



# Summer School



## PROCEEDINGS of the 11<sup>th</sup> ASECU YOUTH INTERNATIONAL CONFERENCE AND SUMMER SCHOOL

**4<sup>th</sup> - 10<sup>th</sup> SEPTEMBER 2022**

ROLE OF GLOBAL ECONOMICS AND MANAGEMENT  
IN THE PROCESS OF TRANSFORMING  
TO THE SUSTAINABLE DEVELOPMENT

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PROCEEDINGS

of

the 11<sup>th</sup> Asecu Youth International Conference and  
Summer School

# **Role of Global Economics and Management in the Process of Transforming to the Sustainable Development**

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Summer School

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## Why influencers should encourage sustainable consumption? A qualitative approach to a moral influencer marketing

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### **Abstract**

*Influencer marketing is increasingly growing in social media due to the efficiency it has proved in recent years. However, social media and press have criticized some influencers and influencer marketing campaigns for lack of authenticity, consumerism encouragement and other negative consequences on people's mental health, body image and consumption habits. Since a great influence comes with a responsibility that both brands and opinion leaders should have towards their audience, the environment and the whole society, this study qualitatively analysed consumers' opinions regarding ethical and moral responsibility in influencer marketing. These opinions were made public in a Facebook group where the main discussion topics were business ethics, influencer marketing ethics, moral responsibility of influencers and honesty in advertising – all of these with a focus on a Romanian cosmetics brand. The group consisted of mainly dissatisfied customers of this brand which collaborated with more than 20 Romanian influencers for a marketing campaign during 2018-2019. The company's sales went up due to this campaign, but multiple customers noticed skin-related issues after using those products. Thus, they started to discuss about their issues on the Facebook group, from where our content analysis gathered 104 Facebook posts. 306 screenshots were taken and analysed in Nvivo. Our results show that during a brand crisis like that one, people start to lose trust in both brand and influencers who promote the brand, experiencing thoughts specific to the so-called influencer fatigue. Consumers also see opinion leaders' influence beyond shopping activities, admitting influencers activities have effects on their body image, self-esteem and buying habits. Hence, we state that brands and influencers should rethink their strategies from a macromarketing perspective too, approaching a more sustainable and moral way of doing advertising.*

**Keywords:** brand responsibility, influencers' responsibility, influencer marketing, macromarketing impact, marketing ethics.

**JEL Classification:** E70, K10, L66, M31, M37.

### **1. Introduction**

Influencer marketing is currently the fastest growing field in marketing (Digital Marketing Institute, 2018), with a global market value that has doubled since 2019 (when it was approximated at \$6,5 billion dollars) (Michaelsen et. al., 2022). This rise was due to multiple advantages identified by brands when collaborating with influencers: their attractiveness for social media users and also a strong influence on consumer behaviour, consumers' buying decisions, brand perception, brand attitude and brand loyalty (Michaelsen et al., 2022; Kwon & Song, 2015). With the outbreak of COVID-19 that increased the need for social media entertainment and virtual social experiences, the rise of influencer marketing has accelerated even more (Wu, Li, Qi, Kong & Li, 2021).

However, this rapid growth also came with some downsides in recent years because of the novelty of this phenomenon (Michaelsen et al., 2022), the blurred lines between who is and

who is not a professional influencer (Hudders, De Jans & De Veirman, 2020), the unclear or not sufficiently known influencer market regulations (Hudders et al., 2020) and the lack of some monitoring tools to ensure this marketing strategy is done correctly (Michaelsen et al., 2022). These downsides can affect both brands and consumers. Concerning brands, one of the most common issues in influencer marketing is influencer fraud (Geyser, 2022), referring to influencers who have fake followers to be more attractive for brands interested in paid partnerships. This issue has however received attention in the scientific literature (Costello & Biondi, 2020; Kim & Han, 2020). Moving on to downsides for customers, Michaelsen et al. (2020) talk about the lack of transparency and/or disclosure in paid collaborations, the lack of separation between advertising and content (both referring to the fact that even if they must clearly let the consumers know that a post is a paid ad and not genuine content, not all the influencers do so), misleading messages and targeting vulnerable consumer groups. All these practices might make people exposed to ads buy the product/service not by a rational choice, but rather by being tricked. Along with these issues, the authors also point out other potential risks in influencer marketing, especially when they promote gambling, nudity or harmful products/services (like alcohol and tobacco) (Michaelsen et al., 2020). To the best of our knowledge, this is the first study gathering and pointing out potential issues regarding customers in influencer marketing practices. In general, studies on influencer marketing focus on insights related to consumers' preferences, behaviours and responses to influencers activities in order to suggest better influencer marketing practices for brands (Farivar, Wang & Yuan, 2021; Lee, Koseoglu, Qi, Liu & King, 2021, Campbell & Farrell, 2020, Casaló, Flavián & Ibáñez-Sánchez, 2020; Chopra, Avhad & Jaju, 2020; Haenlein et al., 2020; Nadanyiova, Gajanova, Majerová & Ližbetinová, 2020; Huhn Nunes, Brantes Ferreira, Sabino de Freitas & Leão Ramos, 2018; Saito, Teramoto & Inoue, 2015; Bakshy, Hofman, Mason & Watts, 2011). A more detailed analysis about the main topics in the influencer marketing studies was made by Vrontis, Makrides, Christofi and Thrassou in their systematic review (2020). As found by the authors, such studies rather offer useful information for brands, focusing on consumers outcomes at different characteristics of influencers (perceived credibility, trustworthiness, popularity, perceived similarity etc.), consumer's psychological processes when exposed to social media influencers, consumer outcomes at different types of content seen and effects of sponsorship disclosure and strategic assessment of social media influencers as a marketing tool. Thus, except the study of Michaelsen et al. (2022), it seems that the topic is mainly treated from a micromarketing perspective in the scientific literature, with a focus on the act of buying at influencers' recommendations and how buying decisions can be influenced. Even when discovering potential macromarketing effects (compulsive buying caused by envy), studies conclusions still focus on recommendations for marketers to better persuade consumers through their influencer marketing strategies (Jin & Ryu, 2020). However, with influencer marketing being present so often in social media, looking at this phenomenon from a macromarketing perspective is also important.

Hence, the downsides of influencer marketing highlighted by Michaelsen et al. (2022) were a starting point in seeing influencer marketing besides its effects on consumers' purchase intentions. Nevertheless, Michaelsen et al. (2022) mainly talked about regulations on influencer market and the consequences of not respecting these regulations. Therefore, the authors focused on the legal obligations of influencers, with an exception concerning promotion of harmful products/services that rather points out their moral obligations. In other words, if not clearly disclosing the contractual relationship with a brand is illegal, promoting gambling is not (of course, depending on the country and context of doing so), but it could be considered immoral if we take its macromarketing effects into consideration (i.e. creating gambling addiction). To fill the gap in the literature, this study aims to show why influencer marketing activities need to be morally and socially responsible and sustainable by outlining macromarketing effects of

these activities. Besides the issues identified by Michaelsen et al. (2022), social media and press have criticized some influencer marketing campaigns for aspects like lack of authenticity and consumerism encouragement, signalling possible negative consequences of these campaigns on people's mental health, body image and consumption habits. We hence consider that this great influence comes with a responsibility that both brands and opinion leaders have towards their audience, the environment and the whole society in general.

To support this view, the next section will briefly define influencer marketing and review some macromarketing effects of influencer marketing highlighted in the scientific literature, but also in press and social media. The third section will present the methodology and data used, followed by the presentation of our main results. Finally, based on our findings, possible policies to improve influencer marketing macromarketing impact are suggested.

## 2. Literature review

Before defining influencer marketing, it is important to mention that there is no clear and widely accepted definition of what this is, especially because influencers are defined in regard with multiple criteria like sources of revenues, service provided and audience (Michaelsen et al., 2022). Besides that, in the academic literature, influencers are often named in other ways like market mavens, (key) opinion leaders (KOLs) and key players (Momtaz, Aghaie & Alizadeh, 2011). While some authors accept a generic term for all of them, others talk about little differences in their meanings. The most common distinction is made between influencers and KOLs, with influencers being considered those who have gained their fame through social media by sharing aspects of their personal life and thus becoming popular (Hudders et al., 2020) and key opinion leaders being the celebrities, known on social media due to the domains where they work on (sport, fashion, journalism etc). It is hence stated that unlike influencers who often collaborate with brands for paid advertising, celebrities only promote products from their area of expertise (Influencity, 2018). However, these distinctions do not always apply, this being the reasons some researchers accept the overlap between the terms (Casalóa et al., 2020). In respect of this view, in this paper, we will refer to influencers as to active and empowered social media users seen by others as trusted sources (Agostino, Arnaboldi & Calissan, 2019) and who post on their accounts in exchange for a compensation (Campbell & Farrell, 2020).

In order to support the fact that influencers have a responsibility in our society, it is firstly important to briefly explain how they influence their followers. Considering the bounded rationality theory of Herbet Simon (1982), with nowadays increasing number of products and brands joining the markets, consumers do not have time anymore to detailly analyse all the offers they receive; thus, they seem to prefer taking advice from someone they trust in order to make a buying decision (Momtaz et al., 2011). Here, influencers become the trusted advisors concerning products, services and shopping in general (Huhn Nunes et al., 2018), but also lifestyle, traveling, fashion and many other fields, especially because they serve as role models to their followers in respect of Albert Bandura social learning theory (Chopra et al., 2020; Huhn Nunes et al., 2018; Lim, Mohd Radzol, Cheah & Wong, 2017).

Since they are trusted by their followers, influencers should be responsible for what they encourage consumers to do. Thus, influencers' activities on social media should be re(thought) above the act of persuading consumers to buy the product/service they promote. To explain this, a few examples of macromarketing effects of influencer marketing will be given, with more discussions about them in the results section. Firstly, as pointed out by Michaelsen et al. (2022), by some influencer marketing practices, many purchases are made not by a rational choice of the customer, but rather as a consequence of being tricked in doing so. In other words, consumers do not always need the products they buy, but influencer marketing sometimes



encourages materialistic behaviour (with younger consumers being more prone to respond to it – Michaelsen et al. 2022), materialistic envy and compulsive buying (Jin & Ryu, 2020). These lead to consumerism which is harmful for the environment. Secondly, to reiterate Jin and Ryu (2020) finding, compulsively buying out of envy does not only lead to consumerism. It also leads to social comparison, thus affecting the mental health of social media users exposed to influencer marketing (Vrontis et al., 2020). In terms of social comparison, consumers can compare multiple aspects of their life with influencers: their personal traits, their material possessing, their abilities or success in life. Concerning the comparison of personal traits, influencers and social media effects on body image were frequently explored in the scientific literature, with many studies finding out that influencers promote an ideal self-representation (especially to edited and/or unrealistic photographs posted online) which can lead to social comparison, body dissatisfaction and a lower self-esteem of those realising they are not able to obtain that idealistic self in real life (Pedalino & Camerini, 2022; Chae, 2017a; Kleemans, Daalmans, Carbaat & Anschütz, 2016). Even if the topic has been explored in the academic literature, the fact that photo-editing practices are still frequently used supports a demand for even more research into this field in order to obtain more detailed explanations of how they impact people's mental health in general. Our study results will also cover this topic. Moving on to other ways of comparing themselves to influencers, beside the physical aspect, people also compare their life in general with the life of influencers. As a consequence of social comparison, people tend to imitate influencers, this increasing their buying intentions toward endorsed products, this again encouraging materialism (Dinh & Lee, 2022). Here, a recent emerging trend is 'flex culture', which refers to showing off the wealth (even the opulence) and success that someone has (Ferg, 2019). On social media, many influencers share luxurious ways of spending free time, clothes or cars, which are intangible things to ordinary people. These things could make people compare their lives to those of others, feel envious, and lower their self-esteem (Jan, Soomro, & Ahmad, 2017). Also, Chae, (2017b) discovered that when exposed to pictures of influencers, women would compare their feel envy towards influencers, these things affecting their mental health. Taking these effects into consideration, our claim is that influencers should promote and encourage a more sustainable consumption. A clear definition of what 'sustainable' means must be given here. Even if many may think so, sustainability is not only about environmentalism. Indeed, one of the most known definitions of sustainability is the one offered by the World Commission on Environment and Development (1987): the activity that "meets the needs of the present without compromising the ability of future generation to meet their own needs". However, sustainability regards more dimensions, because as stated by United Nations in its Agenda for Development (1997), "economic development, social development and environmental protection are interdependent and mutually reinforcing components of sustainable development". Hence, influencers should think their social media activity on a long-term, thinking about their impact on people's mental health, environment and economic development.

### 3. Data and methods

In order to better highlight why a morally and socially responsible influencer marketing is important, we focused our study on a situation directly implying and proving possible negative consequences of this type of marketing when it is not done correctly and responsible. Thus, we wanted to discover what are consumer's opinions about influencers responsibilities during a marketing campaign but also in general. We have conducted a content analysis on Facebook posts made during an influencer marketing brand crisis. The Facebook posts were retrieved from a Facebook group created on 15th of April 2020 by a group of dissatisfied customers of a Romanian cosmetics brand that had collaborated with more than 20 Romanian influencers for

a marketing campaign during 2018-2019. The company's sales went up due to this campaign, but multiple customers started to notice skin-related issues after using those products (from stinging, itching and redness to vulgar acne). Thus, they have created this Facebook group to discuss about the issues they had encountered and the accusations they should bring to the company and influencers who promoted this brand. The group rapidly became viral, because the brand was a popular one in Romania and many of its customers and ex-customers joined the group to see what the products had done to others (many group members were posting pictures with their damaged skin, claiming that the damage was because of the products). Besides discussions about the brand and its products, more general topics like business ethics, influencer marketing ethics, moral responsibility of influencers, and honesty in advertising were also discussed. All the posts and comments were in Romanian, but citations presented on this paper were translated in English. Our content analysis gathered 104 Facebook posts from that group (by posts we mean the posts themselves and also their comments). The posts were collected in a chronological order, starting with those from 15th of April 2020. When selecting the material for our analysis, we have excluded posts and comments asking for dermatologists and/or products recommendations to treat the dermatological problems caused by the brand in cause, because they were not the subject of our research. We have also excluded posts related the company's logistics (how to return the products etc). Finally, 306 screenshots were made and analysed in Nvivo.

#### 4. Results

For a better understanding of the situation, it is important to mention that when the group was created (15th of April 2020), discussions in the group started with the core issue: products bought from the Romanian cosmetics brand had damaged the skin of the customers. Hence, multiple customers and ex-customers of the brand were posting pictures with their damaged skin and were also relating other negative stories and experiences with the company. 55 posts and comments claiming that the products had caused damage to the skin were identified and among these, 30 were also including before and after pictures – i.e. before and after using the company's products, thus showing the bad effects of these cosmetics). However, 33 posts and comments were relating positive experiences with the products. Nevertheless, they were surpassed by the negative ones. Many group members were claiming that the skin treatment scheme they were following was the one recommended by the company's manager, a pharmacist. The pharmacist was the one keeping in contact with the customers and she would have told them that the treatment scheme was personalized for every skin type. However, when made public on the Facebook group, screenshots with the conversations with the pharmacists showed that in fact, the treatment scheme was the same for every customer (20 such posts and comments). Besides experiences with the products, the group members were also relating other negative experiences with the company: no answers or very late answers at phone calls, messages and social media comments asking explanations for what was happening (14 such posts and comments), along with the fact that the company was deleting comments, reviews and blocking users that were trying to raise awareness of the fact that the products were harmful for the skin (14 mentions). These discussions do not necessarily reflect the macromarketing perspective, but were needed for a better understanding of the situation.

When the brand crisis became viral, some of the influencers who collaborated with the brand publicly announced that they would end the collaboration, deleting their promotional posts. Others, however, continued the paid partnership, thing that attracted negative attitudes from the group members ("I am shocked and at the same time disgusted by those who promote such a thing"). Moreover, when receiving negative comments at their posts about the brand, some influencers were deleting them or blocking the users who were reporting such things (6

mentions). These kinds of attitudes caused indignation of the Facebook group members (11 mentions): “I don’t understand why they do not stop. They are not even ashamed”.

After seeing these negative stories about the company related on the Facebook group, many group members started to lose their trust in the company. This distrust seemed to progressively be ‘transferred’ to influencers who had collaborated with the company, then to other brands that were collaborating with those influencers, then to social media and finally, to marketing in general.

Starting with distrust in influencers, the group members discussed many motives for not trusting influencers who promoted the company (and also influencers in general). The most mentioned motives for doing so were the belief that influencers do not really use the products they promote (or they do so only in the promotional posts they are paid for) and the fact that influencers are paid to promote the products (and thus they would say anything good about them) (both motives mentioned 27 times). For the former reason, people showed their suspicion about influencers really using the products they promote: “Have you ever wondered why the celebrities who advertise products have them unopened?”; “I think that only 1% (and I’m being generous) of public figures REGULARLY use the products they promote (and not only in 3 Instagram stories they are paid for)”. Concerning the latter, group members also talked about the “paid partnership” option of Instagram (6 mentions): “Paid partnership...I think that says it all”. Not trusting a sponsored post (where the sponsorship is disclosed) aligns with previous findings in the scientific literature. When clearly seeing that a post is an ad, people tend to develop a sort of resistance to that post, which is usually associated with a decreased buying intention (van Reijmersdal et al., 2016). Even if sometimes unclear, there are legal obligations for influencers to disclose the paid partnership between them and a company (Michaelsen et al., 2022), but not all the influencers collaborating with the Romanian cosmetics brand did it.

Another reason to distrust influencers was the fact that in many promotional posts, the pictures and videos were digitally edited (16 such posts and comments). Photo editing can be problematic from both a micromarketing and macromarketing perspective. First of all, at the micromarketing level, these practices can exaggerate the performance of the promoted product. Secondly, on a macromarketing level, such digitally retouched photos make social media users, and especially teenagers, compare themselves to others and feel dissatisfaction concerning their own physical appearance, as well as a low self-esteem (Kleemans et al., 2016). Because of these intangible beauty standards promoted by influencers, more and more people (especially the younger ones) experience anxiety and the fear of showing their appearance when they realize that they cannot achieve such standards, thing also noticed by the group members: “this is where all kinds of problems of normal girls start, because seeing this perfection on Instagram that not everyone can afford causes anxiety and depression”, “it’s sad that many girls lose self-confidence just because of the lies they (i.e. influencers) spread in the media”, “so I really got depression after seeing her perfection and her clear skin (...) I was obsessed with doing masks and treatments just to have a perfect skin”. In respect of this view, the “Redefine Pretty” experiment discovered, in 2018, that exposing people to photos of other people edited in Photoshop or other photo editing programs creates in the human brain an activity similar to the post-traumatic shock, because the viewer gets complexed with its own body image (My Pale Skin, 2018). To encounter such problems, in Norway, the retouched photos law passed the government. Hence, this law ‘requires influencers sponsored for social media posts and brands to disclose any modification on their photos using a ministry-approved label’ (Ghimire, 2021). Even if this law does not necessarily reduce the photo-editing practices, it helps consumers be aware of the fact that digitally retouched photographs do not represent reality. However, they appear to also contribute to the normalization (and even the desire) of social media users to undergo plastic surgery or other beauty procedures (Chen et al., 2019). This leads to the



following reason for distrusting influencers mentioned by the group members: they have gone through aesthetic operations or cosmetic procedures and promote beauty products (9 posts and comments): “it would seem fair to have them (i.e. influencers) saying «I use this facial cream, but let’s not forget that I also do other treatments. The cream helps me maintain, not treat». They promote anti-wrinkle products, but they also have hyaluronic acid injected, which is not fair”.

With less mentions, motives like influencers promoting too many products, from different brands or from the same brand (5 mentions) and that they all have a repetitive content (3 mentions) were also discussed: “they all look the same and post about the same things”, “Do you think anyone can test as many products as influencers recommend? And by testing, I mean putting the product on their faces for a decent period of time”. These two motives for not trusting influencers resemble the so-called influencer fatigue (a “fatigue” and “boredom” related to their content, which makes people no longer trust influencers and their recommendations). The fact that influencers seem to promote too many products is also closely related to the consumerism encouragement mentioned in the literature review. Finally, another reason to distrust influencers was also the fact that they did not have any studies in domains like dermatology or cosmetology. However, a study from 2017 discovered that the expertise of opinion leaders has no influence in the purchase intention of consumers, who actually decide to buy based on other characteristics of the influencer (attractiveness, congruence with the product, meaning transfer) (Lim et al., 2019). Here, Sabine Trepte and Helmut Scherer made the distinction between two types of opinion leaders: (1) those who have knowledge about a certain topic, influence others and get asked advice about topics they are experts on and (2) those who have less information but have developed communication skills to compensate their lack of knowledge.

As mentioned above, a transfer of distrust was made to other brands that approached an influencer marketing strategy similar the one approached by the Romanian cosmetics brand (either with the same influencers or done in the same way – by collaborating with multiple influencers at the same time) (7 mentions): “it looks ok, it sounds ok, but I saw that among the people who promote this brand, there are also girls who promote X (X being the name of the Romanian cosmetics company), who have zero credibility”. Furthermore, the group members also manifested a lack of trust in social media (6 mentions) and marketing activities in general (14 mentions – “let’s stop believing in beautiful advertisements and the so-called stars who try to sell us all kinds of rubbish”, “we are being manipulated in every way”).

After this brand crisis, 10 members of the group considered influencers to be responsible for recommending a brand that was not aligned to ethical and moral values: “I think many people have used the products because of the excessive advertising and the perfection seen in celebrities”, “they are guilty of not testing the products and lying to naive young women”, “they are as guilty as this pharmacist lady (...) I wonder how they can sleep at night knowing that they lie for money”. On the other hand, 9 members believed that it is in fact everyone’s own responsibility to thoroughly inform themselves before buying a product, without relying on the recommendations of opinion leaders.

Finally, some group members (3 of them) stated that influencers should also use their ‘power’ in other ways, for example, for educational campaigns, not only for promotional activities. Here, Hudders et al. (2020) also mention that the academic research mainly focusses on the use of influencers in commercial campaigns, thus neglecting the use of influencers on social behavioural change campaigns.

## 5. Conclusions

Concerning the brand crisis based on which we conducted our content analysis, some influencers did not respect their legal obligations (i.e. they did not disclose their paid partnership with the brand) and others did not take their moral obligations into consideration (i.e. they were promoting beauty products even if they had undergone plastic surgery without mentioning that on their promotional posts). Concerning legal obligations, until now, studies approaching regulations on influencer market mainly focused on influencers' obligation to disclose their paid partnership with the brand (Mitchell, 2021; Hudders et al., 2020; Riefa & Clausen, 2019). These are important, but future research should also consider other legal obligations in order to suggest better policies to regulate the market.

Moving on to the moral obligations of influencers, given our findings and the fact that influencer ads are in general, compared to other types of ads, easier to remember and involve a much greater emotional activity (Watson, 2019), influencers should be more aware of the impact they have on the whole society. This is necessary for both the well-being of the consumers, as well as for the future credibility of marketing activities in general. A deeper understanding of micro and macromarketing effects of influencer marketing is needed for all influencers, companies and customers. However, understanding and being aware of these effects is not sufficient. A sustainable-oriented attitude of both brands and influencers is also needed in influencer marketing campaigns. For example, to encounter consumerism, an interesting trend is the 'anti-haul' movement which promotes an anti-consumerism attitude. In general, anti-hauls are videos in which influencers list products they would not buy for different reasons. Such videos are 'a deliberate attempt to resist the celebration of beauty consumption in beauty influencer social media culture' (Wood, 2020).

For a more sustainable influencer market, besides the laws (which are not, unfortunately, always respected – Michaelsen et al., 2022) and influencers' own morality, a control mechanism is also needed. As identified by Michaelsen et al. (2022), just a few complaints are annually registered for non-compliant influencer marketing practices. Thus, campaigns to inform consumers what they should do when identifying unethical practices could become a solution to this.

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## Sustainability and innovation: the case of Industry 4.0

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### Abstract

*In the last years, sustainability is increasing in popularity not only among firms but also among their stakeholders. The latter are now aware that to fight and minimize the climate change, sustainable practices are important. They are likely to reward those companies meeting sustainable principles. From their side, in addition to a growth in sales, companies can improve their financial and investment opportunity as well as reduce operational costs and be more productive, minimize carbon fossil material used and improve energy efficiency, opting for renewable opportunities such as solar energy and wind power. Traditionally, sustainability is based on three pillars – environment, economics and society – that companies have to balance in order to be considered truly sustainable. According to the literature, there seems to be a correlation between sustainable companies and innovation. Advanced technologies may contribute to the sustainability. This is the case of the Fourth Industrial revolution – known also as Industry 4.0, which is an industry paradigm shift introducing many new technologies. Thanks to its technologies indeed, it is possible to monitor and reduce emissions, diminish wastes and have a more efficient production. Assuming that technological level is an indicator of sustainable practices, the objective of this paper was to study how it differs among micro, small, medium and large companies. This was achieved analyzing data of a survey conducted in Slovakia and Italy in the year 2021.*

**Keywords:** sustainability, Industry 4.0, digitalization.

**JEL Classification:** O30, O33, Q56

### 1. Introduction

Policy makers, consumers and other stakeholders – included many employees enthusiastic about greener production - are now demanding products that are made employing sustainable practices. This is due to an increasing awareness of the importance to fight climate change and be more environmentally friendly. Consumers are then likely to reward those companies that are compliant with those principles by purchasing from and be loyal to them even though their products are more expensive. Similarly, investors may decide to invest in sustainable companies as they are more appealing from the financial side: sustainability increases their value. Moreover, all economic activity is dependent and conditioned by both renewable and non-renewable natural resources of the environment (Rout, Verma, Bhunia, Surampalli, Zhang, Tyagi, Brar & Goyal, 2020). Therefore, their wise consumption and employment in production are a must.

The perception of a global environmental crisis started to appear in the governments' agenda in the first part of the second half of the 20<sup>th</sup> century, but only in 1987, the World Commission on Environment and Development (WCED) was formed (Lazaretti, Giotto, Sehnem & Bencke,

2019). