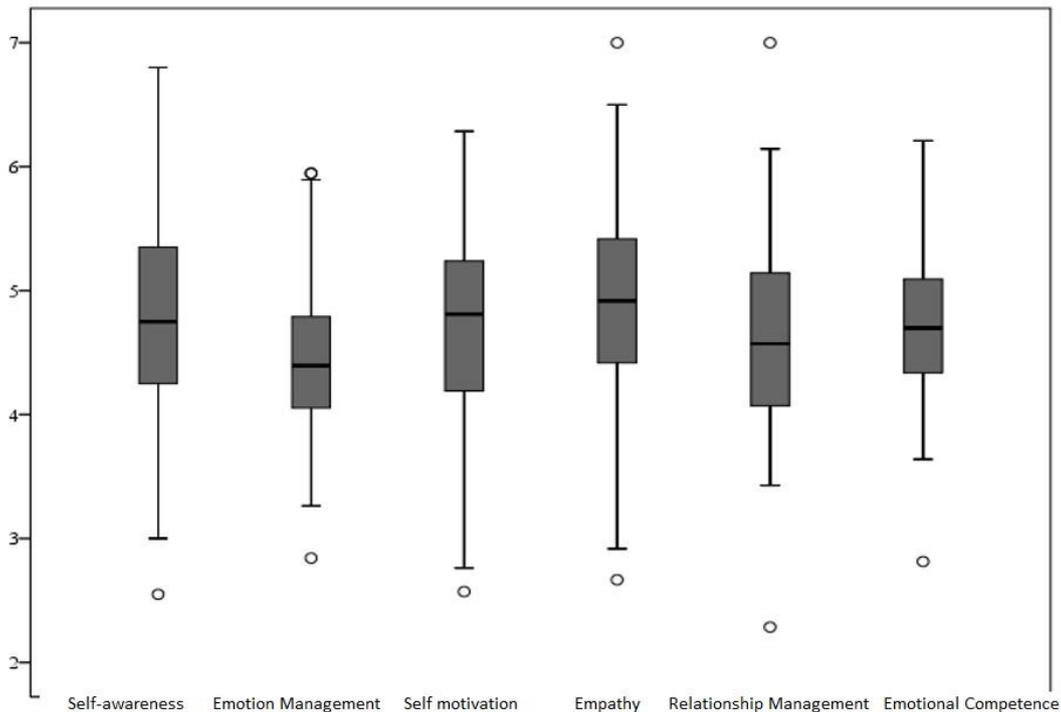
Figure 3: Diagrams of extremes and quartiles of the distributions of dimensions and emotional competence
(Source: Prepared by the authors)

In order to complement the study, the correlation between all dimensions was analyzed and also the weight of each dimension in emotional competence (table 2). As the assumption of normality was verified in all dimensions and emotional competence (attached table), Pearson's correlation coefficients were used. All coefficients presented are statistically significant (proof value less than 5%), they are positive, indicating a relationship in the same direction between the different dimensions. The table highlights coefficients with a value greater than 0.70, which reveals at least a strong correlation. Regarding emotional competence, the strongest contributions come from the dimensions: self-awareness (r=0.838), emotion management (r=0.822) and self-motivation (r=0.799).

	Self awareness	Emotions Management	Self motivation	Empathy	Relationship Management	Emotional Competence
Self awareness	1	0.620**	0.679**	0.440**	0.246*	0.838**
Emotions Management		1	0.581**	0.507**	0.393*	0.822**
Self motivation			1	0.354**	0.236*	0.799**
Empathy				1	0.611*	0.710**
Relationship Management					1	0.593**
Emotional Competence						1

*-significant at 5%; *+-significant at 1%.

Table 2: Pearson correlation coefficients
(Source: Prepared by the authors)

The table below shows the characterization of the levels of emotional competence of the dimensions of the scale and global emotional competence. It is observed that in general, in all dimensions and emotional competence, the level obtained by the majority of respondents was average. It should be noted that in the self-awareness dimension, 20.5% (16) of respondents obtained a high level of competence and in the empathy dimension, 24.4% (19) obtained the highest level of competence.

Dimensions	Level of emotional competence		
	Low	Average	High
Self-awareness	5(6.4%)	57(73.1%)	16(20.5%)
Emotion Management	5(6.4%)	65(83.3%)	8(10.3%)
Self motivation	3(3.8%)	62(79.5%)	13(16.7%)
Empathy	4(5.1%)	55(70.5%)	19(24.4%)
Relationship Management	3(3.8%)	62(79.5%)	13(16.7%)
Emotional Competence	1(1.3%)	68(87.2%)	9(11.5%)

Table 3: Characterization of the levels of emotional competence in each of the dimensions and emotional competence
(Source: Prepared by the authors)

4.4. Characterization of emotional dimensions and competence according to sociodemographic characteristics

Table 4 presents the characterization of emotional dimensions and competence according to sociodemographic characteristics and results of the respective statistical tests applied. It is observed that in the dimension: self-awareness, the results presented by male respondents (4.85±0.82) were slightly higher than the results of women (4.78±0.87), in the empathy dimension , the results of female respondents (4.93±0.73) are slightly higher than the results of men (4.79±0.90). However, at a significance level of 5% it was concluded that the differences observed were not statistically significant. It can therefore be stated that the results of emotional dimensions and competence are identical between male and female individuals who consume psychoactive substances. Regarding the age group, it is observed that the results obtained for emotional dimensions and competence are relatively similar between individuals from different groups, hence no statistically significant differences were detected. When it comes to marital status, it is observed that single or divorced respondents presented higher average results in the self-awareness and empathy dimensions than married or cohabiting respondents, however such differences were not statistically significant. Regarding whether or not the respondent had children, it was observed that the results in the dimensions: self-awareness, self-motivation, empathy and emotional competence were higher in respondents who did not have children. At a significance level of 5%, it was concluded that the differences observed were not statistically significant. With regard to educational qualifications, higher average values were recorded in individuals who had higher education compared to those who had a maximum of 12th grade, with the exception of self-awareness. It was concluded by applying the appropriate test that the differences observed in the dimensions were not statistically significant.

		B.C	GE	AM	AND	GR	EC
Sex	**Feminine**	4.78±0.87	4.43±0.64	4.78±0.76	4.93±0.73	4.65±0.74	4.70±0.56
	Masculine	4.85±0.82	4.45±0.71	4.73±0.69	4.79±0.90	4.66±0.91	4.69±0.63
	ET (p)	-0.334 (0.739)[a]	-0.124 (0.902)[a]	0.301 (0.764)[a]	0.723 (0.472)[a]	-0.057 (0.955)[a]	0.072 (0.943)[a]
	ET Independence Test (p)	1.563 (0.473)	0.729 (0.731)	0.546 (0.891)	1.417 (0.534)	1.178 (0.710)	1.813 (0.462)
Age years)	**Up to 30**	4.88±0.76	4.45±0.59	4.73±0.73	4.87±0.74	4.48±0.81	4.68±0.52
	More than 30	4.74±0.92	4.43±0.73	4.79±0.73	4.88±0.85	4.79±0.78	4.71±0.64
	ET (p)	0.707 (0.482)[a]	0.111 (0.912)th	-0.359 (0.721)th	-0.080 (0.936)th	-1.699 (0.093)th	-0.231 (0.818)[a]
	ET Independence Test (p)	1.286 (0.573)	1.508 (0.538)	1.547 (0.521)	5.607 (0.059)	3.380 (0.217)	1.099 (0.221)
marital status	**Single/divorced**	4.81±0.87	4.40±0.67	4.74±0.74	4.92±0.80	4.59±0.87	4.68±0.60
	Married/de facto union	4.80±0.85	4.51±0.67	4.81±0.71	4.88±0.80	4.65±0.80	4.70±0.57
	ET (p)	0.028 (0.978)a	-0.681 (0.498)th	-0.364 (0.717)[a]	0.643 (0.522)[a]	-1.054 (0.295)[a]	-0.384 (0.702)a
	ET Independence Test (p)	0.420 (0.920)	0.478 (0.999)	3.097 (0.214)	3.749 (0.163)	0.358 (0.999)	0.358 (0.999)
Have children	**Yes**	4.58±1.03	4.67±0.79	4.68±0.86	4.75±0.89	4.68±0.84	4.60±0.73
	No	4.90±0.75	4.46±0.61	4.80±0.67	4.93±0.76	4.64±0.80	4.74±0.51
	ET (p)	-1.497 (0.138)a	-0.548 (0.585)th	-0.687 (0.494)th	-0.329 (0.742)b	0.170 (0.865)th	-0.979 (0.331)th
	ET Independence Test (p)	2.553 (0.290)	2.951 (0.244)	4.585 (0.108)	0.746 (0.762)	1.203 (0.700)	3.541 (0.161)
Qualifications	**3rd cycle/Secondary**	4.83±0.96	4.43±0.65	4.66±0.71	4.71±0.96	4.61±0.97	4.65±0.67
	University education	4.79±0.79	4.44±0.68	4.82±0.74	4.97±0.68	4.68±0.71	4.73±0.53
	ET (p)	0.162 (0.871)th	-0.104 (0.917)th	-0.937 (0.352)[a]	-1.360 (0.178)[a]	-0.333 (0.740)[a]	-0.585 (0.560)[a]
	ET Independence Test (p)	3.632 (0.173)	0.547 (0.896)	1.201 (0.709)	3.443 (0.139)	2.327 (0.313)	2.187 (0.430)

AC – Self-awareness; GE – Emotion Management; AM – Self motivation; E – Empathy; GR – Relationship Management; CE – Emotional Competence; ET – Test statistics; p – evidentiary value; [a]- parametric t test; b – Mann-Whitney non-parametric test; c – Anova parametric test; d – Kruskal-Wallis non-parametric test

Table 4: Characterization of emotional dimensions and competence according to sociodemographic variables
(Source: Prepared by the authors)

4.5. Characterization of emotional dimensions and competence depending on the characteristics of psychoactive substance consumption

Table 5 presents the characterization of the dimensions and emotional competence according to the characteristics of consumption of psychoactive substances and the results of the respective statistical tests applied.

It is observed that individuals who made their first consumption over 16 years of age had higher mean values in the dimensions: self-awareness (4.89±0.80), emotion management (4.50±0.68), self motivation (4.87±0.70) and emotional competence (4.75±0.48). However, at a significance level of 5% it was concluded that the differences observed were not statistically significant. It can therefore be stated that the results of dimensions and emotional competence are identical between consumers who had their first experience before the age of 16 and those who had their first experience after the age of 16. Regarding the substance of initial consumption, it is observed that the results obtained are generally higher in the group of cannabis/cocaine users, although the results are considerably close, which is why no statistically significant differences were detected. In relation to the substance currently consumed, individuals who consume alcohol present the highest average results in all dimensions and in emotional competence. However, at a significance level of 5% it was concluded that the differences observed were not statistically significant. Regarding the context of initial consumption, it was observed that the highest average values in all dimensions and emotional competence occurred in the group of individuals who had their first consumption in the context of parties. Regarding the degree of satisfaction with consumption, it is observed that, with the exception of the emotion management dimension, consumers satisfied with consumption presented the highest average values in all dimensions and in emotional competence. At a significance level of 5%, it was concluded that the differences observed were not statistically significant, with the exception of the relationship management capacity, which presents statistically significant differences between the groups of differentiated satisfaction. In this dimension, satisfied respondents presented an average value of 4.87±0.65 and those who were neither satisfied nor dissatisfied presented an average value of 4.38±0.76. Regarding the feeling of satisfaction with consumption, it is observed that individuals who manifest social disinhibition are those who present higher results in all dimensions and emotional competence. At a significance level of 5%, it was concluded that the differences observed were not statistically significant.

Table following on the next page

		B.C	GE	AM	AND	GR	EC
Age of first consumption (years)	Up to 16 years old	4.74±0.90	4.39±0.66	4.67±0.75	4.89±0.91	4.68±0.85	4.66±0.67
	Over 16 years old	4.89±0.80	4.50±0.68	4.87±0.70	4.87±0.64	4.62±0.76	4.75±0.48
	ET (p)	-0.771 (0.443)ª	-0.696 (0.489)ª	-1.216 (0.228)ª	0.116 (0.908)th	0.323 (0.748)ª	-0.708 (0.481)ª
	ET Independence Test (p)	1.494 (0.489)	2.096 (0.349)	0.651 (0.903)	1.800 (0.438)	2.851 (0.271)	0.879 (0.999)
Initial consumption substance	Alcohol	4.70±0.82	4.49±0.64	4.74±0.70	4.74±0.78	4.60±0.68	4.65±0.51
	Cannabis/Cocaine	4.94±0.94	4.43±0.77	4.82±0.78	4.94±0.86	4.66±0.87	4.75±0.70
	Tobacco	4.70±0.60	4.29±0.34	4.68±0.73	5.05±0.64	4.78±0.96	4.66±0.39
	ET (p)	0.771 (0.466)c	1.383 (0.501)d	0.194 (0.824)c	0.827 (0.441)c	0.189 (0.828)c	0.257 (0.774)c
	ET Independence Test (p)	3.466 (0.461)	2.282 (0.716)	1.147 (0.942)	3.827 (0.426)	1.910 (0.192)	3.614 (0.456)
Current substance of consumption	Alcohol	4.85±0.63	4.59±0.55	4.82±0.76	5.13±0.50	4.74±0.71	4.81±0.38
	Cannabis/Cocaine	4.84±1.01	4.43±0.78	4.78±0.77	4.79±0.96	4.56±0.84	4.68±0.73
	Tobacco	4.69±0.55	4.42±0.36	4.62±0.76	4.94±0.71	4.69±1.04	4.65±0.33
	None	4.75±0.91	4.27±0.70	4.75±0.64	4.71±0.75	4.71±0.75	4.63±0.62
	ET (p)	0.099 (0.960)c	0.680 (0.567)c	0.159 (0.924)c	1.089 (0.359)c	0.240 (0.868)c	1.638 (0.651)d
	ET Independence Test (p)	6.481 (0.315)	4.020 (0.668)	2.716 (0.900)	3.987 (0.673)	2.595 (0.915)	4.983 (0.606)
Initial consumption context	Friends	4.89±0.89	4.49±0.61	4.80±0.77	4.81±0.78	4.71±0.74	4.73±0.61
	Parties	4.88±0.68	4.51±0.66	4.86±0.69	5.01±0.64	4.74±0.31	4.79±0.47
	Experience/ Well-being	4.53±1.08	4.21±0.74	4.52±0.72	4.70±1.08	4.39±1.01	4.46±0.71
	ET (p)	1.386 (0.500)th	1.155 (0.321)c	1.239 (0.296)c	1.842 (0.398)a	1.213 (0.303)c	1.965 (0.147)c
	ET Independence Test (p)	8.502 (0.055)	1.783 (0.820)	2.455 (0.678)	6.804 (0.105)	4.514 (0.302)	3.534 (0.470)
Satisfaction with consumption	Neither satisfied nor dissatisfied	4.77±0.79	4.36±0.64	4.63±0.67	4.78±0.60	4.38±0.76	4.58±0.52
	Satisfied	4.84±0.74	4.37±0.44	4.84±0.77	5.04±0.76	4.87±0.65	4.77±0.48
	Very satisfied	4.80±1.03	4.55±0.88	4.80±0.78	4.79±1.04	4.67±0.98	4.72±0.75
	ET (p)	0.247 (0.884)d	0.587 (0.746)d	0.546 (0.581)c	0.864 (0.426)c	6.235 (0.044)d	1.070 (0.586)d
	ET Independence Test (p)	5.149 (0.257)	8.471 (0.037)	0.899 (0.967)	9.473 (0.027)	2.750 (0.634)	4.221 (0.315)
Feeling of satisfaction	Social disinhibition	4.97±0.88	4.59±0.65	4.92±0.63	5.00±0.71	4.81±0.76	4.85±0.58
	Fun	4.52±0.81	4.24±0.68	4.65±0.84	4.91±0.74	4.71±0.69	4.57±0.49
	Relaxation	4.78±0.82	4.39±0.67	4.68±0.76	4.76±0.89	4.49±0.87	4.62±0.61
	ET (p)	0.038 (0.962)c	2.616 (0.270)d	0.546 (0.581)c	0.864 (0.426)c	2.468 (0.092)c	2.375 (0.305)d
	ET Independence Test (p)	6.147 (0.165)	5.613 (0.181)	5.376 (0.184)	3.299 (0.503)	2.779 (0.625)	4.405 (0.292)

AC – Self-awareness; GE – Emotion Management; AM – Self motivation; E – Empathy; GR – Relationship Management; CE – Emotional Competence; ET – Test statistics; p – evidentiary value; ª- parametric t test; b – Mann-Whitney non-parametric test; c – Anova parametric test; d – Kruskal-Wallis non-parametric test

Table 5: Characterization of dimensions and emotional competence depending on the variables of psychoactive substance consumption

(Source: Prepared by the authors)

4.6. Dimensions and emotional competence depending on discontinuity of consumption

Table 6 presents the results of dimensions and emotional competence depending on the discontinuity of consumption. It is observed that individuals who have already been without consuming presented higher results in the dimensions: emotion management (4.44±0.68), empathy (4.94±0.79), relationship management (4.71± 0.81) and emotional competence (4.71±0.61). However, at a significance level of 5% it was concluded that the observed differences do not present statistical significance, with the exception of the empathy capacity in which the differences are statistically significant. In relation to the period of time without consumption, individuals who spent less than a year present better results in all dimensions and emotional competence. However, at a significance level of 5% it was concluded that the differences observed were not statistically significant. Regarding the reason for stopping consumption, it was observed that individuals who responded that they were not addicted and stopped when they wanted presented the highest results in all dimensions and emotional competence, with the exception of self-motivation. However, at a significance level of 5% it was concluded that the differences observed were not statistically significant.

		B.C	GE	AM	AND	GR	EC
Have you ever been without consuming	**Yes**	4.79±0.88	4.44±0.68	4.76±0.76	4.94±0.79	4.71±0.81	4.71±0.61
	No	4.94±0.58	4.41±0.55	4.85±0.47	4.35±0.72	4.14±0.58	4.59±0.31
	ET (p)	-0.460 (0.646)[a]	0.101 (0.920)[a]	-0.327 (0.745)[a]	2,000 (0.049)[a]	1.929 (0.057)[a]	0.563 (0.575)[a]
	ET Independence Test (p)	0.452 (0.814)	0.660 (0.762)	1.534 (0.523)	1.843 (0.379)	3.193 (0.133)	1.311 (0.628)
Time without consumptio n (years)	**Up to one year**	4.83±0.87	4.52±0.63	4.76±0.74	4.96±0.73	4.78±0.75	4.75±0.52
	More than a year	4.74±0.89	4.33±0.75	4.75±0.79	4.90±0.86	4.62±0.87	4.66±0.71
	ET (p)	0.389 (0.698)th	1.153 (0.253)[a]	0.017 (0.986)[a]	0.338 (0.737)th	0.825 (0.412)[a]	0.658 (0.513)th
	ET Independence Test (p)	0.755 (0.841)	0.806 (0.804)	0.980 (0.725)	1.510 (0.504)	3.413 (0.133)	2.095 (0.365)
Reason to stop consuming	**There is no dependency**	4.83±0.86	4.61±0.70	4.75±0.77	5.05±0.61	4.83±0.68	4.79±0.57
	Health/Family/Pro fessional	4.64±0.89	4.42±0.65	4.75±0.77	4.81±0.88	4.58±0.089	4.63±0.59
	Own will	4.89±0.89	4.32±0.70	4.76±0.76	4.96±0.85	4.73±0.84	4.71±0.68
	ET (p)	0.513 (0.601)c	3.595 (0.166)d	0.001 (0.999)c	0.522 (0.596)c	0.545 (0.582)c	0.383 (0.683)d
	ET Independence Test (p)	3.862 (0.445)	1.100 (0.935)	0.921 (0.968)	2.636 (0.673)	2.144 (0.812)	4.287 (0.310)

AC – Self-awareness; GE – Emotion Management; AM – Self motivation; E – Empathy; GR – Relationship Management; CE – Emotional Competence; ET – Test statistics; p – evidentiary value; ᵃ- parametric t test; b – Mann-Whitney non-parametric test; c – Anova parametric test; d – Kruskal-Wallis non-parametric test
Table 6: Characterization of dimensions and emotional competence depending on consumption discontinuity variables
(Source: Prepared by the authors)

Observation: To answer research question 2, the variables were crossed: profile of each of the dimensions of emotional competence (defined by the level of competence: low, moderate or high) with each subjective feeling of satisfaction due to the consumption of psychoactive substances and application of the independence test.

5. DISCUSSION
Question 1: Is there an influence of sociodemographic variables on the Emotional Competence of Consumers of Psychoactive Substances?

- No, it was concluded that there were no significant differences between the scores of the emotional dimensions and competence of individuals from different groups for each sociodemographic characteristic. It was also found that the competence levels of the dimensions and emotional competence were not significantly associated with sociodemographic characteristics. It can therefore be stated from the study developed that emotional competence is identical between individuals with different sociodemographic characteristics and is not associated with these characteristics. Some studies corroborate the present study, such as the study by Silva (2013), which indicates that there is no relationship between sociodemographic variables and alexithymia in consumers of psychoactive substances. The study by Rocha (2016) states that sociodemographic variables do not constitute explanatory factors for professional satisfaction. Some studies contradict the results obtained in the present study, as is the case of the study by Duarte (2019) where the influence of sociodemographic variables on the dimension of military self-motivation is verified. The study by Gregório (2008) indicates that there is a positive influence of academic qualifications on the management of group emotions in health professionals. Antunes and Costa (2019) present a study that states that the analysis of the data collected allowed us to verify that some sociodemographic variables contribute to the consumption of psychoactive substances such as alcohol and drugs. The study by Ferreira (2018) tells us that emotional competence varies according to personal (age and gender) and professional (profession and satisfaction with the functions performed) characteristics.

Question 2: Is there a relationship between the profile of each of the dimensions of Emotional Competence and the feeling/emotion felt most frequently when consuming psychoactive substances?
- It was found that the profile of each of the dimensions of emotional competence, measured through competence levels, was not significantly associated with feelings: interest, joy, surprise, anguish and shame. On the other hand, it was concluded that self-awareness and empathy were significantly associated with feelings of guilt. Likewise, self-awareness and emotion management were significantly associated with feelings of sadness. The study by Reis (2015) indicates that greater alcohol consumption is related to positive affects. According to the study by Norris, Szkudlarek, Pereira, et al. (2019), the sensation manifested by consumption depends from person to person, in some subjects, the most sensitive part of the brain is the frontal part and, in this case, it causes feelings of comfort, tranquility and happiness. If the part most sensitive to the substance is the posterior region of the brain, the drug will make the person feel fear and some unfounded paranoia, so this study does not corroborate this.

Question 3: Is there a relationship between the consumption of psychoactive substances and the general Emotional Competence profile of consumers of psychoactive substances?
- No, it was concluded that there were no significant differences between emotional competence scores for individuals from different groups for each characteristic of psychoactive substance consumption. It can therefore be stated from the study developed that emotional competence is identical between individuals with different substance consumption characteristics. It was also found that the level of emotional competence (low, moderate and high) was not significantly associated with any characteristic of psychoactive substance consumption. The study by Almeida, Anjos, Vianna and Pequeno (2014) indicates that the consumption of psychoactive substances affects the subject's life in different ways, causing personal, family and social difficulties. The results of Silva's (2013) study indicate the presence of a relationship between alexithymia and substance use.

The study by Jora (2016) reveals that the consumption of psychoactive substances influences sociodemographic variables (age, race and marital status).

Question 4: Is there a relationship between the consumption of psychoactive substances in relation to each particular dimension of the Emotional Competence of consumers of psychoactive substances?

- No, it was concluded that in general there were no significant differences in scores between individuals from different groups for each characteristic of psychoactive substance consumption under study. It should be noted that significant differences were recorded in the ability to manage relationships and the degree of satisfaction with consumption and also in the ability to empathize between individuals who had already stopped consuming or not. There was a significant association between empathy and satisfaction with consumption. Some studies do not corroborate the present study, such as the study by Almeida, Anjos, Vianna and Pequeno (2014) which indicates that the consumption of psychoactive substances affects the subject's life in different ways, causing personal, family and social difficulties. In the study by Silva (2013), the results indicate the presence of a relationship between alexithymia and substance use. The study by Jora (2016) reveals that the consumption of psychoactive substances influences sociodemographic variables (age, race and marital status).

6. CONCLUSIONS

The present study was based on a reflection on how sociodemographic variables and substance consumption variables influence the emotional competence of consumers of psychoactive substances. From this study it can be concluded that consumers of psychoactive substances have a moderate level of emotional competence, with females showing 4.70 and males 4.69, with a moderate level score between 3.50 and 5.45. Although the validity of the study is only internal due to the insufficient number of samples obtained in it, it is an innovative study as there is a great scarcity of studies that relate the consumption of psychoactive substances and emotional competence and was developed during the COVID-19 Pandemic. 19. Given the results, it is suggested the development of emotional education training to promote the emotional competence of consumers of psychoactive substances and even prevent the consumption of these substances. In a macrosocial approach, Emotional Education training could also be developed aimed at families of users of psychoactive substances and also at technicians who work directly with this type of problem.

LITERATURE:

1. Almeida, RAD, Anjos, UUD, Vianna, RPDT, & Pequeno, GA (2014). Profile of users of psychoactive substances in João Pessoa. Saúde em Debate, 38(102), 526-538. Link: https://doi.org/10.5935/0103-1104.20140049
2. Antunes, A., & Costa, ECV. (2019). Sleep, aggression and risk behaviors in drug and alcohol dependent individuals. Psychological Analysis, 37(1), 1-14. Link: http://dx.doi.org/10.14417/ap.1390
3. Asselmann, E., Wittchen, H. U., Lieb, R. Höfler, M., & Baum, K. B. (2014). Associations of fearful spells and panic attacks with incident anxiety, depressive, and substance use disorders: A 10-year prospective-longitudinal community study of adolescents and young adults. Journal of Psychiatric Research, vol 55, 8-14 Link: 10.1016/j.jpsych ires.2014.04.001.
4. Batista, IR, Almeida, PP, Fadel, G., & Bressan, RA (2008). Neuroscience of Substance Use. São Paulo: LiNC-Lab Interdisciplinary Clinical Neurosciences. Link: https://www.uni ad.org.br/wp-content/uploads/2013/10/Addictions_Neurobiology_final.pdf

5. Beça S. d. S. (2014). Drug consumption and trafficking in universities. Master's thesis in Legal Medicine. University of Porto. 4-12. Link: http://www.dgsi.pt/bpjl.nsf/83cbe9ace f94db5a8025730800549412/05ccf18e92e0b38180257f9500394904?OpenDocument

6. Bisquerra, R., & Pérez, N. (2007). The emotional skills. Education XXI, 10, 61

7. 82. Link: http://www.ub.edu/grop/wp-content/uploads/2014/03/Las-competencias-emocio nales.pdf

8. Correia-Almeida, A. (2013). Teacher training in emotional skills: an empirical study. Doctoral thesis in Educational Sciences. Lisbon: Faculty of Social and Human Sciences – UNL. Link: http://hdl.handle.net/10362/10186

9. Coutinho, C. (2011). Research methodology in Social and Human Sciences: Theory and Practice. Coimbra: Almedina Editions.

10. Duarte, AA (2019). Characterization of the Self-Motivation Capacity of the National Republican Guard Soldier. Integrated Master's Dissertation in Military Sciences, specializing in Security. Military Academy of Lisbon. Link: https://comum.rcaap.pt/ bitstream/10400.26/30137/1/284_Duarte_Caracteriza%C3%A7%C3%A3o%20da%20cap acidade%20de%20automotiva%C3%A7%C3%A3o%20do%20militar%20da%20GNR.pd f

11. Ferreira, CAP (2018). Emotional Competence and Interdisciplinarity in Referral Teams of Primary Health Care Units: A Perspective of Formal and Informal Caregivers. Master's Thesis in Continuing Care. Polytechnic Institute of Bragança. Link: http://hdl.handle.net/ 10198/17872

12. Ferreira, CRN (2019). Alexithymia and dependence on psychoactive substances in long-term users. Master's thesis in Social Gerontology. Superior Institute of Social Service of Porto. Link: http://hdl.handle.net/10400.26/30282

13. Formigoni, MLODS, Kessler, FHP, Pechansky, F., Baldisserotto, CFP, & Abrahão, KP (2017). Neurobiology: reinforcement and reward mechanisms and the biological effects common to drugs of abuse. EAD SUPERA course. Brasília, DF: MJC, 2017. Module 2, Chapter 1. 13-27. Link: https://www.supera.org.br/@/material/mtd/pdf/SUP/SUP_Guia.pdf

14. Freixo, JMV, (2010). Scientific Methodology, Editora Piaget.

15. Goleman, D. (1995). Emotional Intelligence, themes and debates. Editorial Activities: Lisbon. 53-132.

16. Gonçalves, MCP (2008). The Recognition of Basic Emotions through the analysis of facial expression: The Influence of Drug Addiction. Master's thesis in Clinical Psychology. Higher Institute of Applied Psychology. Lisbon. Link: http://hdl.handle.net/10400.12/3567

17. Gregory, FA (2008). Emotional competence and professional satisfaction of nurses. Master's Thesis in Psychology. Polytechnic Institute of Beja, Higher Education School of Beja, Faro. Link: http://hdl.handle.net/10400.1/732

18. Institute of Drugs and Drug Addiction. (2006). Annual report 2005 – The country's situation regarding drugs and drug addiction. Retrieved from Instituto da Droga 110 e da Toxicodependência website. http://www.idt.pt/PT/IDT/RelatoriosPlanos/Paginas/Situacao doPais.aspx.

19. Jora, N. P. (2016). Consumption of cocaine, crack and multiple drugs: interfaces with users' quality of life. Doctoral thesis in Science with the Postgraduate Program in Psychiatric Nursing. University of Sao Paulo. Link: https://www.teses.usp.br/teses/disponiveis/ 22/22131/tde-07012015-140041/publico/NATALIAPRIOLLIJORA.pdf

20. Loureiro, LA (2012). Substance consumption and lifestyles in higher education students. Master's thesis in Community Nursing. Coimbra Higher School of Nursing. Link: https://repositorio.esenfc.pt/private/index.php?process=download&id=23814&code=745

21. Marques-Teixeira, J. (2001). Drugs and emotions. Mental Health, 3, 19-31. Link: https://repositorio-aberto.up.pt/bitstream/10216/5549/2/83361.pdf

22. Miguel, N. (1997). Drug addiction: a perspective. Revista Toxicodependências, 3, 25-30. Link: http://www.sicad.min-saude.pt/BK/RevistaToxicodependencias/Lists/SICAD_Artigos/Attachments/358/artigo_3.pdf

23. Norris, C., Szkudlarek, H.J., Pereira, B. et al. (2019). The Bivalent Rewarding and Aversive properties of Δ9-tetrahydrocannabinol are Mediated Through Dissociable Opioid Receptor Substrates and Neuronal Modulation Mechanisms in Distinct Striatal Sub-Regions. Sci Rep 9, 9760 . Link: https://doi.org/10.1038/s41598-019-46215-7

24. Pestana, MH, & Gageiro, JN (2014). Data Analysis for Social Sciences. The complementarity of SPSS. (6th Edition); Lisbon: Sílabo Editions.

25. Reis, R. (2015). Alcohol Consumption, Personality and Emotional Adjustment in College Students. Masters dissertation. School of Psychology and Life Sciences - Lusófona University of Humanities and Technologies. Lisbon. Link: https://recil.grupolusofona.pt/bitstream/10437/7211/1/roberta%20reis%20vers%C3%A3o%20final%20%20com%20juri.pdf

26. Rocha, B. A. (2011). Consumption of psychoactive substances and attitudes in young people in the 3rd cycle of the cerco school: implications for prevention. Masters dissertation. University of Porto. Link: file:///C:/Users/Ana%20Luisa/Downloads/Consumo_de_substancias_psicoativas%20(6).pdf

27. Rocha, RMP (2016). Professional satisfaction of INEM nurses. Master's Dissertation in Management of Health Units. University of Minho. Link: http://repositorium.sdum.uminho.pt/handle/1822/47989

28. Rodrigues, Pedro FS, Salvador, Ana CF, Lourenço, Inês C., & Santos, Luísa R. (2014). Patterns of alcohol consumption in students at the University of Aveiro: Relationship with risk behaviors and stress. Psychological Analysis, 32(4), 453-466. Link: https://dx.doi.org/1014417/ap.32.3.789.

29. Santos, C.S.V. (2009). Psychophysiology of Basic Emotions: Empirical Study with Drug Addicts in Treatment. Master's degree in Clinical and Health Psychology. Fernando Pessoa University. Harbor. Link: https://bdigital.ufp.pt/bitstream/10284/1426/1/dm_catarinasantos.pdf

30. Silva, ASF (2013). Affective regulation in drug addiction: impact of emotional intelligence and alexithymia on the degree of substance dependence. Master's thesis in Clinical and Health Psychology. Universidade Católica Portuguesa. Braga. Link: https://repositorio.ucp.pt/handle/10400.14/20913

31. Silva, ASF (2013). Affective regulation in drug addiction: impact of emotional intelligence and alexithymia on the degree of substance dependence. Master's thesis in Clinical and Health Psychology. Universidade Católica Portuguesa. Braga. Link: http://hdl.handle.net/10400.14/20913

32. Sousa, NMCd (2014). University students and the consumption of psychoactive substances. Master's Dissertation in Forensic Psychology. Lusófona University of Porto. Link: https://core.ac.uk/download/pdf/48583004.pdf

33. Torrado, M. (2011). Emotion Regulation and Drug Addiction. Psychosomatic Magazine – Vol. I Online. Link: https://repositorio.ul.pt/bitstream/10451/10522/1/ulsd067258_td_Marco_Torrado.pdf

34. Torres, N., Chagas, T. & Ribeiro, JP (2008). Emotional dependence and consumption of psychoactive substances: A correlational study based on WR Bion's basic assumption group theory. Drug Addictions, 14 (3), 35-48. Link: http://repositorio.ispa.pt/bitstream/10400.12/1185/1/RT%2014(3)%2035.pdf

35. Veiga-Branco, A. (2004). Emotional competence. Coimbra. Quartet. Hyperlink: Obtained from: https://bibliotecadigital.ipb.pt/handle/10198/5463

36. Veiga-Branco, A. (2018). About Emotional Competence … or twenty years of Learning Emotional Competence - A Brief Approach. Speech given at the European Parliament in Brussels. June 19th.

37. Veiga-Branco, A. (2019). Emotional competence. in Dictionary of Entrepreneurship Education, 224-227. Lisbon. Pregnant. Link: http://hdl.handle.net/10198/19295

SOCIO-EMOTIONAL SKILLS IN THE CONTEXT OF THE COVID-19 PANDEMIC

Ana Luisa Serafim
University of Salamanca, Spain
anaserafim87@gmail.com

Claudia Miranda Veloso
GOVCOPP; ESTGA, Aveiro, Portugal
cmv@ua.pt

Sara da Veiga Fernandes
University of Salamanca, Spain
katharina.dvf@gmail.com

Jesus Rivera-Navarro
Department of Social Sciences, University of Salamanca, Salamanca, Spain
jrivera@usal.es

ABSTRACT

Emotional competence in teaching is a topic that reveals a lot of interest nowadays, since in addition to being extremely important that teachers feel good about the tasks, they are tasked with in terms of work it is also very important that for them to accomplish efficiently and feel good on an emotional level. Due to the context of Pandemic by COVID-19 that we are all experiencing, there were several changes that teachers had to adjust to provide a good learning experience for students, which is the reason for this study, so the objective of this investigation is to know the profile of emotional competence of the teachers of the School Groups of the district capital of Bragança in the context of Pandemic by COVID-19, using an anonymous and confidential questionnaire applied to the teachers of the Group of the district capital of Bragança, divided into two parts: a first part, contemplating socio-demographic and professional variables and a second part consisting of the "Veiga Emotional Competence Scale" (EVCE) (Veiga-Branco, 2005, 2011, 2015, 2016, 2017, 2018). The results obtained reveal that there is no influence of sociodemographic or professional variables on the teachers' emotional competence profile or dimensions.
Keywords: Emotional Competence, Teachers, COVID-19, educational organizations, welfare

1. INTRODUCTION

Veiga- Branco (2004) indicates that the concept of emotional competence is similar to that of emotional intelligence, however, each of the concepts has different points of view on the skills referred to with emotion, different methods of development and use and even different data collection tools and study of results. Esteves (1987, 1991, 1992) cited by Correia-Almeida (2013) refers to twelve factors that cause discomfort in teachers, the expansion of impositions on teachers; the instructive interdiction of other social actors; the expansion of alternative means of information to schools; the breakdown of social approval of education; the extent of paradoxes in teaching practice; the change in expectations regarding the educational system; the shift from community aid to the education system; reduction in the social appreciation of teachers; changing curricular subjects; imperfect work contexts and insufficient material resources; changes in the teacher-student connection and teacher labor segmentation. The purpose of this work is to study the emotional competence profile of teachers in Groups in the capital of the district of Bragança in the context of the COVID-19 Pandemic, with the study

sample being random for convenience. This investigation involves reflecting on the way in which sociodemographic and professional variables influence emotional competence in general, as well as the different dimensions that comprise it, empathy, emotion management, self-motivation, relationship management and self-awareness in teachers. who perform functions in the District Capital Groups in the context of the COVID-19 Pandemic. The study's data collection instrument is a confidential and anonymous questionnaire that is distributed in two parts: the first part, composed of questions produced by the researcher, covering sociodemographic and professional variables (Age; Sex; Marital status; Affiliation; Residence; Grouping where he teaches; Educational qualifications; Teaching group; Time spent professionally; Satisfaction with salary; Chose or not for the same profession), the second part formed by a scale related to emotional competence ("Veiga Scale of Emotional Competence" (EVCE) (1999)) which integrates 86 items to instrument the five dimensions of emotional competence. Some studies corroborate this investigation, such as the study by Calaça (2014), Valente (2019) and Gonçalves and Neves (2011), other studies contradict the results of this investigation: Fernandes (2019), Ribeiro, Barbosa and Soares (2015) , Nogueira (2015), Pinto (2018) and Sousa (2016). This work is divided into five parts, introduction, theoretical foundation, methodology, presentation and analysis of results, discussion and the conclusions of the study.

2. THEORETICAL FOUNDATION

As Bisquerra and Pérez (2007) indicates, emotional competence is the combination of knowledge, skills, abilities and actions to understand, manifest and adequately regulate "emotional phenomena", and which comprises, among other dimensions, "emotional awareness ", regulating impulsivity, working in groups, being able to take care of oneself and others. Harmonizes evolution in life situations such as learning methods, interpersonal relationships, problem solving, adaptation to the context. Bisquerra (2003) indicates that emotional education aims to: obtain a broad understanding of one's own emotions; recognize the emotional expressions of others; develop skills for controlling your own emotions; prevent the harmful effects of negative emotions; strengthen the ability to generate positive emotions; promote greater emotional competence in social connections; achieve the ability to empathize in interpersonal relationships; develop the ability to self-motivate; manifest a positive attitude towards life; enhance the ability to control stress, anxiety and depressive states; be aware of the factors that encourage well-being; develop flexibility to frustration; motivate yourself to success. Correia-Almeida (2013) states that "psychopathological disorders" can be recognized in teachers, such as "anxiety, depression, irritability, hostility, emotional exhaustion" (Capel, 1987), "impatience in contact with others, emotional instability" (Kossack & Woods, 1980), "feeling of guilt, exhaustion" (Hargreaves, 1994) and "desire to abandon teaching and self-responsibility due to the inability to succeed in teaching" (Esteve, 1992). The order of psychologists states that the COVID-19 pandemic requires compliance with isolation measures to contain the spread of the virus that have transformed the subjects' routines, determining a set of requirements. The closure of educational establishments could in no way impede learning and the school journey and implies the adoption of strategies for appropriating the new reality, and this new reality encompasses worksheets, work carried out remotely, participation in classes outside the school environment and the physical presence of educational agents and peers. According to Valente, Veiga-Branco, Rebelo, Lourenço and Cristóvão (2020), Emotional Intelligence, that is, the ability to understand, perceive, express, classify, manage and regulate emotions positively influences the effectiveness of teachers and also It leads teachers to understand the emotional state of their students, which promotes the adaptation of the subject's behavior as well as the development of activities. Teachers with more IE competence adapt their teaching and practices to help students learn, achieve more and find coping strategies.

This study determines that EE training should be introduced in teacher training. Educational organizations prioritize subjects that promote the teacher's teaching qualifications but do not value or enhance contact and relationships with students. We can therefore say that the initial training of teachers should not only involve preparing classes but also enhancing the self-knowledge, relationships and the acquisition of different skills, in turn promoting the search for strategies to "deal with, prevent and resolve conflicts" (Jesus, 2000, 2004, cited by Correia-Almeida, 2013). According to Dias, Lucas, Alves and Veiga-Branco (2012), obtaining and developing emotional skills adopts a prevention role, and presents itself as an instrument for pacifying discord and resolving problems in intimate relationships. It is therefore important to obtain these skills in teachers as well, to prevent the practice of dating violence among students.

3. METHODOLOGY

This research deals with the socio-emotional skills of teachers, and aims to understand some of the determinants that influence how they perceive their profession. The main objective of the study is: To understand the profile of the Socio-Emotional Skills of teachers in School Groups in the capital of Bragança district in the context of the COVID-19 Pandemic. The specific objectives are: Analyze the influence of sociodemographic variables on the general Emotional Competence of teachers, in the context of the COVID-19 Pandemic; Analyze the relationship between sociodemographic variables and each particular dimension of teachers' Emotional Competence, in the context of the COVID-19 Pandemic; Identify the connection between Emotional Competence and the professional characteristics of teachers, in the context of the COVID-19 Pandemic; Identify the connection between each particular dimension of Emotional Competence and the professional characteristics of teachers, in the context of the COVID-19 Pandemic. To respond to the main objective, the following research questions (IQ) were established:

- **Question 1:**Is there an influence of sociodemographic variables on the general Emotional Competence of teachers, in the context of the COVID-19 Pandemic?
- **Question 2:**Is there a relationship between sociodemographic variables and each particular dimension of teachers' Emotional Competence, in the context of the COVID-19 Pandemic?
- **Question 3:**Is there a connection between Emotional Competence and the professional characteristics of teachers, in the context of the COVID-19 Pandemic?
- **Question 4:**Is there a connection between each particular dimension of Emotional Competence and the professional characteristics of teachers, in the context of the COVID-19 Pandemic?

In order to respond to the main objective of the present study, an anonymous and confidential questionnaire survey was applied to teachers from School Groups in the capital of Bragança district, divided into two parts. According to Freixo (2010), this study can be characterized as descriptive as it allows us to assess the level and meaning of the relationship between two or more variables, thus refining the quantitative methodology that surrounds the analysis of data divided into quantifiable variables. Statistical analysis of data relating to the study developed was carried out using the computer program – SPSS for Windows, version 23.0. Initially, with the aim of describing and characterizing the sample under study, a descriptive analysis of the data was prepared depending on the nature of the variables under study. Statistical measures were used: absolute frequencies, relative frequencies, mean, standard deviation, bar graphs and diagrams of extremes and quartiles in order to describe the characteristics: socio-demographic; professionals and the dimensions and emotional competence of individuals. Subsequently, to carry out the statistical inference necessary to investigate the proposed hypotheses, parametric tests were applied whenever possible. If the assumptions were not verified, non-parametric tests were used.

Therefore, to compare the average values of two independent samples, the recommended parametric test is the t test, which assumes large samples (minimum 30 elements) or small samples from normal populations. To test normality in samples with less than 30 elements, the Kolmogorov Smirnov test was used. If it is possible to apply the t test, it is still necessary to verify the equality of variances between samples, using the Levenne test, which makes it possible to determine whether the samples come from the same population (when the condition of equality of variances is validated). In the event that it was impossible to apply the t test, the non-parametric Mann-Whitney test was used. To compare three or more independent samples, the Anova parametric test was used, whose assumptions are: the distribution of errors normally distributed with zero mean and constant variance (homogeneity of variances) and random. If it is not possible to apply Anova, the non-parametric Kruskal-Wallis test is used, which allows three or more independent samples to be compared. To analyze the internal consistency of the dimensions of emotional competence used, Cronbach's alpha coefficient was used. For Cronbach's alpha values between 0.7 and 0. In order to measure the intensity of the linear correlation between variables, the Pearson coefficient was used, it is a dimensionless index with values between -1 and 1. Results close to 1 mean a very strong and positive correlation between variables, results close to -1 illustrate very strong correlation in the opposite direction between the variables and results close to 0 demonstrate that the variables do not depend linearly on each other. The determination of this coefficient presupposes the normality of the variables, if normality is not verified, the Spearman correlation coefficient is used. Therefore, the Pearson/Spearman correlation measures the intensity of the relationship between two interval-type variables, whenever the magnitude of this coefficient is close to 1 it reveals a very strong correlation, above 0.70 it reveals a strong correlation, between 0.3 and 0, 7 moderate correlation, and below 0.3 is considered weak. Positive correlation coefficient indicates a relationship in the same direction of the variables, that is, they evolve in the same way and negative coefficient indicates that if one increases the other decreases and vice versa. Regarding the Scale used, the "Veiga Emotional Competence Scale" (EVCE) (Veiga-Branco, 2005, 2011, 2015, 2016, 2017, 2018) is composed of 86 items/statements, to operationalize the five dimensions of emotional competence: Self-awareness - 20 items; Emotion Management - 19 items; Self-motivation - 21 items; Empathy - 12 items; Management of Social Emotions - 14 items. These items are constituted as ordinal variables, measured by a Lickert-type temporal frequency scale (1 to 7, with 1 - "never", 2 - "rarely", 3 - "rarely", 4- "As a rule", 5 - "frequent", 6 - "very frequent" and 7 - "always"), where participants can choose how often they experience the situations described. Psychometrics: From the point of view of descriptive statistical analysis, the ECVS / EVCE cutoff point is 4. To measure the EC profile, we consider three levels of EC: the low level between 1 and 3.49; the moderate level between 3.50 and 5.45 and the high level between 5.46 and 7. Among the total of 86 EVCE items, there are some that must be assumed inverted. From the point of view of factor analysis: items related to each dimension of Emotional Competence must be subjected to Main Component Analysis with varimax rotation, to extract factors that aggregate a certain profile in each dimension of Emotional Competence (Veiga-Branco, 2018) . Among the total of 86 EVCE items, there are some that must be assumed inverted. From the point of view of factor analysis: items related to each dimension of Emotional Competence must be subjected to Main Component Analysis with varimax rotation, to extract factors that aggregate a certain profile in each dimension of Emotional Competence (Veiga-Branco, 2018) . Among the total of 86 EVCE items, there are some that must be assumed inverted. From the point of view of factor analysis: items related to each dimension of Emotional Competence must be subjected to Main Component Analysis with varimax rotation, to extract factors that aggregate a certain profile in each dimension of Emotional Competence (Veiga-Branco, 2018) .

In short, in statistical terms the cut-off is 4, corresponding to the expected theoretical value, and according to the author (Veiga-Branco, 2005, 2011, 2015, 2016, 2017, 2018) three levels of classification are considered: low level when the score varies between 1 and 3.49; moderate level score between 3.50 and 5.45 and high level when the score varies between 5.46 and 7.

3.1. Sample and variables

Random sample for convenience. Teachers who are part of the School Groups in the capital of the district of Bragança. 62 teachers working in Bragança were interviewed.

Independent variables

- Age
- Sex
- Academic qualifications
- Marital status
- Membership
- Residence
- Group where you teach
- Teaching Group
- Length of professional experience
- Satisfaction with salary
- Whether or not he chose the same profession

Dependent variables

The emotional competence profile of teachers from the school groups in the district capital of Bragança in the context of the COVID-19 pandemic.

The dimensions of Emotional Competence:

- Self-awareness
- Emotion Management
- Self Motivation
- Empathy
- Relationship Management

Figure 1: Variables under study
(Source: Prepared by the authors)

148

4. PRESENTATION AND ANALYSIS OF RESULTS

4.1. Sociodemographic characterization

It is observed that 79.05 (49) of the respondents are female. Regarding the age of the teachers under study, it was found that it varied between a minimum of 29 years old and a maximum of 69 years old, with an average of 53.44 years old and a standard deviation of 7.73 years old. Hence, it was obtained that 16.1% (10) of the teachers were up to 45 years old; 38.7% (24) were between 46 and 55 years old and 45.2% (28) were over 55 years old. It is observed that the majority of teachers surveyed, 79.0% (49) were married or in a civil union and that 83.95 (52) had children. Regarding educational qualifications, it was observed that 67.7% (42) had a bachelor's degree and the remaining 32.3% (20) had a postgraduate or master's degree. Only one teacher under study lived outside Bragança (in Braga).

4.2. Professional characterization

It is observed that the majority, 77.4% (48), worked at AE Emídio Garcia and the remaining 22.6% (14) at AE Miguel Torga. Regarding the time spent in the profession, it varied between a minimum of 1 year and a maximum of 42 years, with an average of 27.79 years and a standard deviation of 8.36 years. Hence, 59.7% (37) of respondents have been working for more than 25 years. Regarding the salary earned, it appears that 33.9% (21) were dissatisfied or completely dissatisfied; 45.2% (28) were neither satisfied nor dissatisfied and the remaining 20.9% (13) were at least satisfied. When asked about the possibility of returning to the beginning and whether they would choose the same profession, it was observed that the majority, 71.0% (44) said they would do so.

4.3. Characterization of the dimensions of emotional competence

Table 1 presents the characterization of the dimensions and emotional competence. In terms of internal consistency, it is observed that the emotion management dimension is reasonable ($\alpha=0.754$) and in the other dimensions and emotional competence the consistency is good or very good. In average terms, it is observed that in all dimensions and emotional competence the average values obtained are above the expected theoretical value and are all in a moderate classification. There is greater dispersion in the dimensions of self-awareness and self-motivation.

Dimensions	Cronbach's alpha	Minimum	Maximum	Average	Standard deviation
Self-awareness	0.927	1.35	6.85	4.82	0.99
Emotion Management	0.754	2.16	6.37	4.65	0.69
Self motivation	0.916	2.10	6.62	4.85	0.95
Empathy	0.823	2.42	6.50	5.01	0.81
Relationship Management	0.836	2.57	6.71	4.77	0.77
Emotional Competence	0.957	2.47	6.42	4.81	0.70

Table 1: Characterization of the dimensions of emotional competence
(Source: Prepared by the authors)

Figure 2 shows the diagrams of extremes and quartiles of the distributions of dimensions and emotional competence. In general, symmetry is observed in all distributions, there is a greater concentration of results in emotion management and relationship management and the existence of outliers in all distributions.
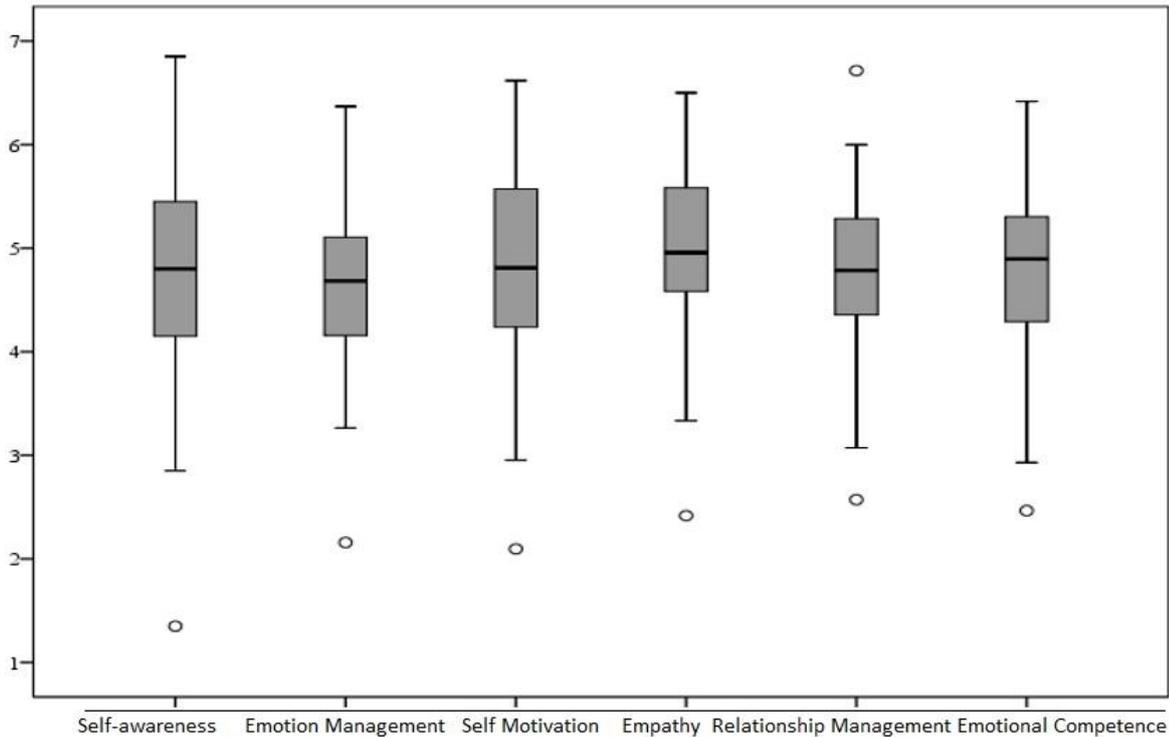
Figure 2: Diagrams of extremes and quartiles of the distributions of dimensions and emotional competence
(Source: Prepared by the authors)

In order to complement the study, the correlation between all dimensions was analyzed and also the weight of each dimension in emotional competence (Table 2). As the assumption of normality was verified in all dimensions and emotional competence, Pearson's correlation coefficients were used. All coefficients presented are statistically significant, they are positive, indicating a relationship in the same direction between the different dimensions. The table highlights coefficients with a value greater than 0.70, which reveals at least a strong correlation. Therefore, it can be said that the correlations between: self-awareness and emotion management and between self-awareness and self-motivation are at least strong. Regarding emotional competence, the strongest contributions come from the dimensions: self-awareness,

	Self awareness	Emotions Management	Self motivation	Empathy	Relationship Management	Emotional Competence
Self awareness	1	0.806**	0.817**	0.436**	0.479**	0.929**
Emotions Management		1	0.748**	0.385**	0.427**	0.868**
Self motivation			1	0.308*	0.408**	0.884**
Empathy				1	0.609**	0.598**
Relationship Management					1	0.661**
Emotional Competence						1

*-significant at 5%; *+-significant at 1%.
Table 2: Pearson correlation coefficients
(Source: Prepared by the authors)

4.4. Characterization of emotional dimensions and competence according to sociodemographic characteristics

Table 3 presents the characterization of emotional dimensions and competence according to sociodemographic characteristics and results of the respective statistical tests applied. It is observed that in the dimensions: self-awareness, emotion management, self-motivation and emotional competence, the results presented by female respondents were slightly higher than the results of men. However, at a significance level of 5% it was concluded that the differences observed were not statistically significant. It can therefore be stated that the results of dimensions and statistical competence are identical between male and female teachers. Regarding the age group, it is observed that the results obtained are relatively close between individuals from different groups, which is why no statistically significant differences were detected. Regarding marital status, it is observed that single or divorced respondents presented higher average results in all dimensions and emotional competence, with the exception of relationship management, than married or cohabiting respondents, however such differences do not were statistically significant. Regarding whether or not the respondent had children, it was observed that the highest results in all dimensions and emotional competence were higher in respondents who did not have children. At a significance level of 5%, it was concluded that the differences observed were not statistically significant. Regarding educational qualifications, higher average values were recorded among teachers who had at least a postgraduate degree compared to those who had a degree. It was concluded by applying the appropriate test (parametric t test for independent samples) that the differences observed in the dimensions: emotion management, self-motivation and emotional competence were statistically significant. Therefore, this study allows us to conclude for the teachers under analysis that those who had at least a postgraduate degree develop significantly greater skills in terms of managing emotions, self-motivation and their own emotional competence than those teachers who have a degree.

Table following on the next page

		B.C	GE	AM	AND	GR	CE
Sex	**Feminine**	4.76±0.94	4.62±0.66	4.78±0.93	5.03±0.71	4.78±0.67	4.77±0.63
	Masculine	5.05±1.19	4.73±0.83	5.14±1.03	4.94±1.13	4.70±1.11	4.93±0.94
	ET (p)	-0.961 (0.341)^a	-0.500 (0.619)^a	-1.213 (0.230)^a	0.374 (0.710)^a	0.357 (0.722)^a	-0.697 (0.488)th
Age years)	**Up to 45**	4.64±0.64	4.36±0.44	4.91±1.09	5.02±0.86	4.66±0.74	4.70±0.54
	From 46 to 55	4.84±0.94	4.68±0.69	4.80±0.95	5.09±0.92	4.87±0.82	4.84±0.72
	Over 55	4.86±1.16	4.72±0.76	4.87±0.94	4.94±0.70	4.71±0.75	4.82±0.75
	ET (p)	0.198 (0.821)c	3.619 (0.164)d	0.061 (0.941)c	1.068 (0.586)d	2.296 (0.317)d	0.134 (0.875)c
marital status	**Single/divorced**	5.05±1.03	4.81±0.57	5.01±1.14	5.08±0.75	4.73±0.63	4.94±0.70
	Married/de facto union	4.76±0.99	4.60±0.72	4.81±0.90	4.99±0.83	4.78±0.81	4.77±0.71
	ET (p)	0.929 (0.357)b	0.829 (0.357)th	0.674 (0.503)^a	0.362 (0.718)^a	-0.185 (0.854)th	0.754 (0.454)b
Have children	**Yes**	4.79±0.98	4.63±0.71	4.83±0.94	4.96±0.82	4.82±0.79	4.79±0.70
	No	4.98±1.11	4.74±0.57	4.99±1.03	5.28±0.73	4.49±0.59	4.89±0.73
	ET (p)	-0.960 (0.337)b	-0.472 (0.639)^a	-0.481 (0.632)^a	-0.853 (0.394)b	1.229 (0.224)^a	-0.925 (0.355)^a
Qualifications	**Graduation**	4.67±0.99	4.50±0.69	4.64±0.89	4.91±0.83	4.70±0.69	4.67±0.66
	Postgraduate Master's degree	5.12±0.95	4.96±0.59	5.29±0.93	5.21±0.75	4.90±0.93	5.10±0.68
	ET (p)	-1.687 (0.097)th	-2.524 (0.014)th	-2.640 (0.011)^a	-1.368 (0.176)^a	-0.917 (0.363)^a	-2.371 (0.021)^a

AC – Self-awareness; GE – Emotion Management; AM – Self motivation; E – Empathy; GR – Relationship Management; CE – Emotional Competence; ET – Test statistics; p – evidentiary value; ^{a}- parametric t test; b – Mann-Whitney non-parametric test; c – Anova parametric test; d – Kruskal-Wallis non-parametric test
Table 3: Characterization of emotional dimensions and competence according to sociodemographic variables
(Source: Prepared by the authors)

4.5. Characterization of dimensions and emotional competence according to professional characteristics

Table 4 presents the characterization of the dimensions and emotional competence according to the professional characteristics and results of the respective statistical tests applied. It is observed that teachers from the Miguel Torga group presented higher average results in all dimensions and emotional competence than teachers from the Emídio Garcia group. However, at a significance level of 5% it was concluded that the differences observed were not statistically significant. It can therefore be stated that the results of dimensions and statistical competence are identical between teachers from the two groups. Regarding the length of time in the profession, it is observed that the results obtained are higher in the group of teachers with less experience, although the results are considerably close, which is why no statistically significant differences were detected. When it comes to satisfaction with salary, it is observed that there is no behavior to record that is in line with the increase in satisfaction with what they receive with salary. It should be noted that the average values obtained are relatively close between respondents from different groups. Regarding the fact that the respondent has the possibility of returning to the beginning of their career and choosing or not to become a teacher again, it is observed that the highest results in all dimensions and emotional competence were higher in the respondents who stated that they would return to being teachers. At a significance level of 5%, it was concluded that the differences observed were not statistically significant.

		B.C	GE	AM	AND	GR	CE
Grouping of schools	**AE Miguel Torga**	4.98±0.87	4.90±0.67	5.06±0.93	5.27±0.86	4.81±0.76	4.99±0.68
	AE Emídio Garcia	4.77±1.03	4.57±0.69	4.97±0.96	4.94±0.78	4.75±0.78	4.75±0.71
	ET (p)	0.684 (0.497)ᵃ	1.588 (0.118)ᵃ	0.949 (0.346)th	1.365 (0.177)th	0.247 (0.806)ᵃ	1.145 (0.257)ᵃ
Exercise time (years)	**Up to 25**	4.99±0.94	4.68±0.70	5.08±0.97	5.22±0.81	4.88±0.81	4.96±0.68
	More than 25	4.70±1.03	4.63±0.69	4.70±0.92	4.87±0.79	4.69±0.75	4.70±071
	ET (p)	1.162 (0.250)ᵃ	0.288 (0.774)ᵃ	1.583 (0.119)th	1.705 (0.093)a	0.980 (0.331)a	1.415 (0.162)a
Satisfaction with salary	**Dissatisfied**	4.76±1.13	4.68±0.80	4.83±1.11	5.02±0.70	4.65±0.74	4.78±0.82
	Neither satisfied nor dissatisfied	4.85±0.97	4.66±0.69	4.83±0.86	5.12±0.84	4.99±0.87	4.87±0.69
	Satisfied	4.85±0.89	4.57±0.55	4.94±0.93	4.76±0.91	4.46±0.40	4.73±0.54
	ET (p)	0.058 (0.971)d	0.728 (0.695)d	0.065 (0.938)c	2.194 (0.334)d	2.646 (0.079)c	0.187 (0.830)c
If I went back to the beginning I would choose the same profession	**Yes**	4.83±0.93	4.63±0.67	4.88±0.91	5.05±0.72	4.88±0.56	4.84±0.63
	No	4.80±1.17	4.68±0.77	4.78±1.06	4.90±0.99	4.50±1.11	4.73±0.87
	ET (p)	0.089 (0.929)a	-0.227 (0.821)ᵃ	0.394 (0.695)ᵃ	0.671 (0.505)a	1.769 (0.082)th	0.525 (0.601)ᵃ

AC – Self-awareness; GE – Emotion Management; AM – Self motivation; E – Empathy; GR – Relationship Management; CE – Emotional Competence; ET – Test statistics; p – evidentiary value; ᵃ- parametric t test; b – Mann-Whitney non-parametric test; c – Anova parametric test; d – Kruskal-Wallis non-parametric test

Table 4: Characterization of dimensions and emotional competence depending on professional variables
(Source: Prepared by the authors)

5. DISCUSSION AND CONCLUSIONS

Question Q1: Is there an influence of sociodemographic variables on the general Emotional Competence of teachers, in the context of the COVID-19 Pandemic?

- No, there is no influence of sociodemographic variables on the general Emotional Competence of teachers, in the context of the COVID-19 Pandemic, with the exception of the characteristic educational qualifications, it was concluded that the results of emotional competence were identical between teachers of different gender, age group , marital status and with or without children. It was only found that teachers with a postgraduate or master's degree had significantly higher levels of emotional competence.

Question Q2: Is there a relationship between sociodemographic variables and each particular dimension of teachers' Emotional Competence, in the context of the COVID-19 Pandemic?

- No, there is no relationship between sociodemographic variables and each particular dimension of teachers' Emotional Competence, in the context of the COVID-19 Pandemic. It was concluded that there were no significant differences between individuals from different groups for each professional characteristic under study. It can therefore be stated from the study developed that emotional competence is identical among teachers with different professional characteristics.

Question Q3: Is there a connection between Emotional Competence and the professional characteristics of teachers, in the context of the COVID-19 Pandemic?

- In general, the answer to this question is negative, as it was concluded that the results for each emotional capacity were identical between teachers of different gender, age group,

153

marital status, educational qualifications and with or without children. In the dimensions: emotion management and self-motivation, it was found that teachers with a postgraduate or master's degree had significantly higher levels of competence than teachers with a bachelor's degree.

Question Q4: Is there a connection between each particular dimension of Emotional Competence and the professional characteristics of teachers, in the context of the COVID-19 Pandemic?

- No, there is no connection between each particular dimension of Emotional Competence and the professional characteristics of teachers, in the context of the COVID-19 Pandemic. It was concluded that there were no significant differences between individuals from different groups for each professional characteristic under study. It can therefore be stated from the study developed that each dimension of emotional competence is identical among teachers with different professional characteristics.

The results obtained in the study by Calaça (2014) corroborate the results of this investigation. Calaça (2014) found in his study that sociodemographic variables such as gender, age, marital status, educational qualifications, teaching cycle and teacher seniority do not influence "stress, coping and engagement" and he also adds that there are no considerable distinctions between professional variables and "stress, coping and engagement". Valente (2019) indicates that professional variables such as academic training and length of service influence teachers' emotional intelligence levels. The more academic training the teacher has, the higher their emotional intelligence levels, however. The results of some studies contradict this research and regarding professional variables, Fernandes (2019) tells us that the influence of sociodemographic variables on variables, emotions and resilience. Ribeiro, Barbosa and Soares (2015) also add that sociodemographic work variables are related to the development of burnout syndrome in the population investigated. Nogueira (2015) states that they influence teachers' self-esteem because an increase in self-esteem is related to an increase in professional experience and that there are different values of self-esteem in relation to the level of teaching. The present study was based on a reflection on how sociodemographic and professional variables influence the emotional competence of teachers in School Groups in the capital of the district of Bragança in the context of the COVID-19 Pandemic. It can be concluded from this research that teachers have a moderate level of emotional competence, with females showing 4.77 and males 4.93, with a moderate level score between 3.50 and 5.45. Veiga-Branco (2005) indicates that the "emotional tones" of the teacher in the educational relationship generate emotions and behaviors in students, and this process brings us to the importance of emotional education. Two more surmountable factors can be highlighted: future citizens depend on today's schools and these depend on their teachers and these in turn must have the characteristic skills to effectively implement what is their responsibility, education. This investigation reveals that, in relation to sociodemographic variables and general emotional competence and its dimensions, female teachers present slightly higher results in the dimensions: self-awareness, emotion management, self-motivation and emotional competence. Regarding the age group, no statistically significant differences were detected. Single or divorced respondents showed higher average results in all dimensions (with the exception of relationship management) and emotional competence in general. Teachers who did not have children revealed higher results in all dimensions and in emotional competence in general. Regarding the professional variables and general emotional competence and its dimensions, it can be considered that the teachers from the Miguel Torga group presented higher results in all dimensions and in emotional competence in general than the teachers from the Emídio Garcia group. Teachers with less experience and those who stated that they would return to being teachers if they had the possibility of returning to the beginning of their career show higher results in all dimensions

and in emotional competence in general. The results achieved in this study contradict the results of studies developed by some authors such as Pinto (2018) who indicate that the sociodemographic variables "Age", "Education Level", "Employment Situation", "Economic Situation" and "Civil Status" influence the incidence of depressive personality in the population and the study by Sousa (2016) which reveals the existence of significant differences between the sociodemographic variables gender and educational qualifications on deviant behaviors, deviant behaviors of an interpersonal nature and deviant behaviors of an organizational nature. The study by Gonçalves and Neves (2011) corroborates the present study, indicating that sociodemographic variables have a weak influence on well-being at work,

LITERATURE:
1. Bisquerra, R. (2003). Emotional education and basic life skills. Revista de Investigación Educativa (RIE), 21, 1, 7-43.
2. Bisquerra, R., & Pérez, N. (2007). The emotional skills. Education XXI, 10, 61 82.
3. Calaça, ZVA (2014). Stress, coping and engagement in special education teachers in RAM. Master's thesis in Educational Psychology. University of Madeira.
4. Correia-Almeida, A. (2013). Teacher training in emotional skills: an empirical study. Doctoral thesis in Educational Sciences. Lisbon: Faculty of Social and Human Sciences – UNL.
5. Dias, L., Lucas, S., Alves, PJ, & Veiga-Branco, A. (2012). Emotional skills and marital violence-influence on victimization and perception of quality of life. In I International Congress on Emotional Intelligence and Education (pp. 1-17). Comendador Ângelo Azevedo Basic School-CIEE Project.
6. Fernandes, MCS (2019). Emotions and resilience in teachers in the 2nd and 3rd cycle of Basic Education. Master's thesis in Educational Psychology. University of Madeira.
7. Freixo, JMV, (2010). Scientific Methodology, Editora Piaget.
8. Gonçalves, SP, & Neves, J. (2011). The contribution of sociodemographic variables to the characterization of well-being at work in a sample of police officers. Psychiatry, Psychology and Justice, (4), 26-43.
9. Nogueira, ECP (2015). Factors that influence the self-esteem of regular education teachers and special education teachers. Master's Dissertation in Special Education, Cognitive and Motor Domain. Douro Higher Institute of Educational Sciences. Penafiel.
10. Pestana, MH, & Gageiro, JN (2014). Data Analysis for Social Sciences. The complementarity of SPSS. (6th Edition); Lisbon: Edições Sílabo, Lda.
11. Pinto, IS (2018). Depressive personality and depression: influence of sociodemographic variables. Master's thesis in Psychology. University of Lisbon.
12. Ribeiro, LDCC, Barbosa, LACR, & Soares, AS (2015). Assessment of the prevalence of Burnout among teachers and its relationship with sociodemographic variables. Revista de Enfermagem do Centro-Oeste Mineiro, 5(3).
13. Sousa, BMD (2016). Influence of sociodemographic variables on deviant behaviors. Master's Thesis in Psychology. University Institute of Psychological, Social and Life Sciences. Lisbon.
14. Valente, S., Monteiro, AP, & Lourenço, AA (2019). The relationship between teachers' emotional intelligence and classroom discipline management. Psychology in the Schools, 56(5), 741–750.
15. Valente, S., Veiga-Branco, A., Rebelo, H., Lourenço, AA, & Cristóvão, AM (2020). The relationship between emotional intelligence ability and teacher efficacy. Universal Journal of Educational Research, 3(8), 916-923.
16. Veiga-Branco, A. (2005). Emotional competence in teachers: a study in discourses from the educational field. PhD final thesis. Porto: University of Porto

17. Veiga-Branco, A. (2018). Speech given in Parliament. About Emotional Competence … or twenty years of Learning Emotional Competence - A Brief Approach.
18. Order of Psychologists (2020). Studying during a Pandemic. https://www.ordemdospsico logos.pt/ficheiros/documentos/covid_19_estudar_em_tempo_de_pandemia.pdf

EXPLORING THE IMPACT OF COMPANY SIZE AND LONGEVITY ON THE PROFITABILITY RESILIENCE OF HOSPITALITY COMPANIES DURING THE COVID-19 PANDEMIC

Goran Karanovic

University of Rijeka, Faculty of Management Tourism and Hospitality Management
Primorska 46, PO Box 97, 51410 Opatija, Croatia
gorank@fthm.hr

ABSTRACT

Tourism and the closely-linked hospitality industry were a couple of the industries most exposed to the impact of the COVID-19 pandemic, having suffered some of the most severe negative effects. The aim of this paper is to examine whether the size and longevity of select hotel companies in Central and Eastern countries did have any influence on their profitability resilience in response to the COVID-19 pandemic. OLS analysis was conducted in this paper in order to explore and understand specific firm factors that influenced the profitably resilience of hotel industry profitability of select central and eastern European countries. The data was obtained from the EMIS data base and included more than 600 companies, with the observed time period being 2014-2022. The research findings provide essential insights for academia, management in the industry as well as the government, stimulating the formulation of adaptive approaches in risk situations and as possible strategies for overcoming any future crises of the kind.
Keywords: COVID-19, Hospitality industry, Profitability resilience, Size, Longevity

1. INTRODUCTION

The chronicle of the COVID-19 pandemic is well known, commencing with the initial case report in Wuhan, China on December 31, 2019, followed by the first outbreak within China in January. By the end of January China decided to lockdown Wuhan city as a containment measure for the a viral outbreak (Crossley, 2020). During February the virus slowly started to spread around the globe. February 2020 was marked by significant amount of buzz and reports of new cases worldwide, but as the month unfolded the information on the number of cases and the impact to the health and death rate of infected started to dominate the news. On March 11 the World Health Organisation declared the corona virus (COVID-19) outbreak a global pandemic (Cucinotta and Vanelli, 2020). Subsequently, in mid-March, governmental directives and notifications on a global scale encompassed travel constrains and progressively culminated in the implementation of widespread lockdown. The implementation of lockdown measures exhibited variations across countries; however, during March and April, governments worldwide imposed restrictions, including quarantine protocols for incoming travellers from other countries as well as self-isolation for suspected persons. The limited knowledge surrounding the novel COVID-19 virus, coupled with the absence of a cure or vaccine, contributed to a consensus of urgency. By March 20, 2020 as reported by the World Health Organization (2020), there were 750,890 new cases and 36,405 deaths globally. The summer in the Northern hemisphere dampened the situation a bit, however the fall season brought an increase in the number of new cases as well as an increase in the numbers of deaths per 1m people (see figure 1). From October 2020 to the end of May 2021, the global landscape remained challenging, marked by consistently high case numbers, with a daily average of 1,6 new deaths per one million cases. January experienced a modest reduction in new cases and fatalities. Over time, the global implementation of the COVID-19 vaccine significantly aided in managing infections. Simultaneously, the global population acquired a growing understanding of coexisting with the virus.

The virus underwent mutations that rendered it less lethal to the population but, conversely, made it more transmissible (see figure 1). The Period from the October 2020 up to end of May 2021 globally was difficult, with the number of cases remaining constantly high with a daily average of 1,6 new deaths per 1 million of cases, with exception of January in which the numbers of new cases and death decreased a bit. As time went by, the COVID-19 vaccine was implemented on a global scale, helping millions to undergo immunization. Coupled with the fact that the world population learned how to live with the virus, and the virus mutating leading to new, less deadly but more virulent strains, humanity's response to the virus finally became more robust. Three years after the WHO declared COVID-19 a global pandemic, the officials announced on March 5th 2023 that COVID-19 is no longer a public health emergency of international concern. This official declaration about the end of the pandemic however did not mean that the virus is gone; it is still present, but the effect to the health of the overall population is not concerning.
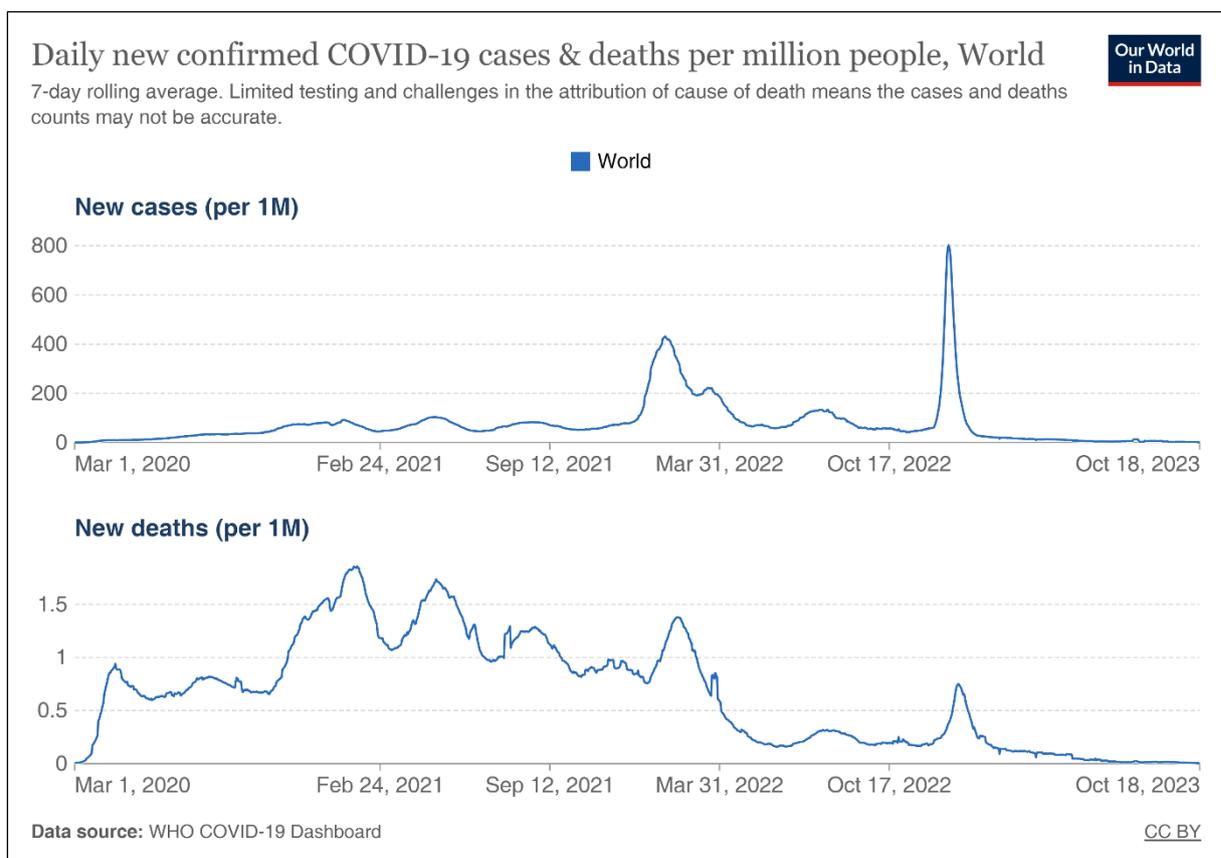
Figure 1: Graph Daily new confirmed COVID-19 cases & deaths per million people, World
(Source: Edouard Mathieu, et.al (2020) - "Coronavirus Pandemic (COVID-19)". Retrieved from: 'https://ourworldindata.org/coronavirus)(Mathieu et al., 2020)

At the beginning of the pandemic (March 2020), governments around the world decreed wide-ranging measures in response to this public health crisis, including the suspension of all public transportation, usage the face masks in public, the prohibition of large gatherings in public places, the closure of physical schools, and the restriction of inter-district, inter-county, and international travel, necessitating special permissions. These limitations were imposed due to world's struggle to limit the spread COVID-19, but on the other hand (Li *et al.*, 2020) pointed out that undocumented infections i.e. asymptotic cases were the main cause of the rapid virus spread in the China at the beginning of the pandemic.

In order to prevent this and avoid such occurrences, travel limitation had been imposed globally. According to the (Gössling, Scott and Hall, 2021) international, regional and local travel restrictions immediately affected national economies, including tourism systems, i.e. international travel, domestic tourism, day visits and segments as diverse as air transport, cruises, public transport, accommodation, cafes and restaurants, conventions, festivals, meetings, or sports events. During the period spanning from June to September 2020, many countries exhibited a relaxation of restrictions; however, as the number of cases increased toward the end of summer, restrictions were subsequently reintroduced, albeit in a less stringent manner. The concise historical overview of the origins of the COVID-19 pandemic outlined above falls short in capturing the profound and enduring impact of pandemics. The remembrance of suffering disappeared among living people because the last similar event happened more than a century ago, as it was associated with the Spanish influenza pandemic. This health, social, economic and political crisis cannot be comprehensively examined without incorporating the emotional and psychological aspects into the analysis of individuals and their subsequent cascading effects on the economy. The emotional and societal dimensions encompass fear, loss of life, panic, vulnerability, misinformation, spread of conspiracy theories, and, following the imposition of lockdown measures, isolation and alienation. All this pressure shaped different actions and behaviour among population. Opposite the mid-age and old population with the comorbidities the young and healthy population exposed tendency towards risky behaviour during the pandemics. As an illustration, several studies delved into the perceptions of the COVID-19 pandemic within the Z generation and its consequential impact on their travel intentions amid this global health crisis. The finding suggested that generation Z perceived the severity of COVID-19 to be low and have neutral perception to the virus and potential exposure (Rončák, Scholz and Linderová, 2021; Tzavara *et al.*, 2023). The negative impact that COVID-19 had on profitability of the tourism and hotel industry is unquestionable. (Lee and Chen, 2022) investigated the impact of COVID-19 to travel and leisure industry returns and concluded that confirmed deaths have a far greater negative impact on the travel and leisure industry returns than the number of new cases. The governments, industry and hotels individually implemented different strategies toward risk management and connected to prevent the spread of COVID-19. The authors (Quan, Al-Ansi and Han, 2022) verified that protected measures play an important role in increasing the number of hotel visitors and increasing the financial performance of the hotel in the time of crisis. Overall, all these elements collectively reverberated across the global populace, significantly affecting the global economy and all industries. The extent of negative consequences experienced by different industries exhibited considerable variation, ranging from severe to moderate. World Travel and Tourism Council (2020) data best illustrates the impact and severity of the COVID-19 pandemic on tourism, the contribution of travel and tourism to total GDP contribution had share of 10,3% in 2019 with overall 330 million jobs globally, or 10.4% of global employment. However, the data of the World Travel and Tourism Council report for 2021 (2021) show the severity that COVID-19 had on tourism and travel, with the fall over 50% of share in global GDP from 10,4% 2020 up to 5,5% in 2021. In 2021, 62 million jobs were lost in the sector, which counts as almost 20% of all employed in the sector. In contrast, some industries benefited from the COVID-19 pandemic. The pharmaceutical sector demonstrated a positive impact. This has been investigated by (Droj, Karanovic and Tara, 2021; Sung *et al.*, 2021; Tušek, Ježovita and Halar, 2021; Vera Ramírez and Valencia Serna, 2022). In summary, it can be concluded that pharmaceutical companies who strategically directed their resources towards the development of pharmaceutical solutions tailored to mitigate the consequences of widespread health crises experienced positive impact of the COVID-19 pandemic. However, the pharmaceutical industry was not the only enjoying this effect. Szczygielski et al., (2022) performed a study about the influence of COVID-19 induced uncertainty on the returns and volatility of 68 global

industries and found that abnormal positive returns included health care technology (39.76%), internet and direct marketing retailing (22.55%), software (21.61%) and biotechnology (21.32%). Both internal and external factors perpetually exert significant influence over the daily decision-making processes within a business, consequently impacting the company, either directly or indirectly. An effective approach to investigate the influence on the performance of a specific industry or company involves assessing its profitability performance, as it is a pivotal determinant shaping a company's overall value. Undoubtedly, the COVID-19 pandemic had a profoundly destructive effect on the global performance of the tourism and hospitality industry. This study endeavours to ascertain whether factors such as company size and longevity, among others, have had any impact on the profitability resilience of hospitality companies during the COVID-19 pandemic. This paper follows the subsequent organization. After this introduction, the second section provides an extensive literature review, with a specific focus on profitability within the hospitality industry, particularly the hotel sector. The third section outlines the methodology framework and the dataset employed in this study. In the fourth section, the results are presented with the interpretations. Finally, the fifth section draws conclusions derived from the findings of this study.

2. LITERATURE REVIEW

The hotel industry performance has been a subject of extensive theoretical and empirical research. As noted by Li, Ma and Qu, (2017), recent research within the field of hospitality has centred prominently on various aspects of performance. Sainaghi, Phillips and Zavarrone (2017) underscore that the investigation of performance measurement has been approached from a myriad of disciplinary perspectives, encompassing accounting, financial management, economics, and strategy. Various analytical models have been employed in these studies, including ratio analysis, regression analysis, data envelopment analysis, Delphi analysis, analytical hierarchical process, and the balanced scorecard, among others. Of particular note, some of the most frequent and innovative approaches to determining and measuring profitability, which is a key dimension of performance, involve the utilization of models such as the least squares path modelling (PLS) and clustering techniques, as discussed by (Lado-Sestayo and Vivel-Búa, 2018). Usually within the hotel industry, performance studies are investigating financial data (return on investments, return on assets, return on equity, capital structure, liquidity, costs, revenues etc.) and other significant variables like location, ownership structure, affiliations on hotel association, management level and education background, location of the hotel and proximity to various important tourist points (airports, train and bus stations, city centre…) number of starts. Numerous studies (Sainaghi, 2011; Honma and Hu, 2012; Ben Aissa and Mohamed, 2014; Bresciani, Thrassou and Vrontis, 2015; Ben Aissa and Goaied, 2016; Lado-Sestayo, Vivel-Búa and Otero-González, 2017; Lado-Sestayo and Vivel-Búa, 2018, 2020; Menicucci, 2018; Bacik et al., 2020; Lima Santos et al., 2020) have indicated the confirmed significance and importance of the "other" variables. The hotel financial performance may be observed solely from the financial perspective. The studies that were performed only with financial perspective and using entirely financial performance ratios and data are not rare. For example, Chambers & Cifter (2022) used ROA and ROE as profitability measures, while sales, debt, size, GDP, cash, and working capital were applied for other independent variables. The result obtained in the study indicated U-shaped relationship between working capital and financial performance of hospitality firms. Karanović, Štambuk and Jagodić (2020) found that capital structure influenced return on investment as measure of financial performance. Kalas, Mirovic and Pavlovic (2019) examined profitability determents of hotel industry and effect of independent variables current liability debt, financial stability, size, growth, sale growth, EBIT on ROA and ROE. Authors employed a combination of multivariate analysis of variance and multiple regression models in their study and discovered

that liquidity and debt have an impact on ROA. Study performed by (Soni, Arora and Le, 2022) examined liquidity, net asset turnover, foreign earnings intensity, proprietary ratio, firm size, and firm age and their impact on firms' return on assets (ROA). Results indicated that liquidity and size have significant and had positive impact to ROA. Karanovic (2023) examined impact on dozen financial variables on ROA of Central and Eastern European hotel companies using the panel regression model. The result indicated that total equity, current ratio, cash to total assets have a positive and significant impact on the return on assets whereas trade receivables turnover debt on total assets ratio, COVID-19 had negative impact and ROA. Study of Droj and Droj (2021) confirmed also that COVID-19 had a negative impact on profitability indicators. In the study of Dimitric, Tomas Žikovic and Arbula Blecich (2019) authors utilized half dozen financial variables as exploratory ones cash flow to operating revenue, net asset turnover, productivity of employees, solvency ratio, firm size and company age were taken as exploratory variables to determine profitability the Croatian hotel industry. This study focuses exclusively on the financial aspect and aligns with prior research in its examination of the impact of financial variables on the financial performance of the hotel industry in the Central and Eastern European region.

3. DATA AND METHODOLY

To assess the impact of company size and longevity on the profitability resilience of hospitality firms during the COVID-19 pandemic, as well as other financial variables, data were sourced from the EMIS database. The dataset exclusively comprised companies falling under the NAICS classification for Hotels (except Casino Hotels) and Motels (72111) and Accommodation (721). In total, the sample encompassed data from 484 hotel companies, covering the period from 2014 to 2022, representing six Central and Eastern European countries: Bulgaria, Czech Republic, Hungary, Poland, Romania and Slovakia. The initial sample consisted of 912 companies; however, those designated with operational statuses 'closed' and 'in liquidation,' as well as companies with extensive missing data, were excluded from the analysis. To examine the influence of financial, size, and longevity variables on the resilience of the hospitality sector during the COVID-19 pandemic, initially it was computed the averages for all observed financial variables during two distinct periods: the pre-COVID-19 period and the COVID-19 period. The following variables were utilized in our models: Average total operating revenue (AVER_TOT_OP_REV), average total liabilities (AVER_TOT_LIAB), average assets to total equity (AVER_ASSET_TO_EQUT), average Altman Z-score (AVER_ATL_Z_SCOR), average cash and cash equivalents (AVER_CASH__EQUI), and average retained earnings (AVER_RET_ERN), all of which served as independent financial variables. These averages were derived from data spanning the years 2017 to 2019. Given that financial variables are closely tied to performance, our analysis restricted just last three pre-COVID-19 years to ensure consistency and lover volatility in the observed data. In addition to these financial variables, it was included the incorporation date as a proxy for longevity and the number of employees as a measure of company size. Number of employees was dived into a five classes addressing the size of the company 6-20, 21-50, 51-100, 101-250, and 251 and more. As measure of profitability it was applied variables return on assets (ROA) and return on equity (ROE). In order to test the resilience and to see the decrease due to the COVID-19, the growth/decrease of ROA and ROE is computed as:

$$\Delta ROA = ROA_t - ROA_{t-1}$$

And

$$\Delta ROE = ROE_t - ROE_{t-1}$$

Δ ROA is difference of average ROAt; COVID-19 ROA (2020-2022) and average ROAt-1 pre COVID-19 ROA (2014-2019). With this it has utilized the impact difference between COVID-19 and "normal stated" of business. Same was done for ROE and it was attained Δ ROE. Afterwards, the current study performs a multiple regression analysis to test the effects of longevity, size and stated financial variables on performance measured Δ ROA and Δ ROE, Full empirical models are:

$$\Delta ROA = \alpha_0 + \alpha_1 \text{AVER\_TOTL\_LIAB} + \alpha_2 \text{AVER\_TOT\_OP\_REV} \\ + \alpha_3 \text{AVER\_ASSE\_TO\_EQUT} + \alpha_4 \text{AVER\_ALT\_Z\_SCOR} \\ + \alpha_5 \text{AVER\_CASH\_EQUI} + \alpha_6 \text{AVER\_RET\_ERN} + \alpha_7 \text{SIZE} \\ + \alpha_8 \text{AVER\_RET\_ERN}$$

And

$$\Delta ROE = \alpha_0 + \alpha_1 \text{AVER\_TOTL\_LIAB} + \alpha_2 \text{AVER\_TOT\_OP\_REV} \\ + \alpha_3 \text{AVER\_ASSE\_TO\_EQUT} + \alpha_4 \text{AVER\_ALT\_Z\_SCOR} \\ + \alpha_5 \text{AVER\_CASH\_EQUI} + \alpha_6 \text{AVER\_RET\_ERN} + \alpha_7 \text{SIZE} \\ + \alpha_8 \text{AVER\_RET\_ERN}$$

4. RESULTS AND DISCUSSION

We can see that oldest company in our examined dataset is 31 years old. On average the Δ ROE had -7,79% fall and standard deviation was 105.17, while Δ ROA had mean od -0,39% with standard deviation 32.

Estimation sample regress		Number of obs =		484
Variable	Mean	Std.	DevMin	Max
Δ ROE	-7,79137	105.1719	-1551.4	1340,622
Δ ROA	-0,38907	32.86346	-67.625	679,7392
Longevity		7.439.425	0	31
AVER_TOT_OP_REV		2.699.818	12	23693,33
AVER_TOT_LIAB		5.889.469	1.166.667	63058,33
AVER_ASSET_TO_EQUT		2.853.211	-11474.65	50720,27
AVER_ATL_Z_SCOR		6.005.413	-9.4	1282,447
AVER_CASH__EQUI		8.218.435	-37	7408,667
AVER_RET_ERN		2412.6	-17724.59	11703,48

Table 1: Descriptive statistics
(Source: author)

First models was OLS regression standard error regression assumptions should be met before proceeding with regression analysis. Tests performed on regression assumptions are:

Table following on the next page

Variable	VIF	1/VIF
Longevity	1,39	0,717116
Size		
6-20	2,5	0,399687
21-50	3,37	0,296891
51-100	2,87	0,348047
101-250	2,44	0,410151
+250	1,9	0,526035
AVER_TOT_OP_REV	1,5	0,667882
AVER_TOT_LIAB	1,43	0,698819
AVER_ASSET_TO_EQUT	1,04	0,960449
AVER_ATL_Z_SCOR	1,03	0,97006
AVER_CASH__EQUI	1,35	0,739666
AVER_RET_ERN	1,21	0,824602
Country_Id		
Czech Republic	1,62	0,617758
Hungary	2,64	0,37835
Poland	3,95	0,252885
Romania	3,77	0,265228
Slovakia	1,99	0,502483
Mean VIF	2,12	

Table 2: VIF test result
(Source: author)

The Variance Inflation Factors (VIF) test was applied to measure that the independent variables are not interrelated. VIF test results are presented above. According to the test result, the VIF values and the average VIF value of the variables are less than 5. Therefore, the multiple linear connection problem was not encountered in the model. To address the violation of heteroscedasticity, it was we employed the ordinary least squares (OLS) method with procedure of Breusch-Pagan/Cook-Weisberg test for heteroscedasticity:

Variable	Chi2 (1)	Prob > chi2
fitted values of ΔROE	376.90	0.0000
fitted values of ΔROA	1523.94	0.0000

Table 3: Breusch-Pagan/Cook-Weisberg test for heteroscedasticity
(Source: author)

Due to the heteroscedasticity problems, it is seen that it is higher than 0.05. Since the H0 hypothesis is rejected, it can be stated that there is variance problem in the model. The models presented in table 3 implemented robust standard errors (HAC) due to heteroscedasticity and autocorrelation consistent standard errors that are not sensitive to potential problems of autocorrelation and/or heteroscedasticity as a consequence of the unique properties of the data being analyzed. Those models

Table following on the next page

VARIABLES	ΔROA	$\Delta ROA2$	ΔROE	$\Delta ROE2$
Longevity	0.0421	0.0421	0.701	0.701
	(0.235)	(0.187)	(0.738)	(0.615)
Size 6-20	-16.99***	-16.99	-18.56	-18.56
	(6.278)	(12.13)	(19.67)	(24.80)
Size 21-50	-15.78***	-15.78	-21.45	-21.45
	(6.036)	(11.37)	(18.91)	(23.93)
Size 51-100	-14.26**	-14.26	-5.190	-5.190
	(6.180)	(11.60)	(19.36)	(23.74)
Size 101-250	-15.77**	-15.77	-10.75	-10.75
	(6.325)	(12.79)	(19.82)	(26.28)
+250	-17.93**	-17.93	-50.73**	-50.73
	(7.505)	(15.03)	(23.52)	(42.34)
AVER_TOT_OP_REV	-0.00125*	-0.00125***	-0.00745***	-0.00745
	(0.000672)	(0.000424)	(0.00211)	(0.00610)
AVER_TOT_LIAB	0.000317	0.000317***	-0.000492	-0.000492
	(0.000301)	(0.000110)	(0.000944)	(0.00109)
AVER_ASSET_TO_EQUT	-0.000221	-0.000221	0.00685***	0.00685*
	(0.000530)	(0.000227)	(0.00166)	(0.00413)
AVER_ATL_Z_SCOR	-0.00630	-0.00630	-0.0171	-0.0171
	(0.0251)	(0.00480)	(0.0786)	(0.0138)
AVER_CASH__EQUI	-0.00152	-0.00152	0.00772	0.00772
	(0.00210)	(0.00112)	(0.00657)	(0.00678)
AVER_RET_ERN	7.44e-05	7.44e-05	-0.000761	-0.000761
	(0.000677)	(0.000323)	(0.00212)	(0.000902)
Czech Republic	3.058	3.058	4.732	4.732
	(8.517)	(2.265)	(26.69)	(17.17)
Hungary	3.639	3.639	1.514	1.514
	(6.585)	(2.839)	(20.63)	(9.898)
Poland	10.90	10.90***	22.67	22.67*
	(6.680)	(3.509)	(20.93)	(12.26)
Romania	5.532	5.532**	4.293	4.293
	(6.018)	(2.143)	(18.86)	(8.120)
Slovakia	4.376	4.376*	-1.530	-1.530
	(7.591)	(2.328)	(23.79)	(12.23)
Constant	10.41	10.41	4.063	4.063
	(8.873)	(15.73)	(27.80)	(33.65)
Observations	484	484	484	484
R-squared	0.051	0.051	0.090	0.090
F	1.471	3.365	2.716	1.340
p	0.100	7.32e-06	0.000268	0.163
Standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

Table 4: Result for models regression standard error OLS (Δ ROA and Δ ROE) and robust standard errors OLS (Δ ROA2 and Δ ROE2)

(Source: author)

The findings indicate that both the size and longevity of hospitality companies were not statistically significant in relation to their profitability resilience during the COVID-19 pandemic. When considering the profitability measure return on assets (ROA), only two variables, namely average total operating revenue and average total liabilities, were found to be significant. Total operating revenue exhibited a negative influence on return on assets, while total liabilities had a positive impact. Regarding return on equity (ROE), the sole significant variable was the ratio of assets to total equity, which had a positive effect on this measure of profitability.

5. CONCLUSION

Financial profitability is most important of company performance. In instability the performance and profitability of companies are tested, this instability may have been caused by inner reasons or by outside impacts. The COVID-19 pandemic had earth-shattering impact to the whole society and connected to world economy. This systemic risk had devastating influence on the tourism and hotel industry and the short time companies from these industries experienced the unseen flabbergast. Everyday business had been forced stopped. Although it was unexpected event, it cannot be said that this is black swan, in recent past the world experienced SARS 2002-2004 epidemics, however the severity wasn't near to the COVID-19 virus. In this study it has examined did the longevity of the company and/or the size had any impact to the profitability resilience of the hospitality companies in particular eastern and central European Countries. Conclusion is that that the companies examined in the study it wasn't find any significance to the profitability resilience during COVID-19. What bring us to the concussion that this systemic risk wasn't considered neither the companies had exit strategies. The companies that had less liabilities on the start of COVID-19 had better ROA, while fore ROE similar to ROA the only positive and significant factor that have impact to the resilience was the assets to the equity. Meaning the less indebt companies at the start of COVID-19 had higher ROE ratios. The research is constrained by certain limitations, primarily stemming from the unavailability of data related to inner variables tied to business models. These variables include factors like location, chain/franchise arrangements, and management educational background, ownership structure, number of stars and others. Furthermore, the study was conducted within a specific and relatively limited geographic scope, encompassing only six Central and Eastern European Union member states. For future research attempts, it is advisable to expand the sample to include other EU countries and other regions. This expanded approach could provide a more holistic understanding of the factors affecting the financial resilience the hotel industry. This research bears significance not only for the academic community but also for hotel owners and managers

LITERATURE:
1. Ben Aissa, S. and Goaied, M. (2016). 'Determinants of tourism hotel market efficiency', *International Journal of Culture, Tourism and Hospitality Research*, 10(2), pp. 173–190. Available at: https://doi.org/10.1108/IJCTHR-11-2013-0080.
2. Ben Aissa, S. and Mohamed, G. (2014). 'Determinants of tourism hotel profitability in Tunisia', *Tourism and Hospitality Research*, 14(4), pp. 163–175. Available at: https://doi.org/10.1177/1467358414543970.
3. Bacik, R. *et al.* (2020). 'Differences in financial performance between various categories of hotels in the Visegrad Group countries', *Journal of International Studies*, 13(2), pp. 279–290. Available at: https://doi.org/10.14254/2071-8330.2020/13-2/19.
4. Bresciani, S., Thrassou, A. and Vrontis, D. (2015). 'Determinants of performance in the hotel industry - an empirical analysis of Italy', *Global Business and Economics Review*, 17(1), p. 19. Available at: https://doi.org/10.1504/GBER.2015.066531.

5. Chambers, N. and Cifter, A. (2022). 'Working capital management and firm performance in the hospitality and tourism industry', *International Journal of Hospitality Management*, 102, p. 103144. Available at: https://doi.org/10.1016/j.ijhm.2022.103144.

6. Crossley, G. (2020). *Wuhan lockdown 'unprecedented', shows commitment to contain virus: WHO representative in China, Reuters.com*. Available at: https://www.reuters.com/article/us-china-health-who-idUSKBN1ZM1G9.

7. Cucinotta, D. and Vanelli, M. (2020). 'WHO declares COVID-19 a pandemic', *Acta Biomedica*, 91(1), pp. 157–160. Available at: https://doi.org/10.23750/abm.v91i1.9397.

8. Dimitric, M., Tomas Žikovic, I. and Arbula Blecich, A. (2019). 'Profitability determinants of hotel companies in selected Mediterranean countries', *Economic Research-Ekonomska Istraživanja*, 32(1), pp. 1977–1993. Available at: https://doi.org/10.1080/1331677X.2019.1642785.

9. Droj, L. and Droj, G. (2021). 'Considerations Regarding the Impact of the Covid-19 Pandemics Over the Financial Performance at The Level of the Tourism', *The Annals of the University of Oradea Economic Sciences*, 30(2), pp. 291–298. Available at: https://doi.org/10.47535/1991AUOES30(2)030.

10. Droj, L., Karanovic, G. and Tara, G. (2021). 'Impact of the Covid-19 Pandemics Over the Financial Performance at the Level of the Tourism Companies Operating in Central and Eastern Europe', *The Annals of the University of Oradea Economic Sciences*, 30(2), pp. 283–290.

11. Gössling, S., Scott, D. and Hall, C.M. (2021). 'Pandemics, tourism and global change: a rapid assessment of COVID-19', *Journal of Sustainable Tourism*, 29(1), pp. 1–20. Available at: https://doi.org/10.1080/09669582.2020.1758708.

12. Honma, S. and Hu, J.-L. (2012). 'Analyzing Japanese hotel efficiency', *Tourism and Hospitality Research*, 12(3), pp. 155–167. Available at: https://doi.org/10.1177/1467358412470558.

13. Kalas, B., Mirovic, V. and Pavlovic, N. (2019). 'Profitability Determinants of Hotel Industry in AP Vojvodina', in V. Bevanda and S. Štetić (eds) *4th International Thematic Monograph: Modern Management Tools and Economy of Tourism Sector in Present Era*. Belgrade, pp. 47–62. Available at: https://doi.org/10.31410/tmt.2019.47.

14. Karanovic, G. (2023). 'Exploring the Intrinsic Factors Influencing Return on Assets: A Case Study of the Hotel Industry in Selected EU Countries', *International Journal of Business and Economic Sciences Applied Research*, 16(1), pp. 54–61. Available at: https://doi.org/10.25103/ijbesar.161.05.

15. Karanović, G., Štambuk, A. and Jagodić, D. (2020). 'Profitability performance under capital structure and other company characteristics', *Zbornik Veleučilišta u Rijeci*, 8(1), pp. 227–242. Available at: https://doi.org/10.31784/zvr.8.1.21.

16. Lado-Sestayo, R. and Vivel-Búa, M. (2018). 'Profitability in the hotel sector: a PLS approach', *Journal of Hospitality and Tourism Technology*, 9(3), pp. 455–470. Available at: https://doi.org/10.1108/JHTT-10-2017-0118.

17. Lado-Sestayo, R. and Vivel-Búa, M. (2020). 'Hotel profitability: a multilayer neural network approach', *Journal of Hospitality and Tourism Technology*, 11(1), pp. 35–48. Available at: https://doi.org/10.1108/JHTT-08-2017-0072.

18. Lado-Sestayo, R., Vivel-Búa, M. and Otero-González, L. (2017). 'Determinants of TRevPAR: hotel, management and tourist destination', *International Journal of Contemporary Hospitality Management*, 29(12), pp. 3138–3156. Available at: https://doi.org/10.1108/IJCHM-03-2016-0151.

19. Lee, C.-C. and Chen, M.-P. (2022). 'The impact of COVID-19 on the travel and leisure industry returns: Some international evidence', *Tourism Economics*, 28(2), pp. 451–472. Available at: https://doi.org/10.1177/1354816620971981.

20. Li, R. *et al.* (2020). 'Substantial undocumented infection facilitates the rapid dissemination of novel coronavirus (SARS-CoV-2)', *Science*, 368(6490), pp. 489–493. Available at: https://doi.org/10.1126/science.abb3221.

21. Li, X., Ma, E. and Qu, H. (2017). 'Knowledge mapping of hospitality research − A visual analysis using CiteSpace', *International Journal of Hospitality Management*, 60, pp. 77–93. Available at: https://doi.org/10.1016/j.ijhm.2016.10.006.

22. Lima Santos, L. *et al.* (2020). 'TRevPAR as Hotels Performance Evaluation Indicator and Influencing Factors in Portugal', *Euro-Asia Tourism Studies Journal*, 1(December 2020), pp. 1–21. Available at: https://doi.org/10.58345/KQMJ7114.

23. Mathieu, E. *et al.* (2020). *OurWorldInData.org*. Available at: https://ourworldindata.org/coronavirus.

24. Menicucci, E. (2018). 'The influence of firm characteristics on profitability: Evidence from Italian hospitality industry', *International Journal of Contemporary Hospitality Management*, 30(8), pp. 2845–2868. Available at: https://doi.org/10.1108/IJCHM-04-2017-0219.

25. Quan, L., Al-Ansi, A. and Han, H. (2022). 'Assessing customer financial risk perception and attitude in the hotel industry: Exploring the role of protective measures against COVID-19', *International Journal of Hospitality Management*, 101(July 2021), p. 103123. Available at: https://doi.org/10.1016/j.ijhm.2021.103123.

26. Rončák, M., Scholz, P. and Linderová, I. (2021). 'Safety Concerns and Travel Behavior of Generation Z: Case Study from the Czech Republic', *Sustainability*, 13(23), p. 13439. Available at: https://doi.org/10.3390/su132313439.

27. Sainaghi, R. (2011). 'Price determinants of individual hotels: evidence from Milan', *Tourism Review*, 66(4), pp. 18–29. Available at: https://doi.org/10.1108/16605371111188713.

28. Sainaghi, R., Phillips, P. and Zavarrone, E. (2017). 'Performance measurement in tourism firms: A content analytical meta-approach', *Tourism Management*, 59, pp. 36–56. Available at: https://doi.org/10.1016/j.tourman.2016.07.002.

29. Soni, T.K., Arora, A. and Le, T. (2022). 'Firm-Specific Determinants of Firm Performance in the Hospitality Sector in India', *Sustainability*, 15(1), p. 554. Available at: https://doi.org/10.3390/su15010554.

30. Sung, M. *et al.* (2021). 'Pharmaceutical Industry's Engagement in the Global Equitable Distribution of COVID-19 Vaccines: Corporate Social Responsibility of EUL Vaccine Developers', *Vaccines*, 9(10), p. 1183. Available at: https://doi.org/10.3390/vaccines9101183.

31. Szczygielski, J.J. *et al.* (2022). 'The impact and role of COVID-19 uncertainty: A global industry analysis', *International Review of Financial Analysis*, 80(January), p. 101837. Available at: https://doi.org/10.1016/j.irfa.2021.101837.

32. Tušek, B., Ježovita, A. and Halar, P. (2021). 'The Profitability Determinants of the Global Pharmaceutical & Biotechnology Companies During The Covid-19 Pandemic', *DIEM: Dubrovnik International Economic Meeting*, 6(1), pp. 43–54. Available at: https://doi.org/10.17818/DIEM/2021/1.5.

33. Tzavara, D. *et al.* (2023). 'Understanding the Travel Risk Profile and Travel Intentions of Generation Z Amidst Covid-19', in N. Persiani et al. (eds) *Global, Regional and Local Perspectives on the Economies of Southeastern Europe*. Cham: Springer, pp. 315–332. Available at: https://doi.org/10.1007/978-3-031-34059-8_17.

34. Vera Ramírez, H.D. and Valencia Serna, F.A. (2022). 'Stock price performance of pharmaceutical companies: pre-vaccine COVID-19 - post-vaccine COVID-19', *Revista de Estudios Empresariales. Segunda Época*, 1, pp. 68–93. Available at: https://doi.org/10.17561/ree.n1.2022.6638.

35. World Health Organization (2020). *Coronavirus disease 2019 (COVID-19) Situation Report – 71*. Available at: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200331-sitrep-71-covid-19.pdf.

36. *World Travel & Tourism Council: Global Economic Impact & Trends 2020* (2020). London.

37. *World Travel & Tourism Council: Global Economic Impact & Trends 2021* (2021). London.

BIOCOSMETICS – THE ROLE OF MORAL, ENVIRONMENTAL AND HEALTH CONCERNS

Afonso Meneses Ribeiro
Instituto Português de Administração de Marketing – IPAM, Porto, Portugal
afonsoribeiro_2003@hotmail.com

Raquel Meneses
School of Economics and Management of the University of Porto, Portugal
INESC TEC, Portugal
raquelm@fep.up.pt

ABSTRACT
The bioproducts market has been growing, and the biocosmetics sector has followed this trend. The motivations that lead consumers to seek out this type of product have yet to be explored, as well as the difficulties experienced in terms of affordability, accessibility and variety. Using a questionnaire with 114 valid responses, a model based on TAM was tested. It was concluded that the main driver of the intention to buy biocosmetics is environmental issues, followed by health issues. The perceived difficulty resulting from higher prices, fewer locations or less variety does not seem to have a significant deterrent effect.
Keywords: Biocosmetics, TAM, Health concerns, Environmental concerns, SEM

1. INTRODUCTION
Cosmetics are used in everyone's day-to-day life, as "a cosmetic product is any substance or mixture intended to be placed in contact with the external parts of the human body (epidermis, hair and hair systems, nails, lips and external genital organs) or with the teeth and oral mucous membranes, with a view, exclusively or mainly, to cleaning them, perfuming them, modifying their appearance, protecting them, keeping them in good condition or correcting body odours" (Infarmed, 2023). In other words, a cosmetic product ranges from a simple toothpaste to a particular anti-wrinkle cream. Cosmetic products are, therefore, used on a massive scale every day, involving a high level of use of animal and plant resources and the development of many synthetic components. Considering growing environmental concerns, the biocosmetics market has been increasing (Misesa et al., 2022). However, consumers sometimes need help understanding exactly what they are and what distinguishes them from other products (e.g. green cosmetics). The truth is that, in general, consumers want fewer chemicals and more respect for nature, i.e. they are more environmentally concerned. In this research, we study the motivation behind the choice of these products using a quantitative methodology based on the Technology Acceptance Model (TAM). We proposed a new model that considered two external factors – Perceive Impact and Perceived Difficulty of use. A self-administered questionnaire was used, and 114 valid answers were collected. We tested the new model using structural equation modelling.

2. LITERATURE REVIEW
The technology acceptance model, also known as TAM, is commonly used in research to quantify consumer acceptance of new technologies em variadíssimos contextos ((Marangunić and Granić, 2015). Davis (1989) was the first to introduce it as an adaptation of the theory of reasoned action (TRA), an intention model used to predict and explain behaviour; it can explain many human actions and behaviours. TAM aims to trace the impact that external factors have on personal beliefs, attitudes and intentions regarding technology acceptance.

In this paper, we use the same logic based on external factors' influence on internal factors and the latter on acceptance intentions. At the external level, the model considers the Perceived usefulness and the perceived ease of use (Figure 1).
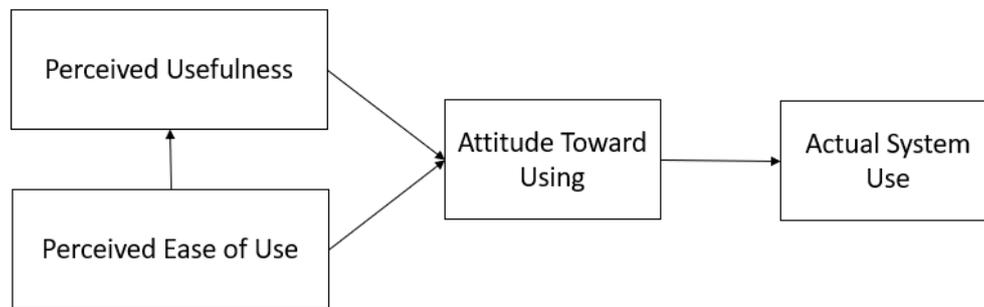
Figure 1: TAM Model
(Source: Davis, 1989)

The perceived usefulness é definida como "the degree to which a person believes that using a particular system would enhance their job performance" (Davis, 1989, 320). This definition is based on the very idea of usefulness, so what is at stake here is the perceived usefulness of the technology. So, extrapolating to biocosmetics, it's essential to understand how they can be useful. Biocosmetics are not vegan products, nor are they green or sustainable. Sustainable products consider the entire production, packaging and waste chain of these products (Bozza et al., 2022). Nevertheless, according to Goyal and Jerold (2023), bio cosmetics are cosmetics " made from 100% natural ingredients derived from plants, animals, microbes, enzymes, insects, and organic crops that are free of pesticides and chemical fertilisers and used for topical skin, hair, face, and oral care" (25148). An ingredient "that is found in nature or extracted from a natural source, and used as it is without being chemically altered, is considered to be natural, whereas if a compound is chemically changed it is deemed to be natural-derived (Bozza et al., 2022). Thus, its definition does not consider the existence or absence of animal components, which is fundamental when defining vegan products. However, these differences are not always apparent in the buyer's mind, so we hypothesise that the perceived usefulness includes a reduction in the impact in terms of animal welfare, a reduction in terms of environmental impact and an improvement in personal health (Limbu et al., 2022). So, as referred by Amberg and Fogarassy (2019), "the negative effects synthetic materials have on health and the environment were made apparent". Good examples of traditionally used additives are related to the colour and aroma found in many conventional cosmetics. Synthetic colouring is more commonly used, as it is cheaper and has preservative effects on the product itself, extending its shelf life (Amberg and Fogarassy, 2019), while fragrances are one of the leading causes of contact dermatitis (Amberg and Fogarassy, 2019). The Perceived Ease of Use is "the perception that a certain technology may or may not be too hard to use" and is the belief around which attitudes are developed. These "perceptions" influence the attitude toward using, which, connected with the perceived usefulness, determines the behavioural intention to use. In the case of bio cosmetics, this difficulty is not based on technological problems but on the fact that they are not affordable (because they have very high prices)(Niedermeier et al., 2021, Kapoor et al., 2019), they are not accessible (because they are not on sale in the area where they live)(Niedermeier et al., 2021), or because they do not exist in sufficient variety to meet the most diverse needs. These three factors make it challenging to use biocosmetics. Generally, Perceived Impact (I) and Perceived Difficulty of Use (PDU) both determine the Attitude Toward Using (A) that generates the Behavioural Intention to Buy (BI) (Figure 2). The intention to buy is a good predictor of purchase behaviour (Morrison, 1979).
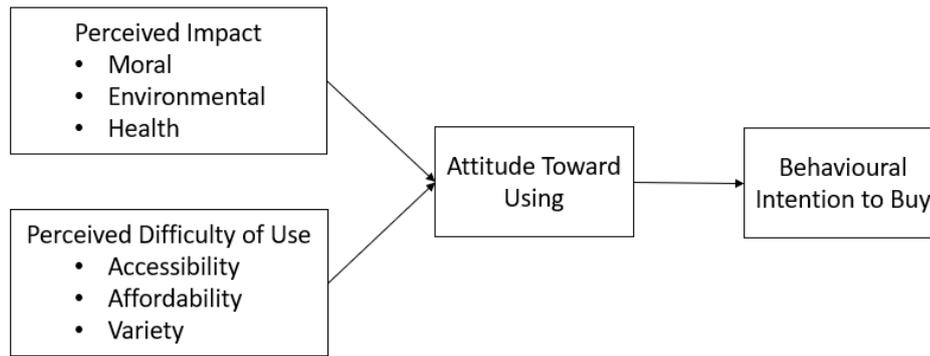
Figure 2: Biocosmetics Acceptance Model

This model represents three main direct hypotheses:
- H1: Perceived (positive) impact has a positive influence on Attitude Toward Using
  - H1.1: Perceived Moral impact has a positive influence on Attitude Toward Using.
  - H1.2: Perceived Environmental impact has a positive influence on Attitude Toward Using.
  - H1.3: Perceived Health impact has a positive influence on Attitude Toward Using.
- H2: Perceived Difficulty of Use has a negative influence on Attitude Toward Using
  - H21: Bad Accessibility has a negative influence on Attitude Toward Using
  - H22: Bad Affordability has a negative influence on Attitude Toward Using
  - H23: Short Variety has a negative influence on Attitude Toward Using
- H3: Attitude toward using has a positive influence on behavioural Intention to Buy.

3. METHODOLOGY

We used the Structural Equation Model (SEM) to test the model. In SEM, there is an inner model and an outer model. The outer model refers to several scales used to evaluate the latent variables. The inner model refers to the different relations researched. Concerning the impact, the questions about the latent variables were made indirectly, using scales almost all adapted from previous studies (Table 1). The 14 items were based on a Likert Scale, varying from 1 (Completely disagree) to 5 (Completely agree), and 3 reflects a neutral position. All constructs were treated as reflexive scales.

Scale	Question	Adapted from
Moral Impact	It prevents pain and suffering in animals (A_Pain)	Rozin et al. (1997)
	It prevents the killing of animals (A_Killing)	
	It protects animals (A_Protection)	
	It prevents us from demeaning ourselves by using animals as „guinea pigs", causing health problems and possibly killing them (A_People)	
Environmental Impact	It is not natural for people to use products with chemicals. (Ev_Chemicals)	Rozin et al. (1997)
	The use of „biocosmetics" decreases chemical pollution (Ev_Impact)	New
	The use of „biocosmetics" decreases the chemical of fossil-based ingredients.	New
	The use of „biocosmetics" reduces the impact of non-bio-degradable ingredients (Ev_biodegradable)	New
	„Conventional " cosmetics pollute the environment's water. (Ev_Water)	New
	„Conventional" cosmetics lead to much waste (Ev_waste)	New
Health Impact	„Biocosmetics" are healthier than „conventional" cosmetics	Rozin et al. (1997)
	The use of „conventional" cosmetics, even in a moderate amount, may harm me (H_Health)	
	Using „conventional" cosmetics is harmful to my health (H_Harmful)	
	Even though "conventional" cosmetics have reduced their chemical composition, they are still unhealthy. (H_Healthy)	

Table 1: Scales of Perceived Impact

The Perceived ease of use was a formative scale, including three items (Table 2) and based on a Likert Scale, varying from 1 (Completely disagree) to 5 (Completely agree), 3 reflects a neutral position.

Scale	Question		Adapted from	
Perceived Ease of Use	Affordability	„Biocosmetics" are too expensive	Rozin et al. (1997)	
	Accessibility	I can't find biocosmetics near my home	New	
	Variety	There is not much variety of biocosmetics based on my needs.	New	

Table 2: Perceived Ease of Use Scale

It was used a single question to measure the Attitude toward Using, "I like the idea of using "green" and "natural" cosmetics" adapted from (Rozin et al., 1997). Respondents must declare whether they agree or not using a five-point Likert scale. The questionnaire also includes demographic questions such as age, gender and residence. To evaluate the economic situation, people are asked to answer about their capacity to get savings. The questionnaire translate to Portuguese by native Portuguese spoken people. It was a self-administered questionnaire, sent through social networks.

4. RESULTS

We obtained 114 answers. Regarding sociodemographic characteristics, the sample is very diverse regarding age; the older person to answer is 68, the younger and only minor is 17, and the average age is 35,7, which further proves that the population is very diverse. In gender, around 60% identify themselves as fenales and 40% as males. The sample has an excellent dispersion considering geography, including big and very cosmopolitan areas and tiny villages. This is quite important since the accessibility to these products is not the same in such a diverse context. Regarding the economic situation of the respondents, 21 said they could save money almost every time or always, while 19 said that most times or even always, they couldn't satisfy their needs. We used the Structural Equation Model (SEM) to test the model. In SEM, there is an inner model and an outer model. The outer model refers to several scales used to evaluate the latent variables. The inner model refers to the different relations researched. The first step was the outer model validation. Using SmartPLs, a confirmatory factor analysis was developed, ensuring the significance level of each construct was below 0.05 (Pinto, 2016). To ensure internal consistency, loadings must be greater than 0,7 (Hulland). As a consequence, two items were excluded (Ev_water and Ev_waste).

	Animals	Healthy	Nature
A_Killing	0.911		
A_Pain	0.946		
A_People	0.869		
A_Protection	0.903		
EvBiodegradable			0.857
EvImpact			0.907
EvPoluition			0.857
H_BadHealthy		0.769	
H_Chemichals		0.713	
H_Healthy		0.816	
H_harmfull		0.865	

Table 3: Outer Loadings

We considered the Composite reliability (rho_a, rho_c and Cronbach's alpha) to ensure consistency and internal reliability (Hair Jr et al., 2021). To assess the convergent validity, we used the AVE; for this parameter to be considered acceptable, its value must be higher than 0,5, which means that the construct explains 50% or more of the variance of the indicators that constitute this construct (Hair Jr et al., 2021). On the other hand, Discriminant validity measures the degree to which a construct is empirically distinct from other constructs in the model (Hair Jr et al., 2021). Tables 4 and 5 present the values for the criteria used.

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Moral	0.930	0.960	0.949	0.824
Healthy	0.814	0.876	0.871	0.629
Environment	0.845	0.855	0.906	0.763

Table 4: Constructs Quality

	Moral	Healthy	Nature
Moral			
Healthy	0.315		
Nature	0.277	0.315	

Table 5: Discriminant Validity

To validate the formative scale of Perceived Ease of Use, we considered the VIF values to avoid multicollinearity (Pinto, 2016) between items (Table 6).

	VIF
E_Variety	1.710
E_expensive	1.005
E_needs	1.707

Table 6: Variance Inflation Factor (VIF)

We used bootstrapping to test the structural model, and the path coefficients are presented in Table 7.

	Original sample (O)	Sample mean (M)	T statistics (|O/STDEV|)	P values
Attitude -> Intention	0.278	0.284	2.593	0.010
Environmental Impact -> Attitude	0.375	0.363	4.008	0.000
Health Impact -> Attitude	0.326	0.326	4.856	0.000
Moral -> Attitude	-0.031	-0.019	0.402	0.688
PDU -> Attitude	0.106	0.139	1.148	0.251

Table 7: Path Coefficients

The total effects results, the addition of direct and indirect effects, are presented in Table 8.

Table following on the next page

173

	Original sample (O)	Sample mean (M)	T statistics (|O/STDEV|)	P values
Attitude -> Intention	0.278	0.284	2.593	0.010
Environmental Impact -> Attitude	0.375	0.363	4.008	0.000
Environmental Impact -> Intention	0.104	0.102	2.277	0.023
Health Impact -> Attitude	0.326	0.326	4.856	0.000
Health Impact -> Intention	0.090	0.094	2.068	0.039
Moral -> Attitude	-0.031	-0.019	0.402	0.688
Moral -> Intention	-0.008	-0.005	0.362	0.718
PDU -> Attitude	0.106	0.139	1.148	0.251
PDU -> Intention	0.030	0.037	1.026	0.305

Table 8: Total Effects

As we can see, the worries people have about the environment and their health have a positive effect on the attitude, and attitude then has a positive effect on the intention. So, the worries about health and the environment positively impact the intention to buy biocosmetics. We don't find a significant relation between the moral impact (concerning animals) and the attitude toward using biocosmetics. This is not surprising since, at the beginning of the questionnaire, we present the biocosmetics definition, and it is not connected with using animals as guinea pigs or with animal-originated components. We didn't find a significant relation between the perceived difficulty of use and the attitude toward using biocosmetics. We even tested each item individually, and we also tested the direct connection with the behavioural intention to buy. So, at this point, it seems that people are more and more concerned with the environmental impact, which is the most significant motivation to buy biocosmetics ($\beta = 0.104$); health concerns are substantial too but with a minor contribution ($\beta = 0.090$).

5. CONCLUSION

This research delved into the motivations behind the choice of bio cosmetics, employing a quantitative methodology rooted in the Technology Acceptance Model (TAM). The findings revealed that environmental concerns play a pivotal role in driving consumers towards biocosmetics, with health considerations also contributing to this decision, albeit to a lesser extent. This is likely due to the growing awareness of the negative impact of conventional cosmetics on the environment. At the same time, conventional cosmetics often contain harsh chemicals that can irritate the skin and cause other health problems. Biocosmetics, on the other hand, are made with natural ingredients that are gentler on the skin and body. The study also found that the perceived difficulty of using biocosmetics is not a significant factor in consumers' decision-making process. This suggests that consumers are willing to put in some extra effort to use biocosmetics if they believe it benefits their health and the environment. The findings of this study have important implications for both consumers and businesses. The study highlights the importance of considering environmental and health concerns when choosing cosmetics for consumers. For companies, the study suggests that there is a growing demand for biocosmetics and that businesses can succeed by developing and marketing products that meet the needs of environmentally conscious consumers. In addition to the two main motivations identified in the study, other factors may also influence consumers' decisions to buy biocosmetics. For example, some consumers may be motivated by aesthetic concerns, such as the desire to use products made with natural ingredients that give them a natural look. This was not investigated and may be included in future studies.

Future research could also explore situational factors such as health or economic situation. Investigating how consumers' motivations for buying biocosmetics vary across cultures and demographics would also be interesting.

LITERATURE:
1. AMBERG, N. & FOGARASSY, C. 2019. Green Consumer Behavior in the Cosmetics Market. *Resources,* 8**,** 137.
2. BOZZA, A., CAMPI, C., GARELLI, S., UGAZIO, E. & BATTAGLIA, L. 2022. Current regulatory and market frameworks in green cosmetics: The role of certification. *Sustainable Chemistry and Pharmacy,* 30**,** 100851.
3. DAVIS, F. D. 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 319-340.
4. DAVIS, F. D., BAGOZZI, R. P., & WARSHAW, P. R. 1989. User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*, 35(8), 982-1003. http://www.jstor.org/stable/2632151
5. GOYAL, N. & JEROLD, F. 2023. Biocosmetics: technological advances and future outlook. *Environmental Science and Pollution Research,* 30**,** 25148-25169.
6. KAPOOR, R., SINGH, A. B. & MISRA, R. 2019. Green cosmetics-Changing young consumer preference and reforming cosmetic industry. *Int. J. Recent Technol. Eng,* 8**,** 12932-12939.
7. LIMBU, Y. B., PHAM, L. & NGUYEN, T. T. T. 2022. Predictors of green cosmetics purchase intentions among young female consumers in Vietnam. *Sustainability,* 14**,** 12599.
8. MARANGUNIĆ, N. & GRANIĆ, A. 2015. Technology acceptance model: a literature review from 1986 to 2013. *Universal access in the information society,* 14**,** 81-95.
9. MISESA, F., INDRIANI, K., RUMUI, M. C., PRABOWO, H. & SRIWIDADI, T. Why Do People Want to Buy Green Cosmetic Exploring the Role of Social Media and Motivation. 2022 5th International Seminar on Research of Information Technology and Intelligent Systems, ISRITI 2022, 2022. 266-271.
10. MORRISON, D. G. 1979. Purchase Intentions and Purchase Behavior. *Journal of Marketing,* 43**,** 65-74.
11. NIEDERMEIER, A., EMBERGER-KLEIN, A. & MENRAD, K. 2021. Drivers and barriers for purchasing green Fast-Moving Consumer Goods: a study of consumer preferences of glue sticks in Germany. *Journal of Cleaner Production,* 284**,** 124804.
12. PINTO, P. 2016. Modelos de equações estruturais com variáveis latentes, fundamentos da abordagem Partial Least Squares. *Bnomics, Lisboa*.
13. ROZIN, P., MARKWITH, M. & STOESS, C. 1997. Moralization and becoming a vegetarian: The transformation of preferences into values and the recruitment of disgust. *Psychological science,* 8**,** 67-73.

ANALYSIS OF THE DEMOGRAPHIC EVENTS IN BUSINESSES IN SLOVAKIA FOR 2008 TO 2020

Maria Vojtkova

University of Economics in Bratislava,
Dolnozemska cesta 1, 852 35 Bratislava, Slovakia
maria.vojtkova@euba.sk

ABSTRACT

This paper focuses on the analysis of the entrepreneurial sphere in Slovakia, with an emphasis on changes caused by "demographic" events, specifically the birth and death of enterprises from 2008 to 2020, especially concerning employment in newly born and dead enterprises. Anonymous data from the Entrepreneurial Demography survey is used for this purpose. The introduction delves into an exploratory analysis of selected derived indicators of business demography and the interpretation of their descriptive characteristics. Subsequently, the focus shifts to modeling the relationship between the proportion of employment in newly born/dead enterprises and the rate of enterprises birth and death. Modeling the dependence of selected demographic events confirmed that the birth and death of enterprises have a significant impact on the proportion of employment. The results of the analysis include point and interval estimates of relevant derived demographic characteristics, with the statistical tool Statgraphics Centurion used in the analysis itself.
Keywords: *Birth rate, Business demography, Death rate, Proportion employment in born/dead enterprises, Regression model*

1. INTRODUCTION
The term "business demography" is frequently used in the context of studying businesses. The creation of new businesses as well as their closures are important indicators that characterize the dynamics of entrepreneurship. This fact is confirmed by Eurostat statistics, which show that in 2020, there were 23.4 million businesses in the non-financial business economy of the EU-27. These businesses collectively employed 127.6 million people and generated wealth measured by added value of 6,496 trillion EUR (Eurostat, 2023). This paper is focused on analyzing the entrepreneurial sphere in Slovakia, with an emphasis on changes caused by "demographic" events, namely the birth and closure of businesses from 2008 to 2020, particularly from the perspective of employment in newly established and closed businesses. For this purpose, anonymized data from the Business Demography survey, provided for scientific purposes by the Statistical Office of the Slovak Republic (ŠÚ SR), are used. Business Demography provides essential information for policy decision-making in the field of entrepreneurship, supports the Europe 2030 strategy, and supplies data for the OECD-Eurostat joint program on entrepreneurship indicators (EIP – Entrepreneurship Indicators Programme) (European Commission, 2021). Newly established businesses, according to the methodology of business demography, are considered to be legal entities and individual entrepreneurs who, in a given year, had either turnover, employees, or investments and had none of these in the two previous years. Newly established business entities are also those that were formed as legal entities or individual entrepreneurs through the combination of production factors with the limitation of not involving another business. On the other hand, businesses that ceased to exist are those that ceased their production factors with the limitation of not involving another business, either as legal entities or individual entrepreneurs.

Derived indicators from these can be characterized as (Vojtková et al., 2016; Eurostat, 2007):

- *Birth rate in %* (BR) - the birth rate of a given reference period (usually one calendar year) is the number of born enterprises as a percentage of the population of active enterprises.
- *Death rate in %* (DR) - the death rate of a given reference period (usually one calendar year) is the number of dead enterprises as a percentage of the population of active enterprises.
- *Proportion of employment in born enterprises in %* (PEBE) - people employed in newly born enterprises in year xx as a proportion of the total number of people employed in the population of active enterprises in year (*t*) - both in head counts.
- *Proportion of employment in dead enterprises in %* (PEDE) - people employed in enterprises that die in year xx as a proportion of the total number of people employed in the population of active enterprises in year (*t*) - both in head counts.

2. USED METHODS AND METHODOLOGY

Statistical modeling is an effective approach for uncovering relationships between variables that arise from complex real-world systems. Regression models are widely used in various scientific fields (Šoltés, 2019; Darlington, Hayes, 2016). In the following part of this paper, we will focus on modeling the relationship between two numerical variables using the classic linear regression model, which forms the basis for general linear models (Kim, Timm, 2006; Searle, Gruber, 2017) and generalized linear models (Agresti, 2015; Fox, 2015). Given the number of selected variables characterizing business birth and death, we will consider pairwise regression, which can be expressed using a linear regression model

$$y_i = \beta_0 + \beta_1 x_i + \varepsilon_i, \tag{1}$$

where β_0, β_1 are the parameters of the model and
ε_i is the random error.

Besides the linear regression model, which we will delve into when modeling demographic events, practitioners often use so-called linearizable models. These models can be transformed into a linear model with a straightforward conversion, and the least squares method can be applied to estimate parameters in both cases. If the model is suitable for the analyzed data, residuals should reflect the expected properties of random errors (Wooldridge, 2013). To what extent the linear regression model, estimated using the least squares method, captures the variability of the dependent variable and whether the influence of the explanatory variable on the dependent variable is relevant will be assessed based on an analysis of variance of the explained variable. In the next step, it's crucial to verify the significance of the estimated parameters, and after assessing their significance, we aim to construct point or interval predictions for the mean and individual values of the dependent variable. When measuring the intensity and closeness of the dependence of two variables, we will use the estimation of the paired (simple) correlation coefficient ρ_{xy}, while the paired (simple) coefficient of determination ρ_{xy}^2 will be used to assess the quality of the estimated model. (Šoltés, 2019)

3. EXPLORATORY ANALYSIS OF SELECTED DEMOGRAPHIC EVENTS IN SLOVAKIA BETWEEN 2008 AND 2020

In the introductory part of the analytical section, we focus on the exploratory analysis of selected derived indicators of business demography for the period from 2008 to the last reported period. Since these data are available with an 18-month lag, the latest year under observation is 2020.

The Slovak economy has been one of the fastest-growing economies in Europe since 2000, which is reflected in the values of the observed business demography indicators. In Figure 1 and Table 1, you can observe the values of selected descriptive characteristics for individual demographic events in the years 2008 to 2020. In general, higher values of all descriptive characteristics associated with enterprises birth can be identified. A more significant difference can be seen in the rate of enterprises birth, where, for example, the average value reached 13.09%, while the average rate of enterprises death for the observed period was only 9.82%. The lowest rate of enterprises birth was 9.89% in 2013, which may have been due to the lingering effects of the economic crisis. On the other hand, the highest rate of enterprises birth, 19.97%, was achieved in 2014, and this value can be considered an outlier. When examining the average values of derived indicators related to employment, only a negligible difference can be observed. The average employment rate of newly born enterprises during the observed period was 4.47%, compared to the average employment rate of enterprises that dead, which reached only 3.58%. All indicators related to employment demographics showed a low level of variability.

	BR	DR	PEBE	PEDE
Count	13	13	13	13
Average	13,0892	9,81692	4,47	3,58385
Standard deviation	2,79015	1,83344	0,824176	0,600244
Coeff. of variation	21,3164%	18,6763%	18,4379%	16,7486%
Minimum	9,89	7,03	3,24	2,62
Maximum	19,97	13,8	6,69	4,74

Table 1: Descriptive characteristics of selected demographic events in Slovakia for the period 2008 to 2020 (Source: Business Demography 2008 – 2020, SO SR, own processing in Statgraphics Centurion)
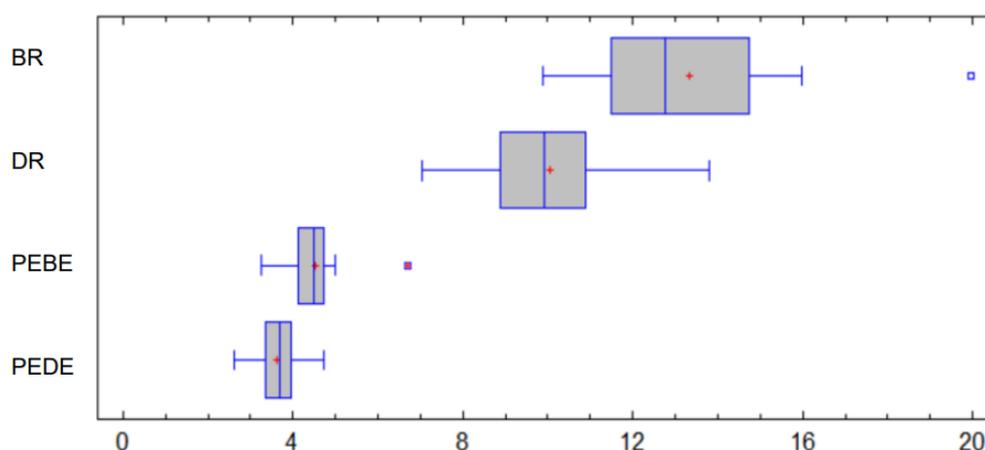
Figure 1: Box-plots of selected demographic events in Slovakia for the years 2008 to 2020 (Source: Business Demography 2008 – 2020, SO SR, own processing in Statgraphics Centurion)

The development of values for individual derived indicators of business demography over the observed period is depicted in Figure 2. In all the observed years, except for 2013, the indicators associated with enterprises birth exceed the values of indicators associated with enterprises death.

This fact merely confirms the previous statement about the possibility of the delayed impact of the major economic crisis precisely in that year. In the final year of the observed time series, a decrease in all the observed derived indicators can be observed compared to the previous period. It is also worth noting that according to the methodology for creating this indicator of enterprises death, the values for the year 2020 are estimated and will be refined in the following two years.
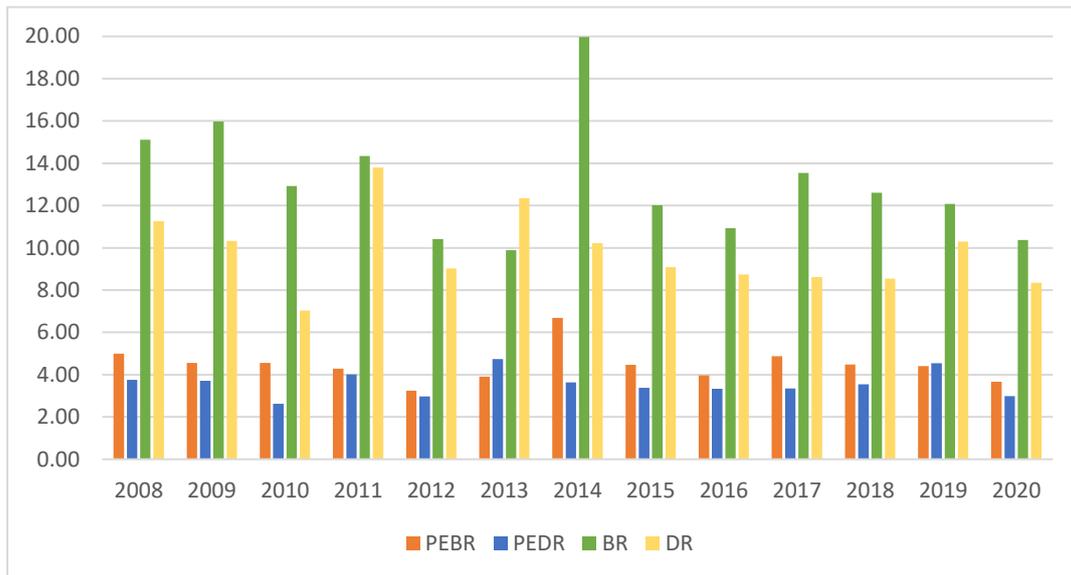
Figure 2: The development of selected demographic events in Slovakia for the years 2008 to 2020
(Source: Business Demography 2008 – 2020, SO SR, own processing
in Statgraphics Centurion)

The dynamics of the development of individual derived demographic indicators can also be observed based on Figure 3, which illustrates the growth coefficients comparing the values of selected derived business demography indicators relative to the previous year. In general, it can be said that the indicators associated with dead enterprises have approximately the same dynamics of development over the observed period. A more significant difference is noticeable only in 2011 when the enterprises death rate increased by 96.3% compared to the previous year, while the employment share in dead enterprises increased by only 53.4% compared to 2010. The opposite trend was observed in 2013 when, conversely, the employment share in dead enterprises increased to 1.596 times that of 2010, while the enterprises death rate increased to 1.369 times the previous year. When observing the dynamics of indicators associated with enterprises birth, there are smaller differences in the values of individual growth coefficients, and the dynamics of development themselves are not the same. For example, in 2010, the enterprises birth rate decreased by 19.1% compared to 2009, but the employment share in newly born enterprises remained unchanged in that year compared to the previous year. Similarly, in 2013, the enterprises birth rate decreased by 5.1%, and the employment share in newly born enterprises increased by 20.7% in both cases compared to 2009. The opposite trend in the development of indicators associated with enterprises birth can be observed in 2011. The growth coefficient in 2011 reached a value of 1.11 for the enterprises birth rate and a decrease coefficient of 0.939 for the employment share in newly born enterprises. In 2020, the first wave of the Covid-19 pandemic broke out in Slovakia, with the employment share in dead enterprises decreasing by 34.4% compared to the previous year, which can be attributed to the impact of support measures provided to businesses struggling to maintain business activity during this period.
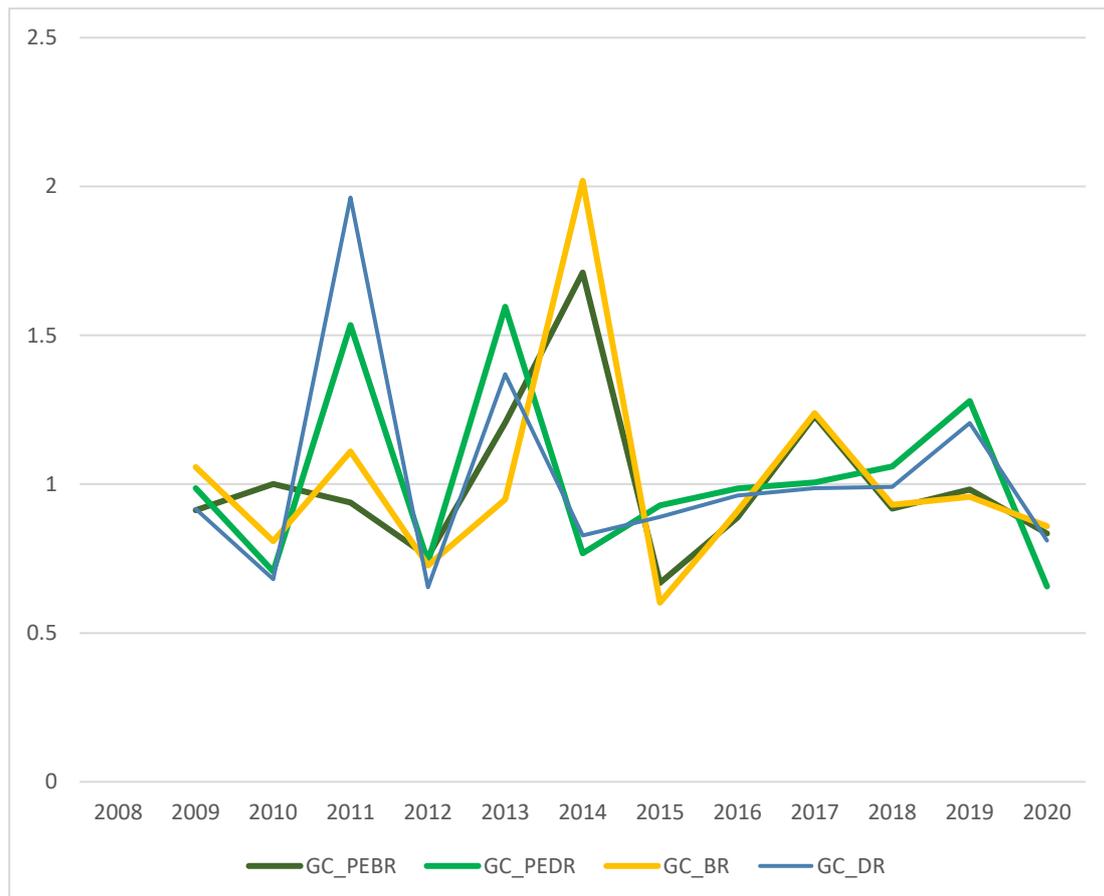
Figure 3: Growth coefficients of selected demographic events in Slovakia for the years 2008 to 2020
(Source: Business Demography 2008 – 2020, SO SR, own processing in Statgraphics Centurion)

4. MODELING OF DEMOGRAPHIC EVENTS FOR THE YEARS 2008 TO 2020 IN SLOVAKIA

When examining basic demographic events related to enterprises birth, we further focused on verifying the relationship between the employment share in newly born enterprises and the rate of their birth. Initially, we decided to model this relationship using a linear regression model, and the estimated parameters of the model are shown in the following outputs (Figures 4 and 5). The output in Figure 4 confirms that the overall linear regression model and the regression coefficient are statistically significant. The reason for choosing this model is primarily the simple interpretation of the model parameters. Thus, if the birth rate of enterprises increases by 1%, the employment share in newly born enterprises increases on average by 0.27 percentage points. The strength of the relationship between the two events is characterized by a correlation coefficient of approximately 0.90, indicating a strong and statistically significant linear dependency. The simple linear regression model explains 81.65% of the variability in the employment share in newly born enterprises. Slightly higher variability (84.96%) in the dependent variable is explained by a nonlinear regression function $y_i = \sqrt{b_0 + b_1 x_i^2} + e_i$ [1], but due

to simplicity, we chose to interpret the linear function.

---

[1] where b_0, b_1 and e_i are the point estimates of the parameters of the regression model

Parameter	Least Squares Estimate	Standard Error	T Statistic	P-Value
Intercept	0,976338	0,509765	1,91527	0,0818
Slope	0,266911	0,0381534	6,99573	0,0000

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Model	6,65532	1	6,65532	48,94	0,0000
Residual	1,49588	11	0,135989		
Total (Corr.)	8,1512	12			

Correlation Coefficient = 0,903595
R-squared = 81,6484 percent
R-squared (adjusted for d.f.) = 79,9801 percent

Figure 4: Linear regression model of the dependence of the proportion of employment in born enterprises on their birth rate
(Source: Business Demography 2008 – 2020, SO SR, own processing in Statgraphics Centurion)
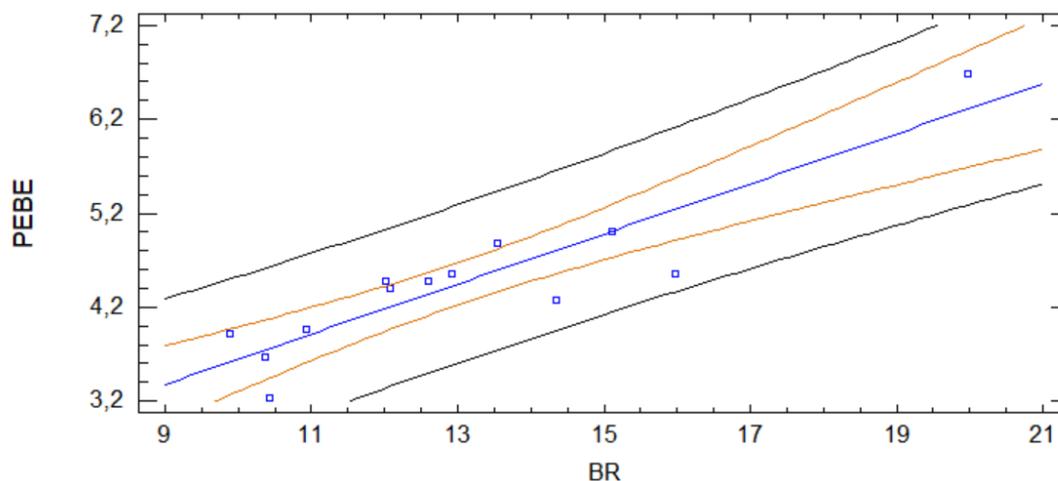
Figure 5: Graph of the linear regression model of the dependence of the proportion of employment in born enterprises on their birth rate
Source: Business Demography 2008 – 2020, SO SR, own processing in Statgraphics Centurion

An important tool for evaluating the impact of individual observations on regression characteristics is projection elements, also known as leverage. Their size can be used to diagnose extreme observations (Šoltés, 2019). In our case, the model contains one extreme observation, which is the year 2014. The leverage value for this observation exceeded the average leverage value by three times. However, considering the importance of maintaining the real picture of the situation, we decided to keep this extreme observation in the model (Figure 5 and 6). When excluding this observation, the estimated value of the regression coefficient parameter changes only slightly to 0.20. However, the percentage of variability explained by the model decreases to 59.37%. This means that the linear relationship between the two demographic events, as measured by the correlation coefficient, will be moderately strong, at 0.77. Given the low percentage of explained variability in the dependent variable, it would be interesting to consider including additional explanatory variables in the model.
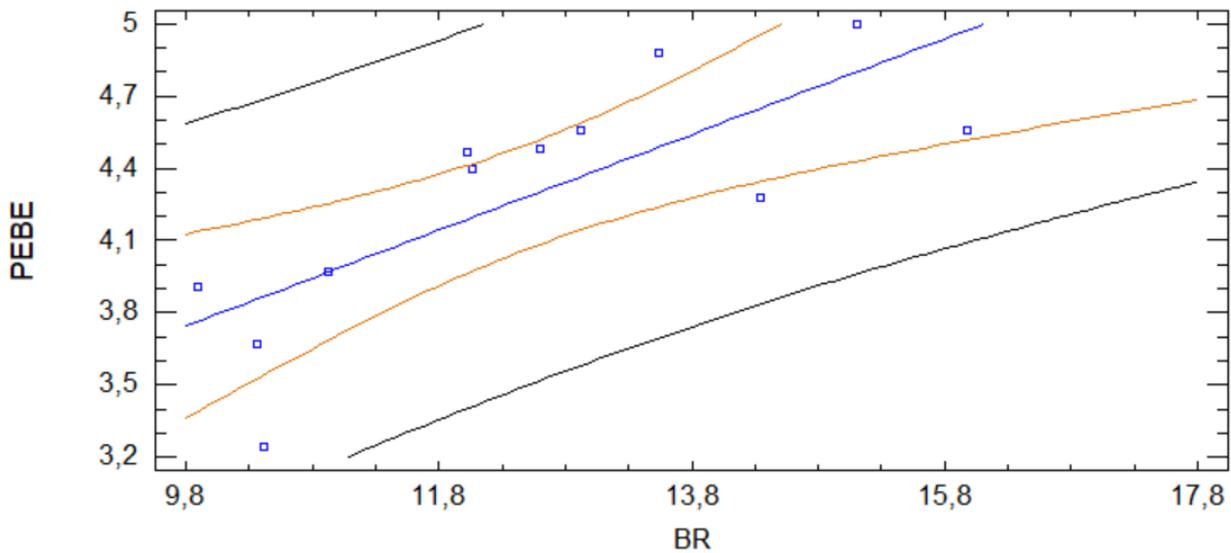
Figure 6: Graph of the linear regression model of the dependence of the proportion of employment in born enterprises on their birth rate after excluding the influential observation (Source: Business Demography 2008 – 2020, SO SR, own processing in Statgraphics Centurion)

		95,00% Prediction Limits		95,00% Confidence Limits	
X	Y	Lower	Upper	Lower	Upper
5,0	2,78886	1,61616	3,96156	1,89001	3,68771
10,0	3,78419	2,94765	4,62072	3,42017	4,14820
20,0	5,77484	4,60487	6,9448	4,87956	6,67012

Table 2: Point and interval estimates of the proportion of employment in born enterprises for specific values of the birth rate of enterprises
(Source: Business Demography 2008 – 2020, SO SR, own processing in Statgraphics Centurion)

Next, we made a point estimate of the employment share of newly born enterprises (Table 2) at specific values of the birth rate of enterprises. At a 10% birth rate of enetrprises, the employment share of newly born enterprises is 3.78%, with a 95% confidence interval for the average employment share of newly born enterprises ranging from 3.42 to 4.15%. These estimates are constructed assuming that the relationship will be modeled based on a simple linear regression model with the influential observation omitted. When assessing the relationship between the employment share of dead enterprises and their death rate, among 27 paired dependence models, the Double Reciprocal Model: $y_i = \dfrac{1}{b_0 + \dfrac{b_1}{x_i}} + e_i$ was evaluated as the

best nonlinear regression model. This nonlinear regression model explains 72.67% of the employment share of dead enterprises, while in the case of a linear regression model, it would only be 60.48%. The relationship between the selected demographic events, as measured by the correlation coefficient, is direct and moderately strong, at 0.85. The model as a whole, as well as the regression coefficient, can be considered significant at a 5% significance level (Figure 7 and 8). The relationship between the selected demographic events is not influenced by influential observations.

Parameter	Least Squares Estimate	Standard Error	T Statistic	P-Value
Intercept	0,057441	0,0428955	1,33910	0,2076
Slope	2,179040	0,402886	5,40858	0,0002

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Model	0,01947330	1	0,0194733	29,25	0,0002
Residual	0,00732261	11	0,000665692		
Total (Corr.)	0,02679591	12			

Correlation Coefficient = 0,852482
R-squared = 72,6726 percent
R-squared (adjusted for d.f.) = 70,1883 percent

Figure 7: Non-linear regression model of the dependence of the proportion of employment in dead enterprises on their death rate
(Source: Business Demography 2008 – 2020, SO SR, own processing in Statgraphics Centurion)
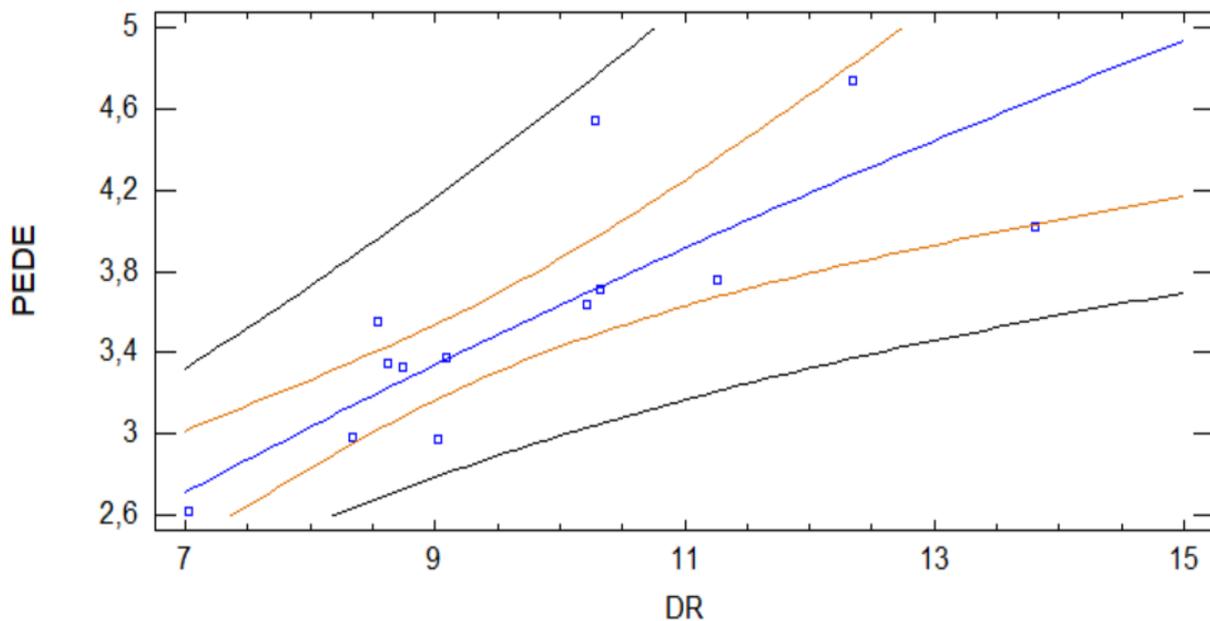
Figure 8: Graph of the non-linear regression model of the dependence of the proportion of employment in dead enterprises on their death rate
(Source: Business Demography 2008 – 2020, SO SR, own processing in Statgraphics Centurion)

Table 3 contains point estimates and interval estimates for the employment share of dead enterprises at various death rates for the selected nonlinear model. For example, the point estimate for the employment share of dead enterprises at a 10% death rate is 3.63%, and at a 20% death rate, it's 6.01%. In Table 3, you'll also find a 95% interval estimate for the individual employment share of dead enterprises (wider range) and the average employment share of dead enterprises (narrower range).

X	Predicted Y	95,00% Prediction Limits		95,00% Confidence Limits	
		Lower	Upper	Lower	Upper
5,0	2,02737	1,67765	2,56131	1,72721	2,45381
10,0	3,63180	2,99006	4,62431	3,42815	3,86118
20,0	6,00986	4,11732	11,1222	4,59503	8,68356

Table 3: Point and interval estimates of the proportion of employment in dead enterprises for specific values of the death rate of enterprises
(Source: Business Demography 2008 – 2020, SO SR, own processing in Statgraphics Centurion)

5. CONCLUSION

The modeling of the relationship between selected demographic events confirms that the birth and death of businesses have a significant impact on the employment proportion. Based on the analysis results, it can be concluded that the dynamics of derived indicators associated with the dead of enterprises are more stable than in the case of indicators associated with the birth of enterprises. On the other hand, the prediction of employment proportion values at various demographic events showed that with the same derived indicator associated with the birth of businesses, a higher impact on the employment proportion in newly born businesses can be observed than in the opposite case. This may be due to different types of models and the length of the observed period. In the future, more attention will be devoted to the impact of the COVID-19 crisis on these demographic phenomena of businesses. However, due to the 18-month lag in the provided data from the Business Demography database, this issue will be addressed later.

LITERATURE:

1. Agresti, A. (2015). *Foundations of Linear and Generalized Linear Models*. John Wiley & Sons.
2. Darlington, R. B., Hayes, A. F. (2016). *Regression Analysis and Linear Models: Concepts, Applications and Implementation*. New York: Guilford Publications.
3. Eurostat. (2023). *Key figures on European business*. Luxembourg: Publications Office of the European Union. Retrieved 19.09.2023 from https://ec.europa.eu/eurostat/en/web/products-key-figures/w/ks-04-23-195
4. Eurostat. (2007). *Eurostat-OECD manual on business demography statistics*. 1st ed. Paris: OECD. Retrieved 19.09.2023 from http://www.oecd.org/sdd/business-stats/39974460.pdf
5. European Commission (2021b). *The European Pillar of Social Rights action plan*. Luxembourg: Publications Office of the European Union. Retrieved 19.09.2023 from https://op.europa.eu/webpub/empl/european-pillar-of-social-rights/sk/
6. Fox, J. (2015). *Applied Regression Analysis and Generalized Linear Models*. Sage Publications.
7. Kim, K. – Timm, N. (2006). *Univariate and Multivariate General Linear Models: Theory and Applications with SAS*. Chapman and Hall/CRC.
8. Searle, S. R. – Gruber, M. H. J. (2017). *Linear Models* (2nd ed.) John Wiley & Sons.
9. Šoltés, E. (2019). *Regresná a korelačná analýza s aplikáciami v softvéri SAS*. Bratislava: LetraEdu. ISBN 978-80-89962-38-9

10. Vojtková, M. (2016). *Demografia podnikov: teoretické aspekty a empíria*. Pardubice: Univerzita Pardubice. ISBN 978-80-7560-028-8
11. Wooldridge, J. M. (2013). *Introductory Econometrics: A Modern Approach* (5th ed.). Mason: South-Western.

DO CSR REPORTS, GRI STANDARDS AND STAKEHOLDERS ENGAGEMENT INFLUENCE ESG PERFORMANCE? A EUROPEAN ANALYSIS

Albertina Paula Monteiro
Porto Accounting and Business School, Polytechnic of Porto, CEOS.PP; CICF, Portugal
amonteiro@iscap.ipp.pt

Catarina Cepeda
Porto Accounting and Business School, Polytechnic of Porto; UTAD, Portugal
clmc@iscap.ipp.pt

Amelia Silva
Porto Accounting and Business School, Polytechnic of Porto, CEOS.PP, Porto, Portugal
acfs@iscap.ipp.pt

ABSTRACT

This study empirically investigates whether Environmental, Social and Governance (ESG) performance is higher in companies that disclose ESG information via sustainability reports, demonstrate a high of application of GRI standards and greater stakeholder engagement. Using fixed effects regression, we analysed a panel data set of 2264 listed European companies over the period 2017-2021. The results show that European listed companies with highest ESG performance are those that publish sustainability reports separate from the annual report, demonstrating a higher disclosure level on the GRI indicators and a higher stakeholder's engagement in their sustainability strategies. These results are useful for organisations that are developing sustainability standards and policy makers, as they show that the companies with the best sustainability performance are those that tend to be involved in the sustainability information disclosure.
Keywords: *ESG, Corporate social responsibility, GRI, sustainability Reporting*

1. INTRODUCTION

Companies have a responsibility to society and stakeholders beyond legal obligations and mere economic benefits, especially in uncertainty economic periods (e.g., Kemper & Martin, 2010; Uribe Bohorquez & García Sánchez, 2023). Stakeholders believe that firms with high ESG disclosures, in extent and quality, yield better operating performance, higher returns, and lower firm-specific risk (Shaikh, 2022). The quantitative and qualitative sustainability disclosures *"are made available through the annual report and Corporate Social Responsibility (CSR) and Global Reporting Initiatives (GRI) report"* (Shaikh, 2022, p. 218). Monteiro *et al.*´s (2023a, p. 1) study shows that social disclosure induces the corporate social performance. Environmental, Social and Governance (ESG) performance is a quantitative measure developed and disseminated by Bloomberg, covering about 120 Environmental, Social, and Governance aspects (Shaikh, 2022). According to Monteiro *et al.*, (2022a), the tree ESG performance dimensions increase the company's transparency for all their stakeholders, increasing the disclosure of this information, as well as its quality (Monteiro *et al.*, 2022a). To signal ESG efforts, companies need to put into place socially and environmentally responsible CSR activities and, further, disclose their efforts and achievements to their social agents to maintain their legitimacy (Wang *et al.*, 2018). In this way, ESG disclosure plays an important role in the growing need to satisfy investors' demands for non-financial information (Ellili, 2022, p. 1094). According to *"ESG disclosure improves transparency, mitigates information asymmetry and enhances investment efficiency"*.

The literature and empirical studies on the relationship between ESG disclosure and ESG performance (ESG Score) have grown exponentially in the last three decades (e.g., Fiaschi *et al.*, 2020; Linnenluecke, 2022; Popescu *et al.*, 2021; Shaikh, 2022, Monteiro *et al*, 2022a; Monteiro *et al.*, 2023b). However, most of the studies in this field focused on the social aspect (e.g., Almaqtari *et al.*, 2023; Chouaibi *et al.*, 2022; Jizi *et al.*, 2022; Monteiro *et al.*, 2022a; Paolone *et al.*, 2023; Rossi *et al.*, 2022) rather than on financial factors (e.g., Salamon and Dhaliwal, 1980; Wallace, 2022). In this sense, there is a few studies related to que the GRI standards and CSR reporting impact on ESG performance. The aim of this study is to analyse whether companies that produce CSR reports, have a higher level of application of the GRI standards and greater involvement with stakeholders have better ESG performance. In this sense, this work takes on importance for the literature because it contributes to research gaps on the stakeholders' relations and GRI and ESG practices (e.g., Grosser, 2009; Uribe Bohorquez and García Sánchez, 2023; Jang and Ardichvili, 2020). This article is presented as follows. Section 2 deals with the literature review, setting out the research hypotheses. Section 3 presents the research methodology and data sources. Section 4 exhibits the results and their discussion. The last section is dedicated to the conclusions.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Corporate Governance is a fundamental feature of firms, and its definition is associated with the way a company conducts its relations with all its stakeholders (board of directors, partners, employees, suppliers, and society) within the framework of equality, transparency, accountability, and responsibility principles (Bektur & Arzova, 2022). Many studies in the literature have revealed that there is a positive relationship between ESG scores and company financial performance (e.g., Gompers *et al.*, 2011; Fooladi and Chaleshtori, 2011; Friede *et al.*, 2015; Cornett *et al.*, 2016; Behl *et al.*, 2021). These complementary non-financial ESG scores should provide information about companies' ESG performance (Sahin *et al.*, 2022). The literature on CSR suggests that CSR activities and achievements disclosed in CSR reports can enhance corporate reputation (Odriozola & Baraibar-Diez, 2017). Romero *et al.* (2019) found that companies that issue separate reports (sustainability reports) or integrated reports present higher quality sustainability information than companies that include their sustainability information in the annual report. In this sense, over the past decade, the number of companies that engage in CSR reporting has increased greatly and attracted considerable international attention in academic research (Fifka, 2013). Nevertheless, there are different report formats and various self-evaluation methods that companies can use to disclose their CSR activities and achievements (Wang *et al.*, 2018). Monteiro *et al.* (2023a) conclude that greater disclosure of social information contributes to greater social performance. Therefore, companies that produce CSR reports are expected to have better ESG performance. In this sense, we formulate de first research hypothesis:

- *H1: Companies that produce CSR Report have higher ESG performance.*

CSR reporting is supported by standards, such as the GRI framework, that enable organizations across the world to voluntarily evaluate and disclose their sustainability management results (Willis, 2003). In the same line Helfaya *et al.* (2023, p.1) prove "*that both board CSR orientation and strategy and the GRI have positively and significantly affected the overall disclosure of ESG practices within Europe*". Following the GRI sustainability reporting standards, firms can increase their own ESG disclosure scores compared to their peers (Helfaya *et al.*, 2023). Luo and Tang (2022, p. 2985) investigate the effects of ESG reporting and the adoption of GRI standards on carbon mitigation and concludes the "*the real effects of GRI standards tend to occur mainly in weak institutional settings (e.g., countries with less stringent*

carbon regulations, lower climate consciousness, and weaker legal enforcement)". Hence, the following research hypothesis is set:

- *H2: Companies that have a higher level of application of the GRI standards have higher ESG performance.*

Smith *et al*. (2005) states that the way in which the role of a corporation and its stakeholders is defined in a society will affect the extent of ESG disclosure. As we know, ESG reports are exposed to all stakeholders, so strategic stakeholder engagement can go a long way towards proper ESG disclosure (Fernandez-Feijoo *et al*., 2019). Romero *et al*. (2019) also found that stakeholder's engagement in dialogue improve the quality and performance of ESG disclosure. In addition, previous research on stakeholder theory, show that ESG practices and disclosure are influenced by firm's stakeholder orientation (Monteiro *et al*., 2022b; Weber and Gladstone, 2014; Wood and Jones, 1995). In view of the above, we formulate the third research hypothesis:
H3: Companies with a hight stakeholder engagement have higher ESG performance.
The research hypotheses formulated above result in the theoretical model exhibited in Figure 1.
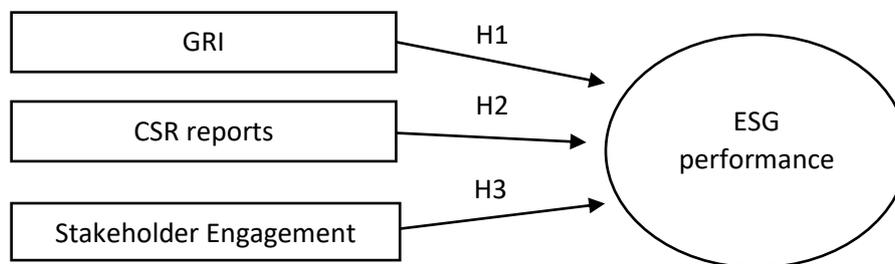
Figure 1: Theoretical model

3. METHODOLOGY
The study takes a quantitative focus, employing different statistical tests. By using descriptive linear regression, it is intended to analyze the association strength of CSR Report, level of application of GRI Standards, stakeholder engagement and the ESG Performance, with stakeholders' theory lenses. Studies on stakeholder theory, indicate that a firm's stakeholder orientation improves ESG practices and disclosure (Monteiro *et al*., 2022b; Weber and Gladstone, 2014; Wood and Jones, 1995). A target population of large listed multinational enterprises with available corporate information in the Thompson Reuters EIKON database was used. Companies that disclose information in a sustainability report, integrated report, or any other format statement, were identified (Monteiro *et al*., 2022a). Thompson Reuters EIKON is a crucial data provider whose data are used by many scholars and investors (e.g., Berg *et al*. 2021; Monteiro *et al*., 2022a). We work with this database and selected data of the European listed companies with disclosures made in the period from 2017 to 2021. This research resulted in a sample of 2264 companies across 30 countries (Cyprus, Gibraltar, Greece, Italy, Malta, Portugal, Slovenia, Spain, Denmark, Faroe Islands, Finland, Guernsey, Iceland, Ireland, Isle of Man, Jersey, Norway, Sweden, United Kingdom, Czech Republic, Hungary, Poland, Romania, Russia, Slovak Republic, Ukraine, Germany, Monaco, Netherlands, Switzerland). Multiple linear regression (equation) was used to model the relationship between the dependent variable (Social Performance Disclosure) and the independent variables (Kumari & Yadav, 2018). We used the analysis of variance (ANOVA) and multicollinearity analysis to define the significant variables for ESG performance. The independent variables used in this study were social governance performance indicators (CSR Report, GRI application and Stakeholder Engagement).

We also used some control variables to avoid misspecification of the model and to limits impact on ESG performance, according to previous research (e.g., Amorelli and García-Sánchez, 2020; García-Sánchez *et al.*, 2020; Orazalin and Baydauletov, 2020; Monteiro *et al.*, 2022a, Parra-Domínguez *et al.*, 2021). The variables used are shown in Table 1.

Variables	Meaning	Data base	Scale	Literature
Dependent Variable:				
ESG Score	Refinitiv ESG Score is an overall company score based on the reported information in the environmental, social and corporate governance pillars (ESG Score)	Refinitiv	0-100	Aluchna et al. (2022); Aydoğmuş et al. (2022); Baraibar-Diez and Odriozola (2019); Refinitiv (2020); Wasiuzzaman and Subramaniam (2023)
Independent variables:				
CSR Report	Does the company publish CSR Report?		Yes:1 No: 0	Refinitiv (2020)
GRI	Company GRI application score		0-100	Refinitiv (2020)
Stakeholder Engagement	Does the company explain how it engages with its stakeholders? - information on how the company is engaging with its stakeholders, how it is involving the stakeholders in its decision-making process; what procedures are in place for engagement; - focus on having established two-way communication between the company and its various stakeholders		0-100	Refinitiv (2020)
Control variables:				
GDP	Gross domestic product (GDP) is the added value created through the production of goods and services in a country during a given period	World Bank and OECD	0- 300000000000	Diaye et al., (2022); Leogrande and Costantiello (2023)
ROA	Return-on-assets ratio	Refinitiv	0-100	Amorelli and García-Sánchez (2020); García-Sánchez et al. (2020); Orazalin and Baydauletov (2020); Monteiro et al. (2022a), Parra-Domínguez et al. (2021)
Levarage	Proportion of debt with respect to total assets		0-100	Amorelli and García-Sánchez (2020); García-Sánchez et al. (2020); McGuinnes et al. (2016); Monteiro et al. (2022a).
ROE	Return on equity ratio		0-100	Agnese et al. (2023)

Table 1: Variables explanation

The models set out in Equation [1] were designed to test the proposed hypotheses. Equation [1] is planned to identify the dependent variable effect, ESG score (ESG_Score), on the independent variables, that is, the CSR report (CSR_Report), level of application of GRI

standards (GRI); Stakeholder Engagement (Stakeholder_Eng) GDP (GDP); ROA; Leverage (Leverage) and ROE.

$$\text{Equation [1]: ESG\_Score}_{i,t} = \beta_0 + \beta_1 \text{CSR\_Report}_{i,t} + \beta_2 \text{GRI}_{i,t} + \beta_3 \text{Stakeholder\_Eng}_{i,t} + \beta_4 \text{GDP}_{i,t} + \beta_5 \text{ROA}_{i,t} + \beta_6 \text{Leverage}_{i,t} + \beta_7 \text{ROE}_{i,t} + \varepsilon_{i,t+1}$$

4. RESULTS AND DISCUSSION
4.1. Descriptive statistics
Table 2 reports the descriptive statistics for all the variables used in the regression model. We find that the mean of ESG Score is 50% (a medium rate in European companies) and a low medium rate in GRI score (36%). Most companies apply CSR reporting (0,79) and have a low stakeholder engagement (43%).

Variables	Number of observations	Mean	Std.Dev	Min	Max
ESG_Score	8116	50.18	21.14	.99	96.67
GRI	7589	35.77	36.25	0	95.31
CSR_Report	8118	.79	.40	0	1
Stakeholder_Eng	8118	42.77	32.86	0	94.44
GDP	11174	1.87E+12	1.88E+12	0	2.33E+13
ROA	11174	.013	.39	-35.34	2.52
Leverage	11174	25.07	60.44	-13.70	4970.54
ROE	11174	.41	375.41	-19701.98	12825.88

Table 2: Sample summary statistics

Our sample covers 2264 companies and the ESG score remains close to 50% on average, having not increased in recent years, as shown in table 3.

Year	Companies nº	ESG Score (%)
2017	2264	52
2018	2264	51
2019	2264	50
2020	2264	49
2021	2264	50

Table 3: Sample description by year and ESG score

4.2. Regression Results
Table 4 shows the regression results that prove H1, H2 and H3 (p<0,000). CSR report, GRI score, and stakeholder engagement has a significant and positive association with the overall ESG score. These results are in line with the literature, supporting the fundaments of Odriozola and Baraibar-Diez (2017), Romero *et al*., (2019) and Fifka (2013) regarding the relationship between CSR reports and ESG score (coeff. = 10.03; p < 0.01). The impact of GRI score on ESG Score is positive and significative (coeff. =0.074; p < 0.01), which corroborate the foundations of Luo and Tang (2022) and Helfaya *et al*. (2023). Finally, results also show a positive connection of stakeholder engagement with ESG score (coeff. = 0.108; p < 0.01), in line with Fernandez-Feijoo *et al*. (2019) and Romero *et al*. (2019) research.

ESG_Score (dependent variable)	Coef	Std. Err.	T	P> |t|
GRI	.744708	.0056631	13.15	0.000
CSR_Report	10.03349	.4870905	20.60	0.000
Stakeholder_Eng	.1078794	.005086	21.21	0.000
GDP	-8.81e-12	5.922-13	-14.87	0.000
ROA	.8553578	.8652164	0.99	0.323
Leverage	.0220462	.00794449	2.77	0.000
ROE	-.0001567	.000201	-0.78	0.436
_cons	51.0241	1.226174	41.61	0.000

R.sq:

    Within = 0.3016

    Between = 0.1018

    Overall = 0.1013

Obs. per group:

    Min = 1

    Avg = 3.3

    Max = 5

Sigma_u = 22.680525

Signa_e = 6.1143693

Rho = .93224706

F (7,5216 = 324,78

Prob > F = 0.0000

Table 4: Regression results

In this investigation we also found that some control variables also impact ESG performance. GDP and Leverage variable have a negative and positive impact on ESG performance, respectively. However, Financial performance (ROA and ROE) does not present a significant relationship with ESG performance.

5. CONCLUSION

Literature suggests that sustainability reporting is a growing thematic (Monteiro *et al*., 2023b). In fact, recent research is focused on sustainability reporting determinants and impacts. In this research line, this study aims to analyse the ESG performance determinants. Specifically, this study investigates whether companies that publishes sustainability reports and demonstrate a high application level of GRI standards and high stakeholder involvement have better ESG performance, in the period from 2017 to 2021. To achieve this objective, a sample of European listed companies was selected from Thompson Reuters EIKON database. The sample consists of 2264 companies from 30 countries. Regression analysis revealed that companies that publish CSR reports are those that obtain better ESG performance. Results also show that companies with the best levels of GRI standards application are successful companies in terms of ESG practices. Finally, companies with the best ESG performance are those that involve their stakeholders in the company's strategies. The study's limitations relate to the discrepancy in the number of companies per country, since the sample mostly includes developed countries, and it is not possible to investigate the differences between countries separately. Despite the study limitations, this study contributes to the literature by providing evidence that CSR report, GRI standards application level and stakeholder engagement have a significant and positive association with the ESG scores. In practical terms, the results of this study are relevant for companies´ managers, as it demonstrates that for companies to be successful in ESG, they need publish information about the activities carried out within the scope of sustainability, develop reports strictly following GRI standards and involve their stakeholders in business strategies. The results are also important for politicians, as they can take actions to promote the involvement of companies in sustainable actions and in the reporting of their performance in these matters.

LITERATURE:

1. Agnese, P., Battaglia, F., Busato, F., & Taddeo, S. (2023). ESG controversies and governance: Evidence from the banking industry. Finance Research Letters, 53, 103397.
2. Almaqtari, F. A., Elsheikh, T., Al-Hattami, H. M., & Mishra, N. (2023). The impact of board characteristics on environmentally friendly production: A cross country study in Asia and Europe. Journal of Cleaner Production, 392, 136257.
3. Amorelli, M. F., & García-Sánchez, I. M. (2020). Critical mass of female directors, human capital, and stakeholder engagement by corporate social reporting. Corporate Social Responsibility and Environmental Management, 27(1), 204–221.
4. Berg, Florian, Kornelia Fabisik, and Zacharias Sautner 2021. Is history repeating itself? The(un)predictable past of ESG ratings. The (un) predictable past of ESG ratings. The (Un) Predictable Past of ESG Ratings (August 24, 2021). European Corporate Governance Institute–Finance Working Paper: 708. Available at SSRN: https://ssrn.com/abstract=3722087 or http://dx.doi.org/10.2139/ssrn.3722087
5. Chouaibi, S., Chouaibi, J., & Rossi, M. (2022). ESG and corporate financial performance: the mediating role of green innovation: UK common law versus Germany civil law. EuroMed Journal of Business, 17(1), 46-71.
6. Diaye, M. A., Ho, S. H., & Oueghlissi, R. (2022). ESG performance and economic growth: a panel co-integration analysis. Empirica, 49(1), 99-122.
7. Ellili, N.O.D. (2022). Impact of ESG Disclosure and Financial Reporting Quality on Investment Efficiency. Int. J. Bus. Soc., 22, 1094–1111.
8. Fatemi, A., Glaum, M., & Kaiser, S. (2018). ESG performance and firm value: The moderating role of disclosure. Global Finance Journal, 38, 45–64.
9. Fiaschi, D., Giuliani, E., Nieri, F., & Salvati, N. (2020). How bad is your company? Measuring corporate wrongdoing beyond the magic of ESG metrics. Business Horizons, 63(3), 287-299.
10. Fifka M. 2013. Corporate Responsibility Reporting and its Determinants in Comparative Perspective – a Review of the Empirical Literature and a Meta-analysis. Business Strategy and the Environment 22(1): 1–35.
11. García-Sánchez, I. M., Aibar-Guzmán, B., Aibar-Guzmán, C., & Azevedo, T. C. (2020a). CEO ability and sustainability disclosures:The mediating effect of corporate social responsibility performance. Corporate Social Responsibility and Environmental Management, 27, 1565–1577.
12. Grosser, K. (2009). Corporate social responsibility and gender equality: Women as stakeholders and the European Union sustainability strategy. Business Ethics: A European Review, 18(3), 290–307.
13. Helfaya, A., Morris, R., & Aboud, A. (2023). Investigating the Factors That Determine the ESG Disclosure Practices in Europe. Sustainability, 15(6), 5508.
14. Jang, S., & Ardichvili, A. (2020). Examining the link between corporate social responsibility and human resources: Implications for HRD research and practice. Human Resource Development Review, 19(2), 183–211.
15. Jizi, M., Nehme, R., & Melhem, C. (2022). Board gender diversity and firms' social engagement in the Gulf Cooperation Council (GCC) countries. Equality, Diversity and Inclusion: An International Journal, 41(2), 186-206.
16. Kemper, A., & Martin, R. L. (2010). After the fall: The global financial crisis as a test of corporate social responsibility theories. European Management Review, 7(4), 229–239.

17. Kumari, Khushbu, and Suniti Yadav. (2018). Linear regression analysis study. Journal of the practice of Cardiovascular Sciences, 4(1), 33.
18. Leogrande, A., & Costantiello, A. (2023). The Labor Force Participation Rate in the Context of ESG Models at World Level. Available at SSRN 4466452.
19. Linnenluecke, M. K. (2022). Environmental, social and governance (ESG) performance in the context of multinational business research. Multinational Business Review, 30(1), 1-16.
20. McGuinness, P. B., Vieito, J. P., & Wang, M. (2016). CSR performance in China: The role of board gender and foreign ownership. Journal of Corporate Finance, 42, 7299. https:// doi. org/ 10. 1016/j. jcorpfin. 2016. 11. 001
21. Monteiro, A. P., Cepêda, C., Pereira, C., & Silva, A. (2023b). Social Performance Disclosed by European Companies: The Role of the Board Attributes and the Country's Legal System. Journal of Risk and Financial Management, 16(6), 284.
22. Monteiro, A. P., García-Sánchez, I. M., & Aibar-Guzmán, B. (2022b). Labour practice, decent work and human rights performance and reporting: The impact of women managers. Journal of Business ethics, 180(2), 523-542.
23. Monteiro, A. P., García-Sánchez, I. M., & Aibar-Guzmán, B. (2023a). Can social disclosure induce a better corporate social performance?. *Economic Research-Ekonomska Istraživanja*, 36(3), 2217885.
24. Monteiro, A. P., Cepêda, C., and Amélia Silva (2022b). EU Non-Financial Reporting Research. International Journal of Financial, Accounting, and Management 4(3): 335-348.
25. Odriozola MD, Baraibar-Diez E. 2017. Is corporate reputation associated with quality of CSR reporting? Evidence from Spain. Corporate Social Responsibility and Environmental Management 24: 121–132. https://doi.org/10.1002/csr.1399
26. Orazalin, N., & Baydauletov, M. (2020). Corporate social responsibility strategy and corporate environmental and social performance: The moderating role of board gender diversity. Corporate Social Responsibility and Environmental Management, 27(4), 1664–1676. https:// doi. org/ 10. 1002/ csr. 1915
27. Paolone, F., Pozzoli, M., Cucari, N., & Bianco, R. (2023). Longer board tenure and audit committee tenure. How do they impact environmental performance? A European study. Corporate Social Responsibility and Environmental Management, 30(1), 358-368.
28. Parra-Domínguez, J., David, F., & Azevedo, T. (2021). Family firms and coupling among CSR disclosures and performance. Administrative Sciences, 11(1), 30. https:// doi. org/ 10. 3390/ admsc i11010030
29. Popescu, I. S., Hitaj, C., & Benetto, E. (2021). Measuring the sustainability of investment funds: A critical review of methods and frameworks in sustainable finance. Journal of Cleaner Production, 314, 128016.
30. Romero, S., Ruiz, S., & Fernandez-Feijoo, B. (2019). Sustainability reporting and stakeholder engagement in Spain: Different instruments, different quality. Business strategy and the Environment, 28(1), 221-232.
31. Salamon, G. L., & Dhaliwal, D. S. (1980). Company size and financial disclosure requirements with evidence from the segmental reporting issue. Journal of Business Finance & Accounting, 7(4), 555-568.
32. Shaikh, I. (2022). Environmental, social, and governance (ESG) practice and firm performance: an international evidence. Journal of Business Economics and Management, 23(1), 218-237.
33. Uribe Bohorquez, M. V., & García Sánchez, I. M. (2023). Sustainability in times of crisis: Female employment during COVID-19. Corporate Social Responsibility and Environmental Management.
34. Wallace, J. (2022). The Anti-ESG Equity Premium. CMC Senior Theses.

35. Wang, L., Li, S., & Gao, S. (2014). Do greenhouse gas emissions affect financial performance? – an empirical examination of Australian public firms. Business Strategy and the Environment, 23(8), 505–519.
36. Wang, Z., Hsieh, T. S., & Sarkis, J. (2018). CSR performance and the readability of CSR reports: too good to be true?. Corporate Social Responsibility and Environmental Management, 25(1), 66-79.
37. Weber, James, and Jeffrey Gladstone (2014). Rethinking the corporate financial–social performance relationship: Examining the complex, multistakeholder notion of corporate social performance. Business and Society Review 119(3), 297-336.
38. Wood, Donna J., and Raymond E. Jones (1995). Stakeholder mismatching: A theoretical problem in empirical research on corporate social performance. The International Journal of Organizational Analysis 3(3), 229-267.

AN ANALYSIS OF THE SUSTAINABLE TOURISM HOTEL CONCEPT: THE INFLUENCE OF ENVIRONMENTAL PRACTICES ON CONSUMER VISIT INTENTIONS

Elio Fernandes
ESTG, University of Madeira, Funchal, Portugal
Happyelio@gmail.com

Tiago Sousa
ESTG, University of Madeira, Funchal, Portugal
2024918@student.uma.pt

Vanda Abreu
ESTG, University of Madeira, Funchal, Portugal
vandaabreu@live.com.pt

Jose Aguiar
ESTG, University of Madeira, Funchal, Portugal
zeaguiar1998@hotmail.com

Eduardo Manuel de Almeida Leite
OSEAN, CiTUR, ESTG, University of Madeira, Funchal, Portugal
eduardo.leite@staff.uma.pt

Humberto Nuno Rito Ribeiro
GOVCOPP; ESTGA, University of Aveiro, OSEAN, Portugal
hnr@ua.pt

Ricardo Correia
CiTUR, ESTG, University of Madeira, Funchal, Portugal
rcorreia@staff.uma.pt

Carmen Freitas
OSEAN, ESTG, University of Madeira, Funchal, Portugal
carmenf@staff.uma.pt

ABSTRACT

The adoption of sustainable practices has proved to be one of the most expressive trends in the tourism sector, putting pressure on hotels to implement new environmental policies to attend with the demands of this new tourism segment. Sustainability has also been recognized as an important factor for the competitive advantage of any business. This study will contribute to the literature by exploring the sustainable hotel policies and assessing their influence in attracting new customers. To conduct this research, the following research question was formulated: Does the adoption of sustainable practices in hotel organizations influence the consumer's purchase intention? A questionnaire was created to measure this phenomenon, a total of 45 completed questionnaires were collected. The results show that there a significant environmental awareness, indicating an influence on purchase decision of costumers in favour of hotels more sustainable. However, price sensitivity still directly affects consumers' decision-making, even the ones with a more environmental conscience.
Keywords: *Hotel industry, Sustainability, Environmental practices, Consumer intentions*

1. INTRODUCTION

The environmental sustainability is a phenomenon which occupies a significant importance in the minds of new consumers, being the result of a "growing concern stemming from the influence of climate change and scarcity of resources" (Almeida, 2016: 14). In this context, the pressure felt by hotels to act upon these undeniable challenges has significantly changed its strategic operating logic. Sustainable practices are now perceived as a way to assure competitive advantage by providing an answer to these new consumer demands (Almeida, 2016). Until 2020, the tourism sector was the third largest export industry in the world. According to the World Tourism Organization (UNWTO) in the 2019 edition of the UNWTO International Tourism Highlights, the number of international tourist arrivals grew 5% in 2018, reaching a total of 1.4 billion. This was the result of a "a relatively strong global economy, a growing middle class in emerging economies, technological advances, new business models, affordable travel costs and visa facilitation" (UNWTO, 2019: 2). The UNWTO underlines that it is committed in ensuring that this continuous growth is managed in a responsible and sustainable way, to guarantee that tourism continues to be a key factor in social and economic development, job creation and equality. Based on an impressive network of companies, services and logistical infrastructure, tourism industry presents itself as one of the largest activities in the world, involving a wide range of stakeholders, such as, private tourism companies, governmental and non-governmental organizations, consumers, and host communities (Patrício, 2020). As perceived, the tourism industry is a constant growing activity, therefore, it is important for this industry to find sustainable ways to continue to use natural resources "given the fragile balance that natural destinations survive on" (Meschini et al., 2021: 2). Hence, the paradigm of sustainable development appears as a global emergent innovative trend, aiming to promote an adequate growth of companies, through the equilibrium between the preservation of environmental resources and the satisfaction of business financial needs. The concept of sustainability suggests that there is a need to not only understand the behaviour patterns and characteristics of the new "green consumer", but also reflect on the influence of hotels' environmentally responsible values and practices on tourist consumption habits and motivations. For this reason, the present study is relevant because it will allow the gathering of important information that will help sustainable hotel industry to generate higher value for their products and services; expand external brand recognition; and help other organizations to guide their decisions regarding the restructuring of business practices directed to the attraction a new segment of sustainable tourism. Hence, this study has two main goals: assess the importance of sustainability in the tourism sector, specially, in the hotel industry; and evaluate the type of influence that best practices have on attracting new consumers. To conduct this research, the following research question was formulated: Does the adoption of sustainable practices by hotels influence the consumer's purchase intention? This research presents a comprehensive theoretical knowledge base on the concept of sustainability and sustainable tourism, as well as a comprehension of the specificities of the new segment of the tourist market and an analysis of the importance of sustainable management in hotels. It will have practical contributions by detecting the effects caused by sustainable practices on the purchasing decisions of hotel consumers, which will allow the optimization of sustainable tourism products, services, and activities, contributing to hotel's success. This paper is structured as follows. The next section presents the conceptual and theoretical basis regarding the phenomenon under study by: 1) introducing the concepts of sustainability, tourism sustainability and sustainable tourism; 2) establishing a frame of reference about the emergence and historical evolution of the practice of sustainability in tourist destinations; and 3) elucidating the importance of environmentally sustainable policies in terms of the management of hotel establishments, mentioning the measures and policies most popular among hotels. The third section outlines the research methodology and the data collection process.

The fourth section presents the main results of the study. The final section presents the conclusions of the study, the main limitations and presents recommendations for future research.

2. LITERATURE REVIEW

The concept of sustainability can be defined as the system that is able to maintain or conserve itself independently. Feil and Schreiber (2017) emphasize that there is a general acceptance regarding the characterization of sustainability as the search for balance between human needs and the environment to achieve human well-being in the long term. On the other hand, the same authors claim that there are analogies between sustainability and sustainable development; both are seen as a single-system relationship between human behaviours and environmental impacts, based on two main objectives: satisfying human needs and protecting and maintaining the environment. Historically, the concept of sustainability is linked to the struggle for social justice, conservationism, internationalism, and other movements of the past. At the end of the 20th Century, in the context of the tourism industry, these ideas culminated in the so-called Sustainable Tourism, which:

"Describes policies, practices and programmes that take into account not only the expectations of tourists regarding responsible natural-resource management (demand), but also the needs of communities that support or are affected by tourism projects and the environment (supply)" (OECD, 2013: 19).

Bergquist et al. (2019: 128) underline that the road to environmental protection started with the implementation of needed regulation "on water and air pollution, restrictions on the disposal of chemical waste, limits on the destruction of habitat, and protection of vulnerable species"; however, they advocate that in the mid-1990s a new approach appeared to protect and sustain natural environment which "prioritized voluntary business action and the harnessing of opportunities for private profit". However, Morais, Oliveira and Souza (2014) considered the term sustainability as something more complex, because it represents a set of social, economic, and environmental attributes that must be incorporated in sustainable companies. For the UNWTO (2022) "sustainability principles refer to the environmental, economic, and socio-cultural aspects of tourism development, and a suitable balance must be established between these three dimensions to guarantee its long-term sustainability".

2.1. Tourism Sustainability: A new market segment

The tourism industry is an important factor for the sustainable development of any community (Sgroi, 2020). Due to the direct relationship between human beings, cultures and the environment, a new concept has emerged, the sustainable tourism, which could constitute a key element in protecting the environment and, at the same time, promote marked benefits for local economies (Hosseini, Paydar & Triki, 2021). As it is perceived, sustainable tourism development is fundamental to improve, develop and protect communities, through the management of the effects of tourism on the environment, economy, society, and culture of the destination community (Toivonen, 2020). Hence, making tourism more sustainable goes beyond managing the negative and positive effects on the environment, it is necessary to consider the economic, social, and environmental dimensions of this activity: the economic dimension is linking to the profitability of tourism development; the social dimension concerns with the positive and negative effects of tourism on the locals, and the environmental dimension deals with major risks of unplanned tourism development (Carrill and Jorge, 2017). In this context, there is a need for sensible and sustainable planning prior to any development of touristic activities.

In September 2015, several world leaders agreed on 17 Sustainable Development Goals "as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity" (UNDP, 2022). Since then, we have seen a rapid shift towards more inclusive development, with a special focus on a more greener development approach across the world. Nevertheless, many destinations face challenges in preserving the environment's quality, affecting visitor satisfaction, and ultimately resulting in smaller revenues from tourism-related activities" (Lukoseviciute and Panagopoulos, 2021: 1).

2.2. Sustainable policies in Hospitality: The relevance of environmental management in hotel organizations

The concept of sustainability continues to attract the attention of companies including those in the hospitality sector; however, its definition is ambiguous, being dependent on the author's perspective. As stressed by Oriade et al. (2021:1), "the subject of sustainability and it its management in the hotel context is somewhat volatile with varied evidence in support of different viewpoints". Nevertheless, there is a global interest in the tourism industry regarding sustainability. In this context, ecotourism and industry's energy saving is seen as the only option for a sustainable future. Sobaih et al. (2021: 9) study shows that "small hospitality business performance (financial and/or non-financial), by understanding the awareness of the economic, social, and environmental risks, leads to sustainable tourism development". As perceived, hospitality industry is facing constant changes, mainly demanded by new consumers, of younger generation, who are more sensitive to sustainability causes. Therefore, hotels need to be prepared for these new costumers' profiles; they are well informed and more predispose to new experience and ideas. In this sense, the adoption of sustainable tourism practices will help hotels and tourist destinations to maintain their competitive advantage and stimulate growth (Almeida, 2016). On another approach, Amatulli, Angelis and Stoppani (2021: 8) studied the effect of a luxury hotel's marketing communication strategy on consumers' willingness to book a room; and concluded that "a sustainability-focused (versus customer service-focused) message leads to a higher willingness to book a room because it enhances customers' perceptions about the hotel's integrity". Additionally, customers which present a more pro-environmental behaviour tend to prefer more sustainable hotels (Nilashi et al., 2019). This shows that customers consider sustainability practices as an important attribute when selecting a hotel (Verma and Chandra, 2018). On another hand, Trang et al. (2019) recognize that green hotel practices impact positively customers' perceived values and pro-environmental attitudes, which will significantly influence customers' intention to practice green actions, as well as their willingness to visit more green hotels. Nowadays, tourists want to feel more in touch with nature; therefore, hospitality industry needs to address this demand and offer a greener and more sustainable services (Dani, Tiwari and Negi, 2020). Therefore, adopting responsible environmental practices and procedures has become an essential strategy for hotels in their attempt to maintain the competitive advantage. Hence, hospitality industry needs to innovate and became more sustainable as possible. In the past decades, sustainability has grown in importance in almost all aspects of the hospitality industry (Goldstein and Primlani, 2012). Therefore, hotels need to introduce measures to promote sustainability, such as saving water and energy, and at the same time offer a distinct experience to consumers. In doing so, hotel industry is starting to develop strategies to respond to customers' greener demands. Boronat-Navarro and Pérez-Aranda (2020) underline that the sustainable hotels customers' purchase intention depends on their attention and respect in terms of environmental behaviour, as well as their interest in the maintenance of green spaces. Their findings show "that the formation of intentions depends on different factors and that awareness of hotels' sustainable practices … plays a crucial role in this process", adding that the greater the environmental awareness of customers, the more willing they will be to enjoy a stay in a sustainable hotel (Boronat-Navarro

and Pérez-Aranda, 2020: 12). Therefore, it is expected that: H1 – Sustainable hotel customers' purchase intention will be influenced by the importance given to the hotel's sustainable policies. However, although some studies show that consumers may be concerned about environmental issues, other, in turn, suggest that consumers are still sceptical about sustainable practices and believe that it is not necessary to stay or pay more for green hotels. In fact, many of these consumers feel that staying in "green" hotels has a negative effect on aspects related to comfort and luxury, being associated to higher costs (Verma and Chandra, 2016). Additionally, some eco-friendly practices like temperature control and low-pressure water systems are seen by consumers as a hotel's cost-saving strategy instead of a real concern on the environment (Yi et al., 2018). Further critics advocate that "it is impossible to develop effective behavioural interventions aimed at triggering more environmentally sustainable behaviour among tourists (because) … habit is a key driver" (MacInnes et al., 2022: 8). Moreover, Grilli et al. (2021) study concluded that even environmental-friendly tourists are not willing to contribute to projects that would create more restrictions to protected areas. As it is perceived, the concept of sustainability from the consumer's perspective is one of the most subjective and least understood concepts. There is a complexity of theories that point to a discrepancy of opinions among researchers in the field of sustainability and tourism. Verma and Chandra (2016: 7) study found that "hotel guests' positive perceptions towards green practices do not necessarily drive their willingness to pay". These consumers believe that many of the ecological practices which translate in the hotel's operational cost reduction should reflect in a price reduction for the customer. Although there is empirical evidence that portrays a great price sensitivity on the part of current consumers, visitors who effectively look for sustainable hotels and recognize the importance of sustainable practices, are willing to pay more for a stay in an eco-label hotel (e.g., Lenziardi, Mayer and Ferreira, 2010; Mauer, 2014). Therefore, it is possible to hypothesize that: H2 - High prices do not significantly compromise the consumer's interest in enjoying sustainable hotels.

3. METHODOLOGY

This research adopts a quantitative methodology because it is a technique which has gain importance in the tourism research on the last three decades (Dwyer, Gill and Seetaram, 2012). The questionnaire methodology followed established procedures to ensure empirical validity and reliability, being designed to assess the influence that hotels' sustainability practices have on the attraction of consumers. The questionnaire consisted of six closed questions, divided into two sections: section I, with a demographic question regarding age; section II, composed of five questions, two multiple choice questions (a likert scale from 1 to 5) and three dichotomous questions. In Section II, questions were directed to assess if the respondent had already stayed in sustainable hotels, the degree of importance given to sustainable practices, the influence of these practices on the choice and their level of agreement regarding the construction of sustainable hotels. For the delimitation of the target sample, a non-probability sampling method for convenience was used. The questionnaires were completed by hotel guests during their pick-up voyage from the airport to their hotel (all category 4 or 5 stars), at Madeira Island (Portugal), during December of 2021 and January of 2022. A total of 45 completed questionnaires were collected. Regarding the evaluation of the internal consistency of the questionnaire, the Cronbach's alpha coefficient was calculated for the questions in Section II, having been obtained a value of 0.632, revealing a moderate reliability rate (Hair et al., 2016). Despite not observing a perfect degree of reliability, all questions are slightly associated with the exploration of the same problem, that is, the relationship between sustainable hotel practices and the consumer's purchase intention.

4. SAMPLE CHARACTERIZATION

Figure 1 presents the characterization of the sample by the age group. The largest age group are of young adults, between 18 and 30 years, representing 35%; followed by 27 % in a group age between 31 to 40 years. The remaining respondents are distributed as following: 20% between 41 to 50 years; 11% between 51 to 65 years; and 7% more than 65 years.
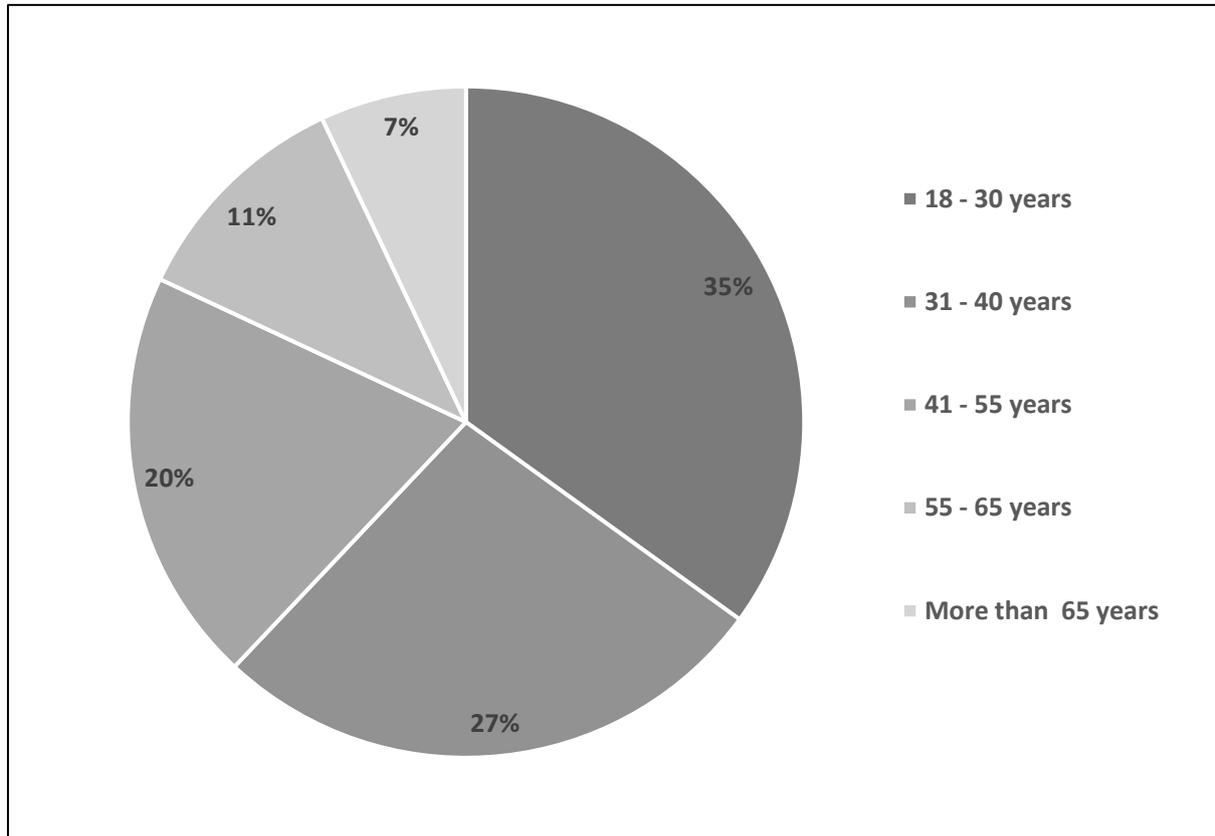
Figure 1: Distribution of respondents by age group

5. RESULTS ANALYSIS

Data was analysed using the Statistical Package for the Social Sciences, being conducted a descriptive statistical analysis of the answers, to determine the Mean (M), in some cases, and the standard deviation (SD). Table 1 shows the responses to the question: Have you ever been accommodated in a hotel with sustainable practices? Most respondents have already been accommodated in a sustainable hotel.

Response	Percentage	SD
Yes	69%	0,468
No	31%	

Table 1: Accommodation in Sustainable Hotels (N = 45).

Table 2 shows the analysis to the questions: How do you evaluate the importance of sustainable policies in a hotel? and What is your level of agreement regarding promotion of the construction of sustainable hotels? It demonstrates that most of the respondents consider to be (very) important the adaptation of sustainable practices by the hotels. Additionally, Table 2 shows that 96% respondents consider to be (very) important the construction of sustainable hotels.

Scale	Sustainable Policies			Sustainable Hotels		
	Perc.	M	SD	Perc.	M	SD
1 – Not important	0%			0%		
2 – Slightly important	0%			0%		
3 – Moderately important	4%	4,51	0,589	1%	4,73	0,495
4 – Important	40%			22%		
5 – Very Important	56%			76%		

Table 2: The level of importance given to sustainable policies in the hospitality industry and to the level of agreement regarding promotion of the construction of sustainable hotels (N=45).

Table 3 analyses the responses to two questions: Do hotels' sustainable practices influence your decision when selecting a hotel? and Would you be willing to pay more for a stay in a sustainable hotel?

Response	Sustainable practices influence (N =		Willing to pay more (N = 45)	
	Percentage	SD	Percentage	SD
Yes	56%		18%	
No	44%	0,503	82%	0,387

Table 3: Influence of sustainable policies on their purchase intentions and willing to pay more.

Pearson's Correlation Coefficient analysis was calculated to measure the degree of relationship between the two independent variables (IV1 - Sustainable practices influence and IV2 - More expensive stays) and the dependent variable (DV - Purchase intention). Table 4 show a positive correlation between the IV 1 and the DV ($r = 0.178$); which according to the levels of correlation presented by Cohen (1988), this is identified as a weak correlation. Nevertheless, it is still possible to observe the influencing power that the importance of sustainable practices has on the purchase intention of the respondents, which suggests that the greater the importance given to the term "sustainability", the more it will influence the choice for sustainable hotels; therefore, hypothesis 1 is supported.

Independent Variable	DV - Purchase intention
IV1: Sustainable practices influence	0.178
IV2: More expensive stays	-0.64

Table 4: Pearson's Correlation Coefficient Analysis of the IV1 and IV2 and the DV (N = 45).

On the other hand, there is a strong negative correlation between both between IV2 and the DV (-0.64), demonstrating that, despite the existence of environmental awareness among hotel consumers, the increase in prices negatively influences their decision to stay in sustainable hotels. Therefore, results do not support Hypothesis 2.

6. CONCLUSION

This study focused on exploring the concept of sustainability applied to the hotel sector, by analysing the point of view of consumers, thus contributing to the global understanding of the importance that environmental policies have in the hotel sector, in terms of the economic benefits that drive cost reduction and an increase in profitability, or in terms of the

organization's market position by reinforcing its competitiveness in view of the rise of eco-friendly tourism. In general, this study contributes to the literature by exploring the influencing power that environmental policies hold in consumer decision-making regarding hotel services. Results shows that individuals expressed a positive influence of sustainable practices on their intention to purchase a hotel; however, they reveal to be unwilling to pay more for a stay in a sustainable hotel. Therefore, it is possible to conclude that investing in sustainable hotel practices is favourable if they are an additional component of a profitable stay. This study presents practical contributions which can help the hotels directors regarding the management and implementation of environmental practices. Despite being seen as way forward and an opportunity that allows the improvement of hotels' reputation through the environmental certification system, as well as becoming financially viable, the adoption of sustainable practices constitutes a real challenge to the hotel industry, since it not only implies restructuring the traditional hotel services and products for alternative options (and therefore more expensive). In this process, hotels directors need to create conditions to anticipate and respond to market demands, developing a balance between the adoption of responsible practices that mitigate the negative impacts of tourist activity and setting prices according to the sensitivity of the target population. Therefore, it is essential that eco-label hotel organizations set affordable prices, without harming tourists' experience, given that the economic effects of sustainability in the hotel industry also include the increase in the price of accommodation, resulting from the high investment and expensive costs to implement sustainable practices, which could become a barrier to demand indices. The main limitation of this study is the small number of completed questionnaires, which resulted from the lack of tourists willing to complete the questionnaire. Future research should continue to collect data, to further investigate the linkage between sustainable hotel policies and the influence in attracting new customers. In the end, this study represents a contribution to the literature given the small scientific literature which explores the influence of environmental practices from the perspective of the hotel consumer.

LITERATURE:

1. Almeida, J. B. (2016). Sustentabilidade em Hotelaria: Uma Análise da Infusão/Difusão em Hotéis de Lisboa, Master Thesis, Universidade Europeia, Lisbon.
2. Amatulli, C., Angelis, M. D., & Stoppani, A. (2021). The appeal of sustainability in luxury hospitality: An investigation on the role of perceived integrity. Tourism Management, vol. 83, 1-12. doi:https://doi.org/10.1016/j.tourman.2020.104228
3. Bergquist, A.-K., Cole, S. A., Ehrenfeld, J., King, A. A., & Schendler, A. (2019). Understanding and Overcoming Roadblocks to Environmental Sustainability: Past Roads and Future Prospects. The Business History Review, 93 (1), 127-148. doi: https://doi.org/10.1017/S000768051900031X

4. Boronat-Navarro, M. & Pérez-Aranda, J. (2020). Analyzing Willingness to Pay More to Stay in a Sustainable Hotel, Sustainability, 12, 1-17. doi:10.3390/su12093730
5. Carrillo, M. & Jorge, J.M. (2017). Multidimensional Analysis of Regional Tourism Sustainability in Spain, Ecological Economics, vol. 140, 89-98. doi: https://doi.org/ 10.1016/j.ecolecon.2017.05.004.
6. Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2nd ed.). Hillsdale, NJ: Erlbau.
7. Dani, R., Tiwari, K., & Negi, P. (2020). Ecological approach towards sustainability in hotel industry. Materials Today: Proceedings, 46 (20), 10439-10442. doi:https://doi.org/10.1016/ j.matpr.2020.12.1020
8. Dwyer, L., Gill, A., & Seetaram, N. (2012). Handbook of research methods in tourism: Quantitative and qualitative approaches. Edward Elgar: Cheltenham
9. Feil, A. A., & Schreiber, D. (2017). Sustainability and sustainable development: unraveling overlays and scope of their meanings, Cadernos EBAPE.BR, 14 (3), 667-681. doi:https://doi.org/10.1590/1679-395157473
10. Goldstein, K.A. & Primlani, R.V. (2012). Current trend and opportunities in hotel sustainability HVS Sustainability Services. View on 26th september 2022, at: https://www.hospitalitynet.org/opinion/4054752.html
11. Grilli, G., Tyllianakis, E., Luisetti , T., Ferrini, S., & Turner, R. K. (2021). Prospective tourist preferences for sustainable tourism development in Small Island Developing States. Tourism Management, 12. doi:https://doi.org/10.1016/j.tourman.2020.104178
12. Hair, J., C., M., Money, A., Samouel, P., and Page, M. (2015). The Essentials of Business Research Method, 3rd edition. New York: Routledge.
13. Hosseini, S. M., Paydar, M. M., & Triki, C. (2021). Implementing sustainable ecotourism in Lafour region, Iran: Applying a clustering method based on SWOT analysis. Journal of Cleaner Production, 329, 1-13. doi:https://doi.org/10.1016/j.jclepro.2021.129716
14. Lenziardi, R., Mayer, V., & Ferreira, D. (2010). O Turista se Importa? A Responsabilidade Social e a Escolha de um Meio de Hospedagem, XXXIV Encontro do ANPAD, 25 a 29 de setembro de 2010, Rio Janeiro: Brazil.
15. Lukoseviciute, G., & Panagopoulos, T. (2021). Management priorities from tourists' perspectives and beach quality assessment as tools to support sustainable coastal tourism. Ocean and Coastal Management, 208, 1-11. doi: https://doi.org/10.1016/j.ocecoaman.20 21.105646
16. MacInnes, S., Grün, B., & Dolnicar, S. (2022). Habit drives sustainable tourist behaviour. Annals of Tourism Research, 92, 1-10. doi:https://doi.org/10.1016/j.annals.2021.103329
17. Meschini, M., Toffolo, M. M., Caroselli, E., Franzellitti, S., Marchini, C., Prada, F., Goffredo, S. (2021). Educational briefings in touristic facilities promote tourist sustainable behavior and customer loyalty. Biological Conservation, vol.259, 1-10. doi:https://doi.org/ 10.1016/j.biocon.2021.109122
18. Morais, D. O., Oliveira, N. Q., & Souza, E. M. (2014). As práticas de sustentabilidade ambiental e suas influências na nova formatação institucional das organizações. Revista de Gestão Ambiental e Sustentabilidade, 3 (3), 90-106. doi:doi.org/10.5585/geas.v3i3.108
19. Nilashi, M.; Ahani, A.; Esfahani, M.; Yadegaridehkordi, E.; Samad, S.; Ibrahim, O.; Sharef, N.; and Akbari, E. (2019). Preference learning for eco-friendly hotels recommendation: A multi-criteria collaborative filtering approach. Journal of Cleaner Production, 215, 767-783. doi:https://doi.org/10.1016/j.jclepro.2019.01.012
20. OECD (2013). Green Innovation in Tourism Services, OECD Tourism Papers, No. 2013/01, OECD Publishing, Paris, https://doi.org/10.1787/5k4bxkt1cjd2-en.

21. Oriade, A., Osinaike , A., Aduhene, K., & Wang, Y. (2021). Sustainability awareness, management practices and organisational culture in hotels: Evidence from developing countries. International Journal of Hospitality Management, 12. doi:https://doi.org/10.1016/j.ijhm.2020.102699
22. Patrício, B. (2020). Sustentabilidade Ambiental na Indústria Hoteleira: Perspectiva do cliente e Gestor, Tese de Mestrado, Católica Porto Business School: Porto.
23. Mauer, E. (2014). Is green the new black? Sustainable luxury: Challenge or strategic opportunity for the luxury sector, Master Thesis, Haute Ecole de Gestion de Genève: Genève.
24. Sgroi, F. (2020). Forest resources and sustainable tourism, a combination for the resilience of the landscape and development of mountain areas. Science of the Total Environment, 736, 1-5. doi:https://doi.org/10.1016/j.scitotenv.2020.139539
25. Sobaih, A. E., Elshaer, b., Hasanein , A. M., & Abdelaziz , A. S. (2021). Responses to COVID-19: The role of performance in the relationship. International Journal of Hospitality Management, vol. 94, 1-11. doi:https://doi.org/10.1016/j.ijhm.2020.102824
26. Toivonen, A. (2020). Sustainability dimensions in space tourism: the case of Finland. Journal of Sustainable Tourism, 30(9), 2223–2239. doi:https://doi.org/10.1080/09669582.2020.1783276
27. Trang, H. L., Lee , J.-S., & Han, H. (2019). How do green attributes elicit pro-environmental behaviors in guests? The case of green hotels in Vietnam. Journal of Travel & Tourism Marketing, 36 (1), 14-28. doi:https://doi.org/10.1080/10548408.2018.1486782
28. UNDP (2022). Sustainable Development Goals, United Nations Development Programme. Viewed on September 23rd of 2022, at https://www.undp.org/sustainable-development-goals
29. UNWTO. (2019). Internacional Tourism Highligts. World Tourism Organization.
30. UNWTO (2022). Sustainable Development, World Tourism Organization. Viewed on September 22nd of 2022, at https://www.unwto.org/sustainable-development.
31. Verma, V. K., & Chandra, B. (2016). Hotel Guest's Perception and Choice Dynamics for Green Hotel Attribute: A Mix Method Approach. Indian Journal of Science and Technology, 9(5), 1-9. doi:https://doi.org/10.17485/ijst/2016/v9i5/77601
32. Verma, V. K., & Chandra, B. (2018). Sustainability and customers' hotel choice behaviour: a choice-based conjoint analysis approach. Environment Development and Sustainability , 17. doi:10.1007/s10668-017-9944-6
33. Yi, S., Li, X., & Jai, T.-M. (Catherine) (2018). Hotel guests' perception of best green practices: A content analysis of online reviews. Tourism and Hospitality Research, 18(2), 191–202. https://doi.org/10.1177/1467358416637251

DEVELOPMENT AND CHANGES IN ESG RATINGS OF THE EUROPEAN UNION COMPANIES

Sofija Turjak
J. J. Strossmayer University of Osijek, Faculty of Economics and Business in Osijek
Trg Lj. Gaja 7, Osijek, Croatia
sofija.turjak@efos.hr

Ana Zrnic
J. J. Strossmayer University of Osijek, Faculty of Economics and Business in Osijek
Trg Lj. Gaja 7, Osijek, Croatia
ana.zrnic@efos.hr

Martina Bris Alic
J. J. Strossmayer University of Osijek, Faculty of Economics and Business in Osijek
Trg Lj. Gaja 7, Osijek, Croatia
martina.bris.alic@efos.hr

ABSTRACT

ESG ratings are becoming very important for companies in the European Union. These ratings evaluate a company's sustainability, ethics, and corporate responsibility performance. They have recently undergone significant development and changes as sustainability and responsible business practices have gained prominence. Over the past decade, there has been a significant increase in the awareness and adoption of ESG principles among EU companies. Regulatory pressures, stakeholder demands, and a growing recognition of the business benefits of sustainable practices have driven this shift. The EU has played a significant role in advancing ESG reporting and standards, with regulations such as the Non-Financial Reporting Directive and the Sustainable Finance Disclosure Regulation requiring companies to disclose ESG-related information. Standardisation of ESG reporting has improved comparability between companies, and there has been an increase in ESG rating agencies and data providers. ESG ratings are increasingly integrated into financial analysis and investment decision-making, leading to a greater emphasis on ESG performance by companies seeking to attract investment. Shareholders and stakeholders increasingly use ESG ratings as engagement and activism tools, with poor ratings potentially leading to shareholder resolutions, divestment campaigns, or calls for changes in corporate behaviour. Data quality and reporting have been a concern, with companies working to improve the accuracy and completeness of their ESG disclosures. Climate-related factors have taken centre stage in ESG ratings, with the EU's commitment to becoming carbon-neutral by 2050 putting pressure on companies to disclose emissions and align their strategies with climate goals. This paper analyses ESG ratings from 2016 to 2020 of the European companies.
Keywords: ESG ratings, sustainability, reporting, challenges

1. INTRODUCTION
The European Union (EU) has actively sought a solution to decrease global warming in an ever-evolving economy with positive and negative consequences for future generations. The EU has pioneered an emissions trading scheme market to influence global warming. In addition, the EU has been developing environmental policies to improve energy efficiency and enhance sustainable development. Furthermore, the environmental, social and governance (ESG) ratings have been developed. The ESG ratings are important because they aim to assess and communicate companies' performance in non-financial areas that impact sustainability.

The ESG ratings have become important to a wide spectrum of stakeholders due to their role in assessing and promoting sustainability, ethical conduct, and responsible governance. They provide valuable information that can guide decision-making, shape behaviour, and contribute to the advancement of responsible business practices in the global economy. The initial recognition of ESG in its contemporary context can be attributed to the 2004 report titled "Who Cares Wins" by the United Nations (United Nations, 2004). This paper strongly advocated for all business stakeholders' long-term adoption of ESG practices. The study catered to various stakeholders, including managers, directors, investors, analysts, and brokers. In 2005, the United Nations Secretary-General Kofi Annan invited a group of the world's largest institutional investors to join a process to develop Principles for Responsible Investment (PRI) (Gasperini, 2020). The PRI aims to understand the ESG factors' investment implications (Doni and Johannsdottir, 2020). Furthermore, the PRI was the first official action toward including ESG in decision-making.

2. LITERATURE REVIEW
The historical overview of the ESG ratings dates to the beginning of the 21st century. During the early 2000s, there was a growing recognition among investors and organisations regarding the significance of including non-financial aspects in their decision-making processes. This led to the emergence and increasing popularity of ESG elements and ratings. During a time when ESG issues had not yet gained widespread acceptance, a group of innovators emerged who began evaluating companies by their ESG performance. As previously mentioned, in 2006, the United Nations introduced the PRI. Although the PRI's encouragement of institutional investors to integrate ESG factors into their investment decisions is not limited to the European Union, it remains a significant aspect of their global approach. This effort facilitated the dissemination of knowledge regarding ESG concerns among investors within the EU. The financial crisis that occurred in 2008 brought attention to the necessity of adopting more accountable and environmentally conscious company strategies. Consequently, there has been an increase in the prominence of deliberations on ESG aspects and their incorporation into the financial sector inside the EU. The "Renewed EU Strategy 2011-14 for Corporate Social Responsibility" was released by the European Commission in 2010. This publication highlighted the significance of responsible business practices and advocated for incorporating ESG factors into companies' strategies (European Commission, 2011). This event was an initial official acknowledgement of ESG principles inside the EU. Directive 2013/34/EU was implemented by the European Union in 2013, mandating the inclusion of non-financial information, such as environmental and social concerns, in the annual reports of specific major corporations (European Parliament, 2013). The aforementioned legislation established the foundation for enhanced levels of transparency and disclosure regarding ESG matters inside corporations listed in the EU. The year 2015 witnessed the adoption of the Sustainable Development Goals (SDGs) by the United Nations, serving as a significant milestone that underscored the significance of ESG issues in the pursuit of worldwide sustainability objectives (United Nations, 2016). Numerous EU organisations have initiated the process of integrating their ESG initiatives with the SDGs. The EU implemented the EU Action Plan on Sustainable Finance in 2018. The primary objective of this comprehensive plan was to reallocate capital flows to prioritise sustainable investments and incorporate ESG factors into the financial system (European Commission, 2018). The initiative encompassed the establishment of a comprehensive taxonomy for sustainable operations across the EU and the formulation of regulations about the disclosure of ESG factors. The EU Taxonomy Regulation was implemented by the EU in 2019 to create a framework for categorising economic activities based on environmental sustainability (European Parliament, 2020). The implementation of this rule represents a noteworthy achievement in the process of establishing uniform ESG criteria across the EU.

The EU introduced the Sustainable Finance Disclosure Regulation (SFDR) in 2020. This regulation mandates that financial market players and advisers provide transparent information regarding incorporating ESG factors within their investment procedures (European Parliament, 2019). The primary objective of this rule was to enhance the levels of transparency and comparability about ESG-related information. The EU made further progress in pursuing sustainable finance objectives in 2021 by releasing the Corporate Sustainability Reporting Directive (CSRD) proposal. It enhances the ESG reporting obligations for corporations, fostering greater openness and responsibility within the EU (European Commission, 2021). The historical trajectory of ESG ratings within the EU showcases a progressive development, characterised by an initial recognition and adoption of voluntary measures, leading to the establishing of a more organised and regulatory system. The EU has emerged as a leading force worldwide to incorporate ESG factors into the financial industry and advance sustainability. This development underscores the EU's dedication to fostering responsible finance and corporate conduct within the region. ESG ratings are important for diverse stakeholders, each with their own motivations and interests. From the investors' point of view, the ESG ratings provide relevant, consistent, comparable, balanced, and reliable ESG information necessary for asset managers to make informed investment decisions (Laermann 2016). The ESG consideration is a significant determinant in the stock return and credit default swap spread around the rating announcement, and all ESG criteria are important for equity and debt investors (Kiesel and Lücke, 2019). The ESG ratings are also important for companies to consider improving their sustainability performance and economic results. Zumente (2021) found that ESG ratings can impact a company's trading volume and returns and that companies should pay attention to the methodologies and practices applied by different rating agencies. Peiró-Signes et al. (2013) found that companies with extreme strategies on ESG issues perform better economically than those in line with the industry. Companies benefit from ESG ratings as they help improve transparency, identify areas for improvement, and demonstrate a commitment to responsible business practices. Strong ESG performance can enhance a company's reputation and access to capital. The ESG ratings are important for employees because they reflect employee performance (Skousen and Sun, 2018) and can be used in management decision-making (Tyvonchuk, 2020). However, the presence of employees on the board of directors may negatively impact market perceptions of ESG performance (Nekhili et al., 2019). Additionally, the specificity of ESG indicators can impact the likelihood that organisations will address each of these sustainability targets (Veenstra and Ellemers, 2020). Moreover, ESG ratings can influence a company's ability to attract and retain top talent. Many employees want to work for organisations prioritising sustainability, social responsibility, and ethical governance. The ESG ratings are important for regulators and policymakers because they can be used to assess companies' environmental, social, and governance practices. According to Redondo Alamillos and de Mariz (2022) Europe has implemented substantial laws on ESG matters during the previous decade, positioning itself as a global leader in ESG implementation. The primary objective of this regulatory initiative is to promote ESG investment, encouraging investors to incorporate environmental, social, and governance factors into their decision-making process (Technical Expert Group on Sustainable Finance, 2020). Also, it seeks to ensure that corporations adhere to their ESG commitments. ESG ratings have become important to a wide spectrum of stakeholders due to their role in assessing and promoting sustainability, ethical conduct, and responsible governance. They provide valuable information that can guide decision-making, shape behaviour, and contribute to the advancement of responsible business practices in the global economy.

3. METHODOLOGY

The authors retrieved the data on ESG ratings among EU companies using Refinitiv Eikon between June 11 and June 15, 2022. The retrieved data consists of 555 companies and a five-year time period from 2016 until 2020. Due to data unavailability, authors could not analyse companies from Bulgaria, Croatia, Estonia, Latvia, Lithuania and Slovakia. In addition, the authors excluded the United Kingdom from the analysis since the UK withdrew from the EU in January 2020. Even though the number of companies increased during the observed time, the authors analysed only companies that provided the data the whole time. The authors used the ESG score, which measures the company's ESG performance based on verifiable reported data in the public domain (Refinitiv, 2022). The authors used Pearson's correlation coefficient to analyse the relationship between the ESG score and the number of employees since the ESG score has been measured on a ratio scale from 1 to 100. On the other hand, number of employees has been measured on ratio interval scale. According to Sedgwick (2012), Pearson's correlation coefficient measures the strength of linear association between two variables. According to Chan (2003), the correlation coefficient is negligible if the correlation coefficient is zero. If the coefficient is less than 0.3, it is poor. When the coefficient is between 0.30 and 0.5, it is fair. A moderately strong correlation is between 0.60 and 0.80; a strong correlation is when the correlation coefficient is at least 0.80. To conduct the analysis, the authors used IBM SPSS 25 software. Descriptive statistics are presented in Table 1. Table 1 shows the minimum, maximum and average values of observed variables and the number of companies that reported them.

Table 5: Descriptive statistics of the analysed sample

	ESG rating				Number of employees			
Year	N	Minimum	Maximum	Mean	N	Minimum	Maximum	Mean
2020	555	2.66	94.75	67.21	504	5	662575	42342.89
2019	553	.37	94.20	64.65	497	5	671205	43982.66
2018	555	.62	94.83	62.83	487	20	664496	43995.14
2017	555	.72	94.27	59.79	482	18	642292	44216.88
2016	555	1.01	92.22	56.44	445	39	626715	45452.55

Source: authors' own calculation

Based on the information in Table 1, the average number of employees in analysed companies has declined. The difference between the average number of employees in 2016 and 2020 is more than 3,000 employees. Economic, demographic, and structural changes explain the decrease in employees in the European Union (EU) between 2016 and 2020. It's important to note that the specific reasons can vary from one country to another within the EU. The EU faced the aftermath of the global financial crisis that began in 2008. Many countries in the EU experienced economic downturns, which resulted in reduced economic growth and job losses. The UK, a significant EU member, officially left the EU in 2020. This process had economic repercussions, including changes in trade dynamics, which may have affected employment in the UK and the EU. The COVID-19 pandemic, which started in late 2019 and continued into 2020, profoundly impacted employment. Lockdowns, restrictions, and disruptions to various industries led to job losses across the EU. Automation and advancements in technology have been changing the labour market. Some jobs have been replaced by automation, impacting employment numbers in certain sectors. Many EU countries have ageing populations, which can decrease the labour force as older individuals retire and are not always replaced by younger workers in sufficient numbers. Some EU countries have low birth rates, which can result in a smaller pool of potential workers entering the job market. The structure of the EU's economy has been evolving. There has been a shift from labour-intensive industries to more service-oriented and high-tech sectors.

This transition can impact the demand for labour in certain industries. The COVID-19 pandemic accelerated the adoption of remote work in many industries. This shift may have affected employment patterns, with some workers no longer counted as employees in specific locations. Some EU countries implemented labour market reforms to make their economies more competitive. These reforms could have influenced employment dynamics. In response to the economic impact of the COVID-19 pandemic, governments in the EU introduced various support measures, such as furlough schemes, to preserve jobs. However, these measures may not have prevented all job losses. Migration patterns within the EU can impact employment. Changes in the number of migrant workers, whether due to policy shifts or economic conditions, can affect employment figures. In addition, analysed data show an increase in the ESG ratings of observed companies. An increase in ESG rating is a positive trend that shows how companies developed their ESG factors through the years. In 2016, the average rating of 445 companies was 56,44; in 2020, it was 67,21. The increase in ESG ratings of companies in the EU between 2016 and 2020 can be attributed to regulatory changes, investor and consumer demand, stakeholder engagement, economic incentives, and a broader recognition of ESG as a long-term value and sustainability driver. Companies that adapted to these trends and integrated ESG considerations into their operations and reporting saw improvements in their ESG ratings during this period.

4. RESULTS

The authors used Pearson's correlation coefficient to test the relationship between ESG ratings and the number of employees during the observed time frame of the companies. The results are shown in Table 2.

Table 6: Pearson's correlation coefficient test results

			ESG rating				
			2020	2019	2018	2017	2016
Number of employees	2020	R	.292**				
		N	504				
	2019	R		.300**			
		N		497			
	2018	R			.313**		
		N			487		
	2017	R				.310**	
		N				482	
	2016	r					.316**
		N					445

**Correlation is significant at the 0.01 level
(Source: author's own calculation)

Based on the conducted correlation analysis, Pearson's correlation coefficient (R) shows a statistically significant relationship between ESG rating and number of employees. The correlation is significant at 0.01 level with positive values. As the ESG rating increases, the number of employees also increases. A weak correlation between the two variables was observed in 2020. A moderate correlation between the two variables was recognised in 2016, 2017, 2018 and 2019. The correlation between the two variables suggests that while there was a general trend toward ESG improvement, the pace and extent of improvement varied widely due to many factors, including industry dynamics, company-specific characteristics, external events, and evolving ESG criteria and standards.

The authors suggest further research to include other characteristics of the companies to investigate the relationship between the ESG ratings and other variables such as industry. In addition, it would be beneficial to study changes in a number of reported ESG factors and their influence on ESG ratings. Results from future studies could be beneficial for companies to determine their environmental policies and to adopt ESG practices into their business strategy.

5. CONCLUSION

In recent years, there has been notable progress and expansion in establishing and evolving ESG ratings for companies in the EU. There has been a growing emphasis among policymakers, investors, and stakeholders on the significance of ESG factors in decision-making processes. This shift in focus is aimed at fostering sustainability, encouraging ethical business conduct, and facilitating long-term value generation. The EU has played a leading role in the advancement and execution of regulatory frameworks aimed at fostering the integration of ESG considerations. The primary objective of EU regulations is to establish a uniform framework for reporting on ESG factors. This framework seeks to enhance the level of transparency in corporate disclosures and facilitate the allocation of financial resources towards sustainable investment opportunities. The EU companies have encountered a growing need to comply with enhanced expectations on ESG disclosure. The SFDR, as an illustration, requires enhanced transparency among financial market participants and advisers in relation to the incorporation of ESG factors into their strategies and products. The CSRD aims to enhance ESG reporting obligations, encompassing a wider range of companies. Various investors, including pension funds and asset managers, have integrated ESG factors into their investment strategies. This has motivated companies to improve their ESG practices to attract investment capital. Numerous EU companies have harmonised their ESG strategies with globally recognised sustainability frameworks, notably including the United Nations SDGs. This alignment signifies a dedication to tackling worldwide issues such as climate change, socioeconomic inequality, and the preservation of the environment. The EU companies have actively involved many stakeholders, such as employees, customers, and civil society, to get insights into and effectively tackle ESG challenges. Incorporating stakeholder feedback has frequently resulted in enhancements to ESG practices and the disclosure of related information. The performance of ESG factors exhibits variation among industries, while certain sectors, such as renewable energy and technology, inherently demonstrate alignment with ESG objectives. Rating agencies and ESG research businesses have consistently improved their techniques and criteria for evaluating the ESG performance of companies. The process of evolution has impacted the evaluations of EU companies as time has progressed. The COVID-19 pandemic and climate-related catastrophes have brought attention to the importance of ESG factors. As a result, companies in the EU have been motivated to modify their practices and risk management techniques. Regulatory measures, investor preferences, stakeholder engagement, and an increasing acknowledgement of the significance of ESG factors have influenced the development of ESG ratings within the EU. These factors have collectively fostered transparency, accountability, and sustainability within the corporate domain. As the results of the conducted analysis show, among the companies that started their ESG reporting in 2016, their ratings increased; therefore, the authors recommend that companies benefit if they incorporate ESG reporting into their business strategies. Over five years average ESG ratings have increased by more than 10 points. In addition, the authors suggest a detailed analysis of companies' characteristics connected to ESG ratings to determine the potential for future improvements in business strategies.

LITERATURE:

1. Chan, Y. H. (2003). Biostatistics 104: correlational analysis. Singapore Med J, 44(12), 614-619.
2. Doni, F., & Johannsdottir, L. (2020). Environmental social and governance (ESG) ratings. *Climate Action*, 435-449.
3. European Commission. (2011.) A renewed EU strategy 2011-14 for Corporate Social Responsibility. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=cele x%3A52011DC0681 (accessed 20.9.2023).
4. European Commission. (2018). Sustainable finance: Commission's Action Plan for a greener and cleaner economy. Available at: https://ec.europa.eu/commission/presscorner/ detail/en/IP_18_1404 (accessed 21.9.2023).
5. European Commission. (2021). DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Directive 2013/34/EU, Directive 2004/109/EC, Directive 2006/43/EC and Regulation (EU) No 537/2014, as regards corporate sustainability reporting. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A 52021PC0189 (accessed 22.9.2023).
6. European Parliament. (2013). DIRECTIVE 2013/34/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL. Available at: https://eur-lex.europa.eu/ LexUriServ/LexUriServ.do?uri=OJ:L:2013:182:0019:0076:EN:PDF (accessed 21.9.2023).
7. European Parliament. (2019). REGULATION (EU) 2019/2088 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL- Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32019R2088 (accessed 22.9.2023).
8. European Parliament. (2020). REGULATION (EU) 2020/852 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32020R0852 (accessed 22.9.2023).
9. Gasperini, A. (2020). Principles for Responsible Investment (PRI) and ESG Factors. *Climate Action*, 737-749.
10. Kiesel, F., & Lücke, F. (2019). ESG in credit ratings and the impact on financial markets. *Financial Markets, Institutions & Instruments*, 28(3), 263-290.
11. Laermann, M. (2016). The significance of ESG ratings for socially responsible investment decisions: An examination from a market perspective. *Available at SSRN 2873126*.
12. Nekhili, M., Boukadhaba, A., Nagati, H., & Chtioui, T. (2021). ESG performance and market value: The moderating role of employee board representation. *The International Journal of Human Resource Management*, 32(14), 3061-3087.
13. Peiro Signes, A., Segarra, O. M., Mondejar, J. J., & Vargas, V. M. (2013). Influence of the environmental, social and corporate governance ratings on the economic performance of companies: An overview.
14. Redondo Alamillos, R., & de Mariz, F. (2022). How can European regulation on ESG impact business globally?. *Journal of risk and Financial Management*, 15(7), 291.
15. Refinitiv. (2022). Environmental, social and governance scores from Refinitiv. https://www.refinitiv.com/content/dam/marketing/en_us/documents/methodology/refinitiv -esg-scores-methodology.pdf (accessed 23.9.2023).
16. Sedgwick, P. (2012). Pearson's correlation coefficient. *Bmj*, 345.
17. Skousen, C. J., & Sun, L. (2019). Do employee dimension ratings reflect employee performance? Evidence from MSCI's ESG database. *Applied Economics Letters*, 26(14), 1182-1185.
18. Technical Expert Group on Sustainable Finance. 2020. Financial Stability, Financial Services and Capital Markets Union. Available at: https://ec.europa.eu/info/departments/ financial-stability-financial-services-and-capital-markets-union_en (accessed 20.9.2023).

19. Tyvonchuk, O. (2020). ESG company ratings–the nature and features of formation. *Galic'kij ekonomičnij visnik*, 67(6), 104-113.
20. United Nations. (2004). Who Cares Wins: Connecting the Financial Markets to a Changing World?. Available at: https://www.unglobalcompact.org/docs/issues_doc/Financial_markets/who_cares_who_wins.pdf (accessed 19.9.2023).
21. United Nations. (2016). The Sustainable Development Goals Report 2016. Available at: https://unstats.un.org/sdgs/report/2016/The%20Sustainable%20Development%20Goals%20Report%202016.pdf (accessed 21.9.2023).
22. Veenstra, E. M., & Ellemers, N. (2020). ESG indicators as organizational performance goals: Do rating agencies encourage a holistic approach?. *Sustainability*, 12(24), 10228.
23. Zumente, I., & Lāce, N. (2021). ESG Rating—Necessity for the Investor or the Company?. *Sustainability*, 13(16), 8940.

SUSTAINABLE SUPPLY CHAIN THROUGH INNOVATIVE DIGITAL TECHNOLOGIES

Maria Rosaria Marcone
Marche Polytechnic University, Italy
m.r.marcone@univpm.it

ABSTRACT

The research work discusses the first results of a study on green firm's strategies with reference to the most relevant strategic decisions on a wide range of evolutionary phenomena in the way of doing business in particular by reconfiguring it into a new green business model (GBM) by the of new digital technologies (DT) of the new sustainable supply chains. The focus of this contribution is mainly to highlight how new digital technologies, especially those implemented in production plants, in new material design and in the new digital governance of platforms within supply chains, represent the ideal prerequisite for allowing manufacturing companies and new innovative actors (farmers, research centres, start upper, etc.) to formulate the most appropriate innovative sustainable strategies to successfully compete in turbulent international contexts. The analysis necessarily moves from the micro level analysis (business level) in order to identify the most profitable ways to carry out R&D and Operations activities by supply chain actors, and also the type of involvement of these in the supply chain technological heritage redesign. About the methodology adopted in the research, still underway, we wish to clarify that the inductive method was used with empirical verification, to correctly interpret the management phenomena that emerged regarding supply relationship management. During the empirical survey, seven Italian firms belonging to various sub-sectors of Italian agrifood supply chain and located in Italy were taken into consideration. The paper presents modern and unusual innovative processes in the Italian agrifood supply chain, shedding new light on success factors in modern competitive contexts increasingly anchored to integrated relationships in sustainable supply chains. In this sector the innovative processes emphasize the role of the external knowledge sourcing and the inside-out path of the open innovation that resonates with the diffusion of the innovation placing the accent on the importance to diffuse the innovations in the supply chain.
Keywords: Green supply chain, agrifood sustainability, technological innovation

1. INTRODUCTION

The core objective of this paper is empirically to observe how green business model (GBM) and DT invest companies and economic operators belonging to different levels of the supply chain. The observation, that more in depth is the interpretation of the theoretical constructs produced by the international managerial literature, allows to test the sustainable innovative processes. The analysis necessarily moves to the micro - business level - in order to identify the most profitable ways to carry out R&D activities by supply chain actors, and also the type of involvement of these in the supply chain technological heritage redesign. In this the relational perspective of the investigation of innovative processes analysis is to highlight the impact generation of the single actors for all supply chain, and in final of the entire supply chain, such as export orientation, new product development (NPD), and repositioning in the international supply chains. This study, while examining the scientific contributions provided by the international managerial literature, even the most up-to-date, does not aim to represent a review on managerial theory produced so far, but also aims to provide, through contextualization based on concrete studies some reflections and suggestions on most topical research directions. The research work discusses the first results of a study on green firm's strategies with reference to the most relevant strategic decisions on a wide range of evolutionary phenomena in the way of

doing business, in particular by reconfiguring it into a new green business model by the new digital technologies (DT) of the new sustainable supply chains. In strategic management studies, traditionally focused on the formulation of decisions, increasing importance to the analysis of how changes are generated and the evaluation of the effects they generate is recognized (Hock et al., 2015). These are new governance systems and new managerial structures, that emerge. In the current economic contexts, we are witnessing profound changes in the processes of structuring agrifood supply chains at an international level. Building resource-based view (RBV) and relational based vew the purpose of this contribution is to empirically explore the relationships among Italian firms belonging to diversified sub-sectors of the Italian agrifood (suppliers, packaging materials manufacturers, machinery manufacturers, biomethane producers) and inter-firm performance in a global context. This research discusses innovative processes shedding new light on the firm success factors in modern competitive contexts increasingly anchored in integrated supply chains relationships. About the methodology adopted in the research, still underway, the inductive method was used with empirical verification, to correctly interpret the management phenomena that emerged regarding supply relationship management. During the empirical survey, seven case studies belonging to various sub-sectors of Italian agrifood supply chain and located in Italy were taken into consideration. The analysis covered the period 2020-2023 and involved the industrial firms, the agricultural providers, the industrial clients, and other economic operators (start-up, incubators, innovation communities, etc.) in the Italian agrifood supply chain. Drawing on an explorative analysis of qualitative data, strategies to innovate each new "interstitial spaces" (or micro-segments) in international offer's structure are investigated. With regard to the structure of the research contribution, the theoretical framework, which is based on the most up-to-date international management literature, is presented in detail, making it possible to explain the research questions. Space is then devoted to identifying the methodology chosen and the guidelines used to select the sample of enterprises. Finally, some results from the empirical investigation are highlighted and some preliminary concluding observations are proposed.

2. THEORETICAL FRAMEWORK

The attention to environmental sustainability now pervades the economic operators and not, the scholars of technological solutions and the recipients of products and services. Internal choices, relational choices and logistical choices inspired by "environmental sustainability" are all the more difficult to formulate if we think that supply chains are global and therefore subject to different national regulations (legislation, social norms) in the various sectors-countries and in the various markets-outlet countries. However, green orientation is a strategic driver on which Italian companies can leverage: the improvement in the ability to compete that derives generates concrete opportunities for growth in turnover, export quotas and employment. From the resource-based theory perspective, we intend to investigate the influential role of various resource-based supply chain characteristics (Khan et al., 2023) recognising the crucial role of resources and the growing prevalence of the resource-based view (RBV). In this context (Stekelorum et al., 2021) this study utilises the RBV as an over-arching theoretical framework, noting strong evidence for the significant role of various resource-based supply chain characteristics, such as open innovation, digital innovation and digital platform systems in transforming SC in GSC, the present study grounds its conceptualizations in RBV specifically, based on a review of literature, the study proposes Phenomena such as integration, relationship, procurement as tangible or intangible resources and GSC as the outcome variable (Fahimnia et al., 2015; Sharma et al., 2021; Tseng et al., 2019). The agricultural context lends itself to studies that show that farmers and agrifood firms are very interested to explore in terms of border line technologies because of the significance of the sector for the economies of countries, the role of efficiency and potential optimization within the agrifood sector, and the role that the sector

plays in transitioning toward net zero targets. In this sense is important to promote research methodological approaches to analyse different uncertainty scenarios for the future such as business model design for a sustainable development, biotechnology innovations, digitization of technologies, inter-firm sustainable relationships, international development of Italian agrifood supply chain. Recent epistemic studies on the implications of digital technologies on supply chain redesign contribute to advance the understanding of how DT resources can affect various aspects of operations management procedures and different ways to design new relationships aimed at integrating innovation in the supply chain (Angelopoulos et al., 2023; Grodal et al., 2023; Mithas et al., 2022; Stark et al., 2022). The increasing diffusion of artificial intelligence (AI) applications, such as machine learning, expert systems, computer vision, along with the rapid expansion of digital technologies (DTs) for data collection, storage, and consumption, is providing society with an unprecedented capacity to generate insights into how to improve the quality of life and the environment (UNSGHL, 2019). These developments, often referred to as the fourth industrial revolution, provide opportunities to improve the sustainability of firm's production systems and its governance (Nishanth., 2020). Digitally aligned technology initiatives are represented in figure 1: Iot, big data, cloud computing, smart manufacturing, intelligent factory, adaptive production, artificial intelligence, automation through the use of physical computer systems (CPS).
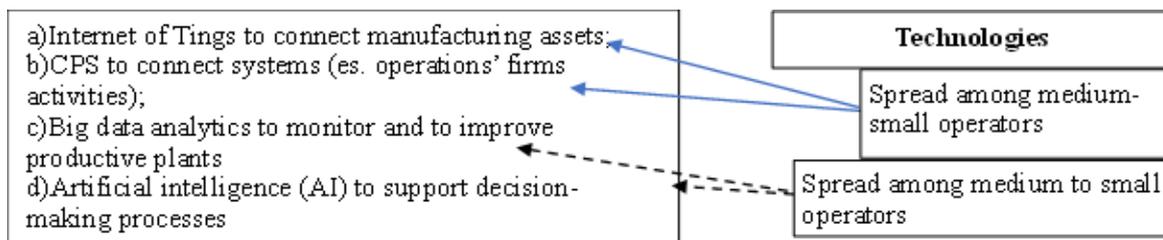
Figure 1: Digital technologies: issues and opportunities for medium-small firms
(Source: our elaboration)

Difficulties for medium-small operator were highlighted by some studies (Fatorachian et al., 2018; Mittal et al., 2018): financial investment is needed to support the I4.0 transition, as well as CPS-based digital connectivity and the integration of systems relations. In the specific, integration is of the Technological Systems of Enterprise is of the productive and technological Systems Along all the supply chain. Investments, digital connectivity, relationships integrations: these are the Real Challenges (challenges) for companies as the supply chain moves towards a more flexible and intelligent production method through the use of IoT-based digital systems and CPS technology (Cyber Physical Systems). Some authors studied the effect of emerging digital technologies on safety and ecological sustainability. These technologies will create new potential for firms changing strategic management, which may lead to improved sustainable competitiveness.

RQ1 - We now believe that both knowledge generation phenomena, both internal and external, can almost always be included in knowledge diffusion processes of the open innovation type.

Academic research has examined green supply chain (GSC) from various perspectives, such as:
1) Practices. Firms are in fact making concerted efforts to modify their design-production systems to incorporate greener practices.
2) Performance or metrics, between comprehensive measures and narrower lens (Cousins et al., 2019; Green et al., 2019; Bag et al., 2020; Tseng et al., 2019). Existing scholarship has also noted GSC's various positive outcomes for firms, including, among others, some

benefits such as increased customer satisfaction, production costs reduction, profit maximisation, improved cooperation, competitive advantage.

3) Special aspects of GSC, such as sustainability development (Fahimnia et al., 2015; Sharma et al., 2021)

Firms are thus making concerted efforts to modify their design-production systems to incorporate greener practices. Nevertheless, recent studies have observed a lack of diffusion of GSC (Kumar and Barua, 2021), despite its being acknowledged as a way of allowing the firms in the sector to operate more sustainably. These studies have noted that in general, manufacturing firms have been rather slow in shifting from a traditional SC framework towards a GSC framework; recognising the slow pace of the transformation to GSC and the crucial need to accelerate it, the present study proposes to examine various factors that can positively impact GSC. The study actually highlights the effort, sometimes pioneering of companies belonging to the Italian agrifood supply chians. In order to effectively exploit resources, firms, innovative Institutions, and economic operators must not only be able to exploit existing resources but also to develop new and dynamic capabilities to maintain competitive advantage in changing both of the industry environments and of the firm's competitive processes (Barney, 2012; Teece, 2010; Wernerfelt, 1984). As has been affirmed, dynamic capabilities studies are developed in the most current and therefore more advanced resource based view (RBV) research steps: they deal with situation specific changes and consider contingency changes (Eisenhardt, 2021). Supply chain innovation is regarded as a complex construct that is strengthened by cooperative ties and joint product development between buyers and suppliers. SC stakeholders are becoming increasingly involved in the innovation process, particularly in the innovative SC. Scholars have used RBV to describe how firms can increase their competitive advantage and enhance their capabilities through collaboration. From the RBV perspective, also external stakeholders are resources that can provide valuable knowledge for firm. A key component of SC innovation in this context is the management of inter-organizational relationships among partners: SC integration refers to strategic collaboration with key SC partners to achieve the efficient and effective management of inter and intra firm activities involving decision processes and the flow of information services and products.

RQ2 - These technologies will create new potential for firms changing strategic management, which may lead to improved sustainable competitiveness.

3. METHODOLOGY

This is qualitative research. First of all, we have continuously visited and revisited the literature and systematize and rearrange the conceptual categories that are the focus of this study and that could contribute to increasing the wealth of knowledge of management scholars. The analysis of International Managerial Literature has privileged the inclusion of scientific papers and research contributions based on the following criteria: the articles should include hypotheses regarding the relationship between digital economic operators, suppliers, food manufacturing firms, innovation communities, etc.; it refers to new relationships in the supply chain. The merit of qualitative research is also that of proceeding in a positive-interpretative way: in fact, the presentation of the case study allows to interpret its relationship with theoretical concepts (Dubois and Gadde, 2014). During this process, we triangulated data and information with different types (interviews, webinair presentation, written documents, etc.) and practiced peer debriefing (e.g. conference of trade associations or industrial associations; scientific meetings or conferences on technological models) to cover complementary views and to be able to redirect research study when necessary. In fact, the search path, as explained above, rather than being linear, was reflective and iterative.

Since our aim has been to systematize and conceptualize an empirical phenomenon and thus contribute to the enrichment of managerial theory (Eisenhardt, 2021), rather than verify or falsify already established constructs, We are not arguing that our results are universal nor that they reveal statistically significant relationships. We continuously collect information (quantitative data, such as revenues, investments in innovative procedures and processes, internal and external innovative resources involved and analysis of the procedures put in place to innovate, such as internal and external relations; those external to the Company, but internal to the supply chain; those external to the Company and the supply chain. It was first investigated howseven companies belonging to the agri-food supply chain design their research activities, to generate sustainable innovative processes (table 1), and then the reconfiguration of sustainable innovative supply chain and sustainable strategic choices of supply chain companies).

Operating modes	R&D activity strategies aimed at sustainability
I	Cooperative R&D activities whit competitors located in the same regional area. Supply chain integration at the aim to joint sustainable production activities.
II	R&D internal activities shared with suppliers: integrated processes with suppliers
III	R&D internal activities in order to broaden (diversification) the technological heritage: R&D activities improvement with national and international partners.
IV	Open Innovation: platform design processes with suppliers (supplier-side innovative/integrated supply chain)
V	New R&D activities in eco-cluster: circular localized economy.
VI	R&D activities both in-house and in partnership with growers and Institutional research centres.
VII	Open digital platform in sustainable supply chain relationships

Table 1: Innovative activities in sustainable strategies: operating modes in enterprises (Source: our empirical investigation)

4. SOME PRELIMINARY FINDINGS

The chosen case studies highlight how the companies belonging to the Italian agrifood sectors have rethought and re-imagined the traditional traditional ways of making innovation and to redesign processes that shape technology adoption within the agritech sector. Agritech sector suggests that technology adoption and implementation face several prevailing challenges, including the need for sustainable, organic, and environment-friendly products, emission-cutting production mechanisms, natural resource optimizing systems, and the strive to exploit the potential of disruptive technologies, enabling new possibilities for firms in the agrifood sector. Indeed, agritech firm's strategies in agri-food supply chains, the focus of this contribution, has recently gained significant scholarly attention, considering its potential to unlock some of the most prevailing global societal and economic problems. Disruptive technologies, though studied in manufacturing systems and services, have long been associated with the agrifood sector, introducing novel operational practices, and optimizing inbound and outbound innovative information creation flows. The impacts of disruptive technological innovation emerge on a plurality of relevant factors, including the following:

- the design and monitoring of the performance of manufacturing systems (Hughes et al., 2022):
- increasing production flexibility through additive manufacturing;
- increasing environmental, social and economic sustainability;
- the efficiency of managerial practices, both in decision-making and in operational management.

Some agritech research have been mainly dominated by conceptual studies and lacks empirical investigations to validate the initial theorizations in the field.

Existing theories on technology adoption and implementation do not fully capture the unique specificities and challenges of the agritech sector and are not fully adapted to the revolutionary self-learning capabilities of machine learning algorithms. While the adoption and implementation effects of several emerging technologies on agritech firms have been explored, the impacts of digital-driven technologies and systems are yet to be examined. Also referred to as e-agriculture, digital farming, or smart farming, the agrifood field, more and more agritech field, is an interesting area of research that attracts significant interest from a multitude of institutional actors, including practitioners, governmental actors, and societal constituencies. This study addresses these gaps developing digital technology readiness and approaching framework that better fits the emerging needs of agritech firms and the ongoing evolution of digital-driven technologies and systems. The multiple, and concomitant, innovative dynamic contexts lead firms to use relationship behaviour for competitive advantage by known, implementing, and leveraging ever more complex external resources which prove relevant across a myriad of relationship forms, such as supplier agreements, cross-sector openness collaborations, network relationships, and consortia design. Specifically, one would like to deepen the relational governance perspective that is based or could even be better developed with collaborative relationships design and in practice relational structures. The rapid evolution of the new digital technologies is transforming the global economy into a knowledge-based economic systemin which knowledge and technology play an increasingly central role. Nella RBT knowledge has been regarded as an important driver of economic growth. Knowledge ca be either generated internally by firms or obtained externally, through spillovers absorption effects, in knowledge diffusion processes. Within the broader theoretical framework on R&D management, studies on knowledge spillovers and firms 'absorptive capacity have considered the diffusion of knowledge at firm, industry and geographical local level. Supply chain integration is an important theoretical framework that can take into consideration two seemingly opposite approaches to the management of supply chain relations: the transactional approach, based on exchange and market, and what refers to collaborative partnerships. First, it takes into account how relations are governance. The second, long-term, takes into account the resource based view (RBV). Numerous managerial studies have taken advantage of the focused theoretical outline on the resources - resource based theory (RBT) - in order to analyze as various forms of integration between actors-enterprises of the supply chain impact on their performances (Flynn et al., 2010; Cao-Zhang, 2011; Schoenherr-Swink, 2012). The resource based approach allows to estimate the value of the 'relational resources' that are developed in the buyer-supplier relationship. The digitalization that is open and at the same time league through trust and contractual fireness the actors of the supply chain in an optical of along period, seems to make the supply chain more resilient (Vanpoucke et al., 2022). The open innovation itself lends to be a buyer-supplier governance mechanism that explains how preferential and long-increased treatment (since binds a greater number of chain steps linked together in vertical directio) the impact of asymmetric perceptions. This article emphasizes that the open relationship, which can be considered from several points of view, helps to overcome negative differences in attitudes and perception. Although less prevalent in the literature is the point of view that the asymmetry is positive as it reconfigures with continuity the relations, relying on integrations strong in sense substantial and regulated by weak links as contracts network (Villena and Craighead, 2017). Increasingly, all companies, regardless of their size, adopt open innovation (OI) processes (Enkel et al., 2009; Laursen and Slater, 2014); collaborate with heterogeneous partners and focus on unexpected ways to innovate products and production processes. Although the results of the OI have also been deepened, less methodological insights have been produced for the operational business processes through which open innovative phenomena are concretely implemented. In fact, OI can be manged and executed in several ways.

5. CONCLUSION

The research work presents the results of a study on green management with reference to the most relevant strategic decisions by companies, belonging in agrifood, and the concomitant design by management of new relational governance systems in supply chain (the one to which they belong, the new one different from the one to which they belong, the radically new sector that help to create). This paper examines the critical yet underexplores modes of innovation diffusion in sustaining digital innovation in business model strategies by firms belonging more and more at evolutionary supply chain systems. The study of the evolutionary view of disruptive innovation diffusion in the supply chain favours, that is the research focus, the investigation of the roles played by case studies - distinct yet interconnected parties (agri-suppliers, food manufacturing systems, manufacturing firms, platforms or hub academies) - within supply chain innovative systems as well as the research opportunities it brings. Although innovation is the cornerstone of our research field, which hypothetically affects firm performance, our results theoretically contribute to the new ways to do business in the modern supply chains by highlighting the significance of the 'relational platforms' based on modern information technologies. The green orientation is however a strategic driver on which the enterprises can make leverage: the improvement of the ability to compete that it results generates concrete opportunities of increase of the turnover, the quotas of export and the occupation. In order to improve the synergies between their own and suppliers' knowledge, firms should be able to identify and use external innovative knowledge (innovative in radical sense) in combination with their operations. The sustainable governance of the supply chain is possible if it involves all the physical and informative flows of the processes that compose the operations of the enterprises pertaining to the supply chain. In practice, the birth of such relations demands the formation of new relational assets that are to the base of the ability of the enterprises to reposition themselves in the new structures of the offer or supply chain: they are perhaps still more important than those relational assets, traditionally dedicated to maintaining established relationships, as well as identifying and designing new ones. Because transactions have evolved today: on the 'supply side' side, contractual relationships take place within a network of potential innovative relationships involving startups, innovation communities, young and competitive companies in new sectors, etc. It seems clear that transactional relationships are not to be considered as traditional ways of regulating supply chain relationships characterized by consolidated or even mature technologies. Moreover, if a company competes mainly on product-service innovation, the type of relationship could depend on where innovation is expected to emerge: many types of innovation (and therefore the technological heritage) emerge outside the usual and close collaborations between suppliers and buyers. Although the RBV places emphasis almost exclusively on the benefits of collaborations based on the development of resources that are specific (unique or dedicated) to each relationship, and therefore difficult to imitate, in global competition, interactions between diversified supply chains are increasingly emerging.

LITERATURE:

1. Angelopoulos, S., Bendoly, E., Fransoo, J., Hoberg, K., Ou, C., & Tenhiälä, A. (2023). Digital transformation in operations management: Fundamental change through agency reversal. *International Journal of Information Management*, 56, 102208
2. Bag, S., Gupta, S., Kumar, S., & Sivarajah, U. (2020). Role of technological dimensions of green supply chain management on firm performance. *Journal of Enterprise Information Management*, 34 (1), pp. 1-27.
3. Barney, J. B. (2012). Purchasing, supply chain management and sustained competitive advantage: the relevance of resource-based theory. *Journal of Supply Chain Management*, 48(2), pp. 3-6.

4. Cao M., Zhang Q., Supply Chain collaboration: Impact on collaborative Advantage and Firm Performance. (2011). *Journal of Operations Management*, 29 (3), pp. 163-180.

5. Cousins, P. D., Lawson, B., Petersen, K. J., & Fugate, B. (2019). Investigating green supply chain management and performance. *International Journal of Operations & Production Management*, 39(5), pp. 767-786.

6. Dubois, A., Gadde, L.E. (2014). Systematic combining - A decade later. *Journal of Business Research*, 67 (6), pp. 1277-1284.

7. Fahimnia, B., Sarkis, J., & Davarzani, H. (2015). Green supply chain management: A review and bibliometric analysis. *International Journal of Production Economics*, 162, pp. 101–114.

8. Fatorachian H., and Kazemi, H., 2018 A critical investigation of industry 4.0 in manufacturing: Theoretical operationalization framework. *Production Planning and Control*, 29 (8), pp. 633-644.

9. Fawcett, S. E., Wallin, C., Allred, C., Fawcett, A. M., & Magnan, G. M. (2011). Information technology as an enabler of supply chain collaboration: A dynamic-capabilities perspective. *Journal of Supply Chain Management*, 47(1), pp. 38-59.

10. Eienhardt, K. M. (2021). What is the Eisenhardt Method, really? *Strategic Organization*, 19 (1), pp. 147-160.

11. Enkel, E., Gassmann, O., Chesbrough, H. (2009). Open R&D and open innovation: exploring the phenomenon. *R&D Management*, 39 (49), pp. 165-180.

12. Flynn B.B., Baofeng B., Zhao X. (2010). The Impact of supply Chain Integration on Performance: A Contingency and Configuration Approach, *Journal of Operations Management*, 28 (1), pp. 58-71.

13. Gölgeci, I., Murphy, W. H., Johnston, D. A. (2018). Power-based behaviors in supply chains and their effects on relational satisfaction: A fresh perspective and directions for research., European Management Journal, 36 (3), pp. 278-287.

14. Green, K. W., Inman, R. A., Sower, V. E., Zelbst, P. J. (2019). Impact of JIT, TQM and green supply chain practices on environmental sustainability. *Journal of Manufacturing Technology Management*, 30 (1), pp. 26-47.

15. Grodal, S., Krabbe, A. D., Chang-Zunino, M. (2023). The evolution of technology. *Academy of Management Annals*, 17 (1), pp. 141–180.

16. Hock, M., Thomas, C., and Esther, S. (2015). The Impact of Organizational Culture on a Firm's Capability to innovate the Business Model. *R&D Management*, 46(3), pp. 433-450.

17. Hughes, L., Dwivedi, Y.K., Rana N.P., Williams, M.D., Raghavan, V. (2022). Perspectives on the future of manufacturing within the Industry 4.0 era. *Production Planning & Control*, 33 (2-3), pp. 138-158.

18. Khan, M., Ajmal, M. M., Jabeen, F., Talwar, S., & Dhir, A. (2023). Green supply chain management in manufacturing firms: A resource-based viewpoint. *Business Strategy and the Environment*, 32 (4), pp. 1603–1618.

19. Kumar, S., and Barua, M. K. (2021). A modelling framework of green practices to explore their interrelations as a conduit to policy. *Journal of Cleaner Production*, 335, 130301.

20. Laursen, K., Salter, A. J. (2014). The paradox of openness: Appropriability, external search and collaboration. *Research Policy*, 43 (5), pp. 867-878.

21. Lehtimäki, T., Komulainen, H., Oinonen, M., Salo, J. (2018). The value of long term co-innovation relationships: experiential approach. *International Journal of Business Innovation Research*, 16 (1), pp. 1-23.

22. Mithas, S., Chen, Z. L., Saldanha, T. J., De Oliveira Silveira, A. (2022). How will artificial intelligence and industry 4.0 emerging technologies transform operations management? *Production and Operations Management*, 31(12), pp. 4475-4487.

23. Mittal S., Khan M.A., Romero D., Wuest T. (2018). A critical review of smart manufacturing and industry 4.0 maturity models: Implications for Small and Medium-Sized Enterprises (SMEs). *Journal of Manufacturing Systems*, 49, pp. 194-214.
24. Nahr, J. G., Nozari, H., & Sadeghi, M. E. (2021). Green supply chain based on artificial intelligence of things (AIoT). *International Journal of Innovation in Management, Economics and Social Sciences*, 1 (2), pp. 56–63.
25. Nishant, R., Kennedy, M., & Corbett, J. (2020). Artificial intelligence for sustainability: Challenges, opportunities, and a research agenda. *International Journal of Information Management*, https://doi.org/10.1016/j.ijinfomgt.2020.102104
26. Parmigiani, A., Rivera-Santos, M. (2011). Clearing a path through the forest: A meta-review of inter-organizational relationships. *Journal of Management*, 37(4), pp. 1108-1136.
27. Schoenherr T., Swink M. (2012). Revisiting the Arcs of Integration: Cross-validations and Extensions. *Journal of Operations Management*, 34 (1-2), pp. 99-115.
28. Sharma, V., Raut, R. D., Mangla, S. K., Narkhede, B. E., Luthra, S., & Gokhale, R. (2021). A systematic literature review to integrate lean, agile, resilient, green and sustainable paradigms in the supply chain management. *Business Strategy and the Environment*, 30 (2), pp. 1191- 1212.
29. Silva, G. M., Gomes, P. J., Carvalho, H., & Geraldes, V. (2021). Sustainable development in small and medium enterprises: The role of entrepreneurial orientation in supply chain management. *Business Strategy and the Environment*, 30 (8), pp. 3804-3820.
30. Stark, A., Ferm, K., Hanson, R., Johansson, M., Khajavi, S., Medbo, L., Öhman, M., Holmström, J. (2022). Hybrid digital manufacturing: Capturing the value of digitalization. *Journal of Operations Management*, 69 (6), pp. 890-910.
31. Stekelorum, R., Laguir, I., Gupta, S., & Kumar, S. (2021). Green supply chain management practices and third-party logistics providers performances: A fuzzy-set approach. *International Journal of Production Economics*, 235, 108093.
32. Teece, D. (2010). Business Models, Business Strategy, and Innovation. *Long Range Planning*, 43 (2-3), pp. 172-194.
33. Tseng, M.-L., Islam, M. S., Karia, N., Fauzi, F. A., & Afrin, S. (2019). A literature review on green supply chain management: Trends and future challenges. *Resources, Conservation and Recycling*, 141, 145-162.
34. UNSGHL (2019). The age of digital interdependence. Report of the UN Secretary General'shigh-level panel on digital cooperation. UN Secretary General.
35. Vanpoucke, E., Wetzels, M., Rozemeijer, F., Pilzak-Blonska, M. (2022). The impact of asymmetric perceptions of buyer-supplier governance mechanisms on relational rents. *International Journal of Operations & Production Management*, 42 (1), pp. 91-121.
36. Villena, V. and Craighead, C. W. (2017). On the same page? How asymmetric relationship characteristics effect opportunism and performance. *Production and Operations Management*, 26 (3), pp. 41-58.
37. Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), pp. 171-180.

ECONOMIC GROWTH AND FINANCIAL INTERMEDIATION IN THE CENTRAL AND EASTERN EUROPEAN COUNTRIES: A COINTEGRATION ANALYSIS

Milena Kovachevich
University of National and World Economy (UNWE)
Sofia, 8th December str., 1700, Bulgaria
mkovachevich@unwe.bg

ABSTRACT

Financial intermediation is key to the development of a country's economy. On the one hand, the quick and easy conversion of savings into investments stimulates economic growth. On the other hand, high economic growth increases income and savings, which increases investments. The present study examines the relationship between economic growth and financial intermediation (the development of the financial sector) in the countries of Central and Eastern Europe (CEE). The monetary aggregate to the gross domestic product is used as an indicator of financial intermediation. The relationship between the variables is examined by cointegration analysis with the econometric software Eviews. The main research hypothesis is that there is a long-term relationship between the economic growth of countries and the development of the financial sector. In addition to the main hypothesis, the direction of the relationship is considered - it should be positive, and CEE countries with higher average growth should have a more developed financial sector compared to CEE countries with lower average growth. At the same time, the fact that CEE countries are developing countries and compared to developed countries have a higher average economic growth, although they have a less developed financial sector, should also be taken into account. The CEE countries are also an interesting combination of five Euro area member countries and five EU member countries, which also affects the results of the study. Euro area member countries are likely to have a more developed financial sector given the fact that they are more integrated into the Euro area financial sector.
Keywords: *Cointegration Analysis, Economic Growth, Financial Intermediation*

1. INTRODUCTION

Financial intermediation is key to the development of a country's economy as the quick and easy conversion of savings into investments stimulates economic growth. On the other hand, high economic growth increases income and savings, which increases investments. The present study examines the relationship between economic growth and financial intermediation (the development of the financial sector) in the countries of Central and Eastern Europe (CEE) for the period of 2007-2021. As Gregorio and Guidotti (1992) note that "the domestic credit to private sector to GDP represents more accurately the role of financial intermediaries in channelling funds to private market participants which is closely related to the level and efficiency of investment, and hence to economic growth. Despite that monetary aggregates provide an alternative set of variables to measure the extent of financial development". In the present study the monetary aggregate to the gross domestic product (GDP) is used as an indicator of financial intermediation. The broadest monetary aggregate (M3) was chosen to avoid the problems of choosing the other more liquid aggregates (Gregorio and Guidotti (1992)). The main research hypothesis is that there is a long-term relationship between the economic growth of countries and the development of the financial sector. In addition to the main hypothesis, the direction of the relationship is considered - it should be positive, and CEE countries with higher average growth should have a more developed financial sector compared to CEE countries with lower average growth.

2. ECONOMIC GROWTH AND MONETARY AGGREGATE M3 TO GDP IN THE CEE COUNTRIES

The CEE countries include Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovenia and Slovakia as five of the countries are members of Euro area. Since reliable data for monetary aggregates after the acceptance in Euro area are not available for the member countries of the Euro area the analysis will focus on the countries that are not in Euro area – Bulgaria, the Czech Republic, Hungary, Poland and Romania. (Figure 1).
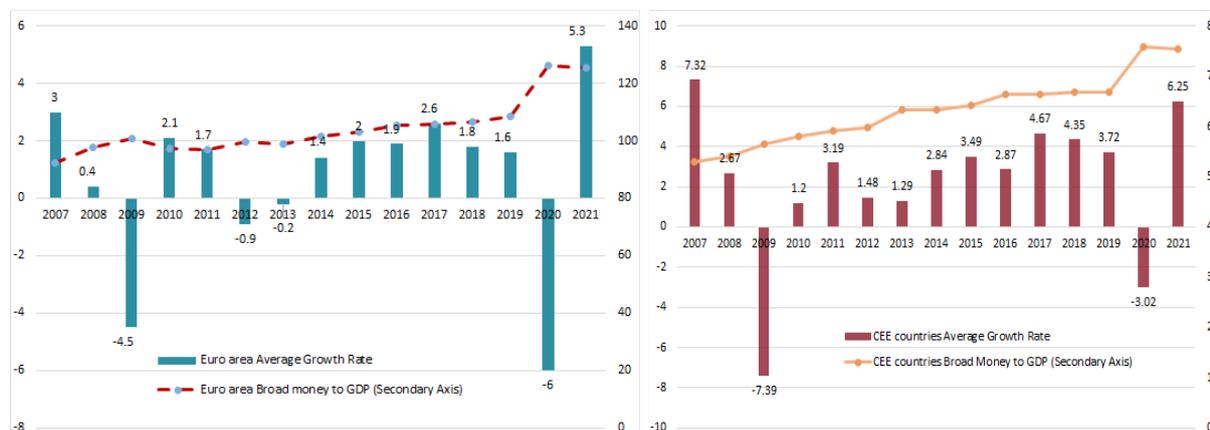
Figure 1: Average real GDP growth rate (annual %) and average broad money to GDP ratio (%) in Euro Area and CEE countries
(Source: ECB, Eurostat, World Development Indicators)

As Figure 1 shows, the average economic growth in all ten CEE countries is significantly higher than the economic growth of the Euro Area countries. An exception is 2009, when the decline in GDP in CEE countries (mainly due to the significant decline in Estonia, Lithuania and Latvia) is larger than the decline in Euro Area countries and 2010 with economic growth in CEE countries close, but still below that of the Euro Area. CEE countries are developing countries and compared to developed countries have a higher average economic growth. At the same time, the broad money to GDP ratio in the CEE countries and in the Euro area, measured by the monetary aggregate M3, has similar dynamics, but significantly higher average values in the Euro area (above 120% of GDP in 2021) compared to the average values for the CEE countries (around 75% of GDP in 2021). For both groups of countries, there is a sharp increase in the ratio for 2020, which is also related to the decline in GDP as a result of the covid-19 restrictive measures. Looking at the data on real GDP growth in Bulgaria, the Czech Republic, Hungary, Poland, Romania and the Euro area (Figure 2), the similar dynamics in the indicator are striking again, as there is a particularly great similarity between the dynamics of GDP in the Czech Republic, Hungary and Poland on the one hand, and Bulgaria, Romania and the Euro area, on the other hand. The highest average GDP growth for the period was observed in Poland (3.74%), followed by Romania (3.09%), and the lowest GDP growth in Hungary (1.71%). However, the average economic growth in developed countries in the Euro area is significantly lower (0.81%).

Figure following on the next page

Figure 2: Average real GDP growth rate (%) in Bulgaria, the Czech Republic, Hungary, Poland, Romania and Euro area
(Source: Eurostat)

Regarding the dynamics of broad money to GDP by country (Figure 3), the analysis shows similarity in Bulgaria, Romania, the Czech Republic, Poland and the Euro area. A sharp increase in broad money to GDP after 2019 was observed in Hungary, as before that the ratio was relatively stable between 58% and 63% of GDP. The highest values for the indicator are observed for the Euro area (over 100% of GDP on average for the entire period), and the lowest values are observed for Poland - about 40% of GDP on average. In the remaining four CEE countries, the broad money to GDP ratio is also significantly lower than that in the Euro area - on average between 60% and 80% of GDP.

Figure following on the next page
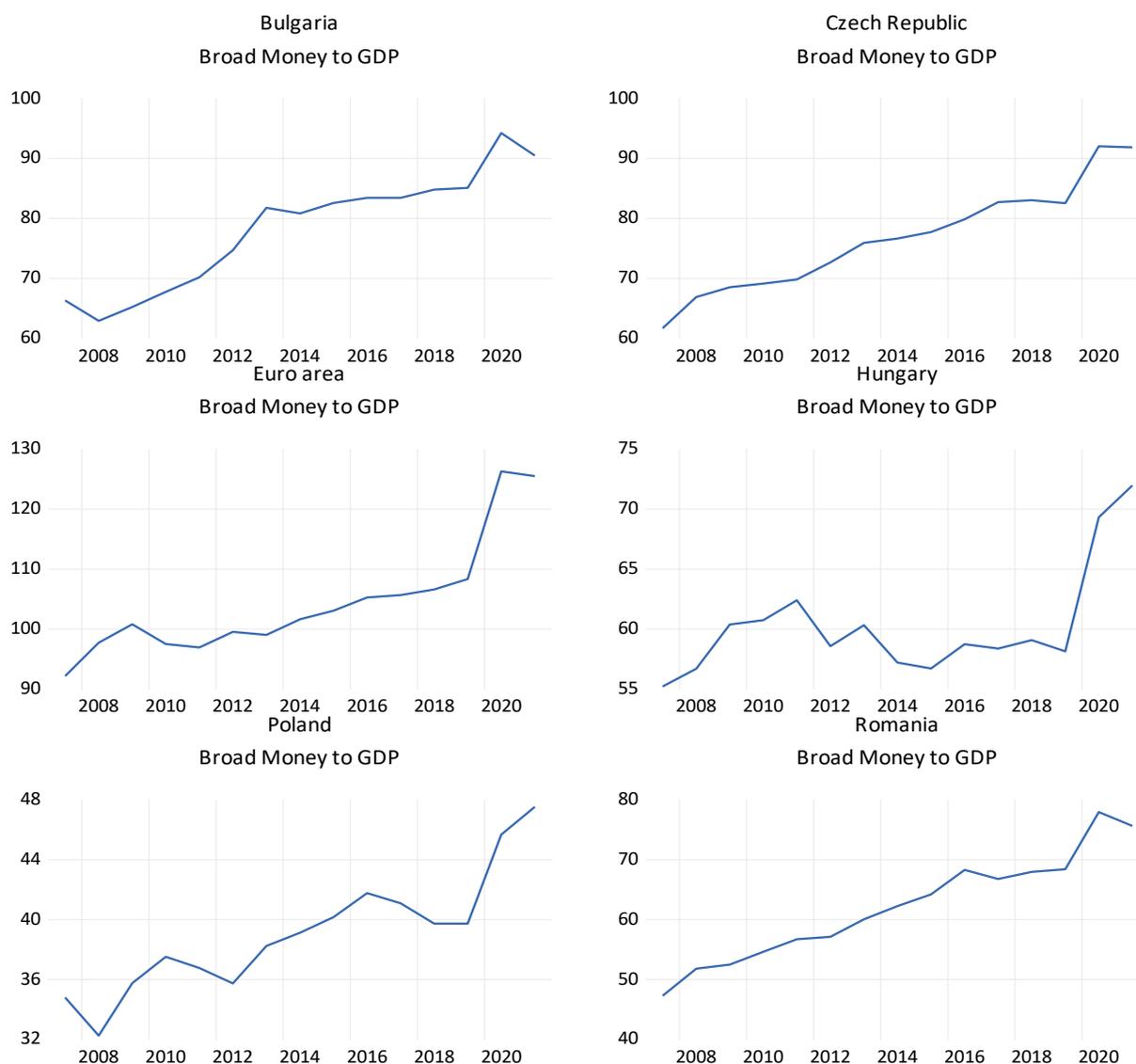
Figure 3: Average broad money to GDP ratio (%) in Bulgaria, the Czech Republic, Hungary, Poland, Romania and Euro area
(Source: ECB, Eurostat, World Development Indicators)

2.1. Literature review

The relationship between economic growth and financial sector development is considered in several directions both for individual countries and for entire regions. Yusifzada and Mammadova (2015) "capture the four aspects of finance – depth, access, efficiency and stability – to investigate the impact of financial development and economic growth. Their results suggest that the impact of four parameters of financial development differs depending on the level of financial development and has an inverted S-shape function". Levine, Loayza and Beck (1999) "evaluate (1) whether the level of financial intermediary development exerts a causal influence on economic growth and (2) whether cross-country differences in particular legal and accounting system characteristics". The authors use both cross-section and panel-data analysis and the results show that financial intermediary development exerts a statistically significant and economically large impact on economic growth. Yakubu, Abokor and Balay (2021) "investigate the impact of financial intermediation on economic growth in Turkey using annual data spanning 1970–2017. Based on the results of the augmented Dickey–Fuller and Phillips–Perron unit root tests for stationarity, the authors employ the Autoregressive Distributed Lag

(ARDL) bounds testing to cointegration to establish the long-run impact of financial intermediation alongside other control factors on economic growth. The study also examines the short-run relationship between financial intermediation and economic growth by estimating the Error Correction Model (ECM). The authors' findings indicate that financial intermediation significantly influences economic growth in both short and long run. However, the effect is positive only in the short run, lending support to the supply-leading hypothesis". Tripathy and Mishra (2023) "examines the relationship between economic growth and financial development in the context of Indian economy over the period of 15 years from June 2003 to February 2018. The study employs cointegration test, involving Johansen Juselius Cointegration and autoregressive distributed lag (ARDL) Bounds test approach to ascertain the long-run relationship between financial development and economic growth. The outcome of the article reports the existence of long-run equilibrium relationship between economic growth represented by Index of Industrial Production and Financial Development represented by the Bombay Stock Exchange (BSE) Index and BSE Volume of Trade". Christopoulos and Tsionas (2004) "investigate the long run relationship between financial depth and economic growth via panel unit root tests and panel cointegration analysis. For 10 developing countries, the empirical results provide clear support for the hypothesis that there is a single equilibrium relation between financial depth, growth and ancillary variables, and that the only cointegrating relation implies unidirectional causality from financial depth to growth". Setiawan, Saleem, Nathan, Zeman, Magda and Barczi (2021) "analyze the impact of financial market development and economic growth in middle-income and high-income countries of ASEAN and CEE countries from 2002 to 2019. Annual time series data were sourced from World Bank using stock market development indicators. The findings of the study reveal that market capitalization and total stock traded from the total value positively impact economic growth".

3. METHODOLOGY

The relationship between the variables is examined by cointegration analysis with the econometric software Eviews. Cointegration analysis is used to reveal a long-term relationship between non-stationary variables (Kovachevich, 2016). Before conducting the cointegration analysis, it is necessary to check the data for stationarity and, if the data are non-stationary, to determine in what order they are non-stationary. Since reliable data for monetary aggregates are not available for the member countries of the Euro area, the analysis will continue for Bulgaria, Czech Republic, Hungary, Poland and Romania separately and for the Euro area as a whole. The souce of data on economic growth rate (annual %) and GDP in CEE countries and Euro area is Eurostat. Data from the World Development Indicators are used to determine countries` monetary aggregate to GDP ratio (for Bulgaria, the Czech Republic, Hungary, Poland and Romania). The source of data for Euro area`s broad money (M3) is European Central Bank (ECB) Statistics. Using cointegration analysis in the present study broad money to GDP ratio and economic growth in the CEE countries are examined in the context of the presence of a long-term relationship between them. Econometric software Eviews v.12 is used for this purpose. The chosen test to identify whether the data are stationary is Augmented Dickey-Fuller (ADF) test. ADF test can also identify the data order of integration. The first step before applying ADF test is to check the data for trend and/or constant. The verification shows that the presence of a trend and a constant is confirmed for the broad money to GDP ratio for Bulgaria, the Czech Republic and Euro area. There is neither a trend nor a constant in real GDP growth rate data of Bulgaria, the Czech Republic, Hungary, Romania and Euro area and there is only a constant in broad money to GDP ratio of Hungary and Romania, as well as Poland`s real GDP growth rate data and broad money to GDP data. The ADF test results are presented in Table 1.

Country	GDP growth rate (%)g. Level	Broad money/GDP (%)
Stationary data	Euro area, Bulgaria, the Czech Republic, Hungary, Romania, Poland	
Non-stationary data		Euro area, Bulgaria, Czech Republic, Hungary, Romania, Poland

Table 1: Augmented Dickey-Fuller stationary test results
(Source: Author`s calculations)

The ADF test results show that the data for all of the countries and for Euro area for GDP growth rate are stationary and the data for broad money to GDP are non-stationary. All of non-stationary data are first order integrated. Since the economic growth is a stationary variable and the broad money to GDP ratio is a non-stationary variable for all of the countries an Auto-Regressive Distributed Lag (ARDL) model can be applied. The ARDL models show long-run (cointegration) and short-run relationship between variables. Table 2 presents the results of the ARDL model for Bulgaria, which shows that there is a short-run relationship between economic growth and broad money to GDP ratio, as only the real growth rate with lag 1 and the broad money (monetary aggregate M3) to GDP at level are statistically significant with probability under 0.05 (5%). The selected model is ARDL (4,3).

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GRBG(-1)	-1.574207	0.321947	-4.889646	**0.0394**
GRBG(-2)	-0.068617	0.240001	-0.285903	0.8018
GRBG(-3)	-0.149078	0.122647	-1.215499	0.3482
GRBG(-4)	-0.081549	0.103257	-0.789767	0.5124
M3BG	-0.579940	0.096531	-6.007817	**0.0266**
M3BG(-1)	-0.460067	0.247217	-1.860983	0.2038
M3BG(-2)	0.257653	0.173925	1.481402	0.2767
M3BG(-3)	0.702330	0.179317	3.916687	0.0594
C	16.62351	5.367464	3.097087	0.0903

R-squared	0.985930	Mean dependent var	2.072727
Adjusted R-squared	0.929652	S.D. dependent var	2.908639
S.E. of regression	0.771466	Akaike info criterion	2.250567
Sum squared resid	1.190319	Schwarz criterion	2.576117
Log likelihood	-3.378116	Hannan-Quinn criter.	2.045352
F-statistic	17.51873	Durbin-Watson stat	3.106141
Prob(F-statistic)	0.055102		

Table 2: ARDL model results for Bulgaria (short-run relationship)
(Source: Author`s calculations)

The selected model for the Czech Republic is ARDL (4,4) and the ARDL model shows that there is a short-run relationship between economic growth and broad money to GDP ratio with almost all variables significant at 5%.

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GRCH(-1)	1.208242	0.023126	52.24625	**0.0122**
GRCH(-2)	4.738455	0.074514	63.59162	**0.0100**
GRCH(-3)	0.220913	0.013206	16.72821	**0.0380**
GRCH(-4)	0.343949	0.015459	22.24951	**0.0286**
M3CH	2.611024	0.054861	47.59360	**0.0134**
M3CH(-1)	4.580541	0.054659	83.80155	**0.0076**
M3CH(-2)	0.196247	0.027107	7.239616	0.0874
M3CH(-3)	-1.448010	0.038473	-37.63680	**0.0169**
M3CH(-4)	-7.937256	0.119471	-66.43686	**0.0096**
C	92.58626	1.709222	54.16867	**0.0118**

R-squared	0.999948	Mean dependent var		1.881818
Adjusted R-squared	0.999483	S.D. dependent var		3.084094
S.E. of regression	0.070095	Akaike info criterion		-3.057636
Sum squared resid	0.004913	Schwarz criterion		-2.695913
Log likelihood	26.81700	Hannan-Quinn criter.		-3.285652
F-statistic	2150.863	Durbin-Watson stat		3.088436
Prob(F-statistic)	0.016732			

Table 3: ARDL model results for the Czech Republic (short-run relationship)
(Source: Author`s calculations)

The selected model for Hungary is ARDL (4,0) and again the ARDL model shows that there is a short-run relationship between economic growth and broad money to GDP ratio with almost all variables significant at 5%. (Table 4.)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GRHUN(-1)	-1.026173	0.243539	-4.213590	**0.0084**
GRHUN(-2)	0.070538	0.177156	0.398166	0.7069
GRHUN(-3)	0.569072	0.197968	2.874568	**0.0348**
GRHUN(-4)	0.649398	0.203455	3.191851	**0.0242**
M3HUN	-0.682041	0.155057	-4.398656	**0.0070**
C	44.71401	9.528258	4.692779	**0.0054**

R-squared	0.861080	Mean dependent var		2.709091
Adjusted R-squared	0.722159	S.D. dependent var		3.282211
S.E. of regression	1.730073	Akaike info criterion		4.236656
Sum squared resid	14.96576	Schwarz criterion		4.453690
Log likelihood	-17.30161	Hannan-Quinn criter.		4.099846
F-statistic	6.198371	Durbin-Watson stat		2.880791
Prob(F-statistic)	0.033420			

Table 4: ARDL model results for Hungary (short-run relationship)
(Source: Author`s calculations)

The selected model for Poland is ARDL (3,4) and the ARDL model shows no short-run relationship between economic growth and broad money to GDP ratio. (Table 5.)

Table following on the next page

228

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GRPOL(-1)	-0.552926	0.350165	-1.579045	0.2551
GRPOL(-2)	0.139895	0.417712	0.334909	0.7696
GRPOL(-3)	-0.647444	0.457387	-1.415529	0.2926
M3POL	-1.148230	0.309770	-3.706723	0.0657
M3POL(-1)	1.267517	0.478027	2.651558	0.1177
M3POL(-2)	0.159320	0.749506	0.212566	0.8514
M3POL(-3)	-0.450765	0.399657	-1.127879	0.3765
M3POL(-4)	0.763177	0.386169	1.976278	0.1868
C	-14.30780	8.388559	-1.705633	0.2302
R-squared	0.960690	Mean dependent var		3.481818
Adjusted R-squared	0.803448	S.D. dependent var		2.531331
S.E. of regression	1.122245	Akaike info criterion		3.000155
Sum squared resid	2.518868	Schwarz criterion		3.325706
Log likelihood	-7.500854	Hannan-Quinn criter.		2.794941
F-statistic	6.109638	Durbin-Watson stat		3.342271
Prob(F-statistic)	0.148210			

Table 5: ARDL model results for Poland (short-run relationship)
(Source: Author`s calculations)

The selected model for Romania is ARDL (4,4) and the ARDL model shows no short-run relationship between economic growth and broad money to GDP ratio. (Table 6.)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GRROM(-1)	0.365884	0.189550	1.930281	0.3043
GRROM(-2)	-0.210743	0.273857	-0.769535	0.5824
GRROM(-3)	-0.074826	0.109344	-0.684316	0.6180
GRROM(-4)	-0.173629	0.115392	-1.504690	0.3734
M3ROM	-0.265774	0.231421	-1.148443	0.4561
M3ROM(-1)	1.016157	0.161619	6.287355	0.1004
M3ROM(-2)	0.413804	0.305523	1.354410	0.4049
M3ROM(-3)	0.246485	0.334429	0.737032	0.5957
M3ROM(-4)	-1.195338	0.347734	-3.437507	0.1802
C	-14.31997	9.864145	-1.451719	0.3840
R-squared	0.992609	Mean dependent var		3.563636
Adjusted R-squared	0.926085	S.D. dependent var		3.036206
S.E. of regression	0.825462	Akaike info criterion		1.874540
Sum squared resid	0.681388	Schwarz criterion		2.236263
Log likelihood	-0.309971	Hannan-Quinn criter.		1.646525
F-statistic	14.92119	Durbin-Watson stat		2.922559
Prob(F-statistic)	0.198448			

Table 6: ARDL model results for Romania (short-run relationship)
(Source: Author`s calculations)

The selected model for Euro area is ARDL (4,4) and again the ARDL model shows no short-run relationship between economic growth and broad money to GDP ratio with all variables insignificant at 5%. (Table 7.)

Table following on the next page

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GREU(-1)	0.352533	0.376724	0.935787	0.5211
GREU(-2)	0.536020	0.416735	1.286239	0.4207
GREU(-3)	0.108346	0.243425	0.445089	0.7334
GREU(-4)	0.532204	0.222291	2.394173	0.2519
M3EU	-0.412937	0.077695	-5.314880	0.1184
M3EU(-1)	0.788960	0.181179	4.354580	0.1437
M3EU(-2)	-0.055305	0.363949	-0.151959	0.9040
M3EU(-3)	-0.567632	0.240005	-2.365081	0.2547
M3EU(-4)	-0.161389	0.353265	-0.456848	0.7272
C	40.75450	27.41656	1.486492	0.3770

R-squared	0.994444	Mean dependent var	1.018182
Adjusted R-squared	0.944442	S.D. dependent var	2.802791
S.E. of regression	0.660637	Akaike info criterion	1.429063
Sum squared resid	0.436442	Schwarz criterion	1.790786
Log likelihood	2.140153	Hannan-Quinn criter.	1.201047
F-statistic	19.88809	Durbin-Watson stat	2.824035
Prob(F-statistic)	0.172418		

Table 7: ARDL model results for Euro area (short-run relationship)
(Source: Author`s calculations)

Regarding the long-run relationship, the ARDL models show long-run relationship between economic growth and broad money to GDP ratio at 5% in Bulgaria, the Czech Republic, Hungary, Poland and Romania (and even at 1% in all of the countries except Poland). (Table 8.)

Country	F-statistic	Critical Values		Long-run relationship
Bulgaria	**16.15484**	Signif. I(0) I(1)		Yes
The Czech Republic	**2516.280**	10% 3.02 3.51		Yes
Hungary	**11.63609**	5% 3.62 4.16		Yes
Poland	**4.902678**	2.5% 4.18 4.79		Yes
Romania	**15.65046**	1% 4.94 5.58		Yes
Euro area	2.273906			No

Table 8: ARDL model results for Bulgaria, the Czech Republic, Hungary, Poland, Romania and Euro area (long-run relationship)
(Source: Author`s calculations)

Only the ARDL model for Euro area shows no long-run relationship between economic growth and broad money to GDP ratio which is somewhat expected as well, considering that the primary objective of the ECB is to maintain price stability, and that the monetary policy instruments of central banks cannot stimulate economic growth in the long term.

4. CONCLUSION

The ARDL model is used to study the short-term and long-term relationships between economic growth and broad money to GDP ratio in CEE countries Bulgaria, the Czech Republic, Hungary, Poland and Romania for 2007-2021. The results of the applied models show long-term relationships between the variables at 5% in all of the countries and short-run relationship in Bulgaria, Hungary and the Czech Republic, which confirms the main research hypothesis for

long-term relationship between the economic growth of countries and the development of the financial sector as we use broad money to GDP as an indicator of financial intermediation. The applied ARDL model for Euro area shows neither short-run nor long-run relationship between economic growth and broad money to GDP ratio.

LITERATURE:
1. Christopoulos, D., Tsionas, E. (2004). *Financial development and economic growth: evidence from panel unit root and cointegration tests.* (Journal of Development Economics Volume 73, Issue 1). pp. 55-74.
2. Eurostat. (2022). *Real GDP Growth rate statistics*. Retrieved 18.07.2023 from https://ec.europa.eu/eurostat/databrowser/view/TEC00115/default/table?lang=en&category=na10.nama10.nama_10_ma.
3. Eurostat. (2022). *GDP statistics*. Retrieved 20.09.2023 https://ec.europa.eu/eurostat/databrowser/view/nama_10_gdp__custom_7829898/default/table?lang=en
4. European Central Bank. (2023). *Monetary Aggregate M3 statistics*. Retrieved 20.09.2023 from https://data.ecb.europa.eu/publications/money-credit-and-banking/3031796
5. Gregorio, J., Guidotti, P. (1992). *Financial Development and Economic Growth.* IMF. WP/92/101.
6. Kovachevich, M. (2016). *Cointegration Analysis and Granger Causality Relationship between Exchange Rate Regime and Government Debt in Greece, Ireland, Italy, Portugal and Spain*. (Economic and Social Alternatives Journal, No 3). pp.61-70.
7. Levine, R., Loayza, N., Beck, T. (1999). *Financial Intermediation and Growth: Causality and Causes*.
8. Setiawan B., Saleem A., Nathan, R.J., Zeman Z., Magda R., Barczi J. (2021). *Financial Market Development and Economic Growth: Evidence from ASEAN and CEE region.* (Polish Journal of Management Studies, Vol.23 No.2). pp.481-494.
9. Tripathy, N., Mishra, S. (2023). *The Dynamics of Cointegration Between Economic Growth and Financial Development in Emerging Asian Economy: Evidence from India.* (Vision, 27(4)). pp.485-497. https://doi.org/10.1177/09722629211011811
10. Yakubu, I.N., Abokor, A.H., Gedik Balay, I. (2021). *Re-examining the impact of financial intermediation on economic growth: evidence from Turkey*. (Journal of Economics and Development, Vol. 23 No. 2). pp. 116-127. https://doi.org/10.1108/JED-09-2020-0139
11. Yusifzada, L., Mammadova, A. (2015). *Financial intermediation and economic growth*. William Davidson Institute. Working Paper Number 1091.
12. World Bank, World Development Indicators. (2023). Retrieved 20.09.2023 from https://databank.worldbank.org/source/world-development-indicators

Supported by: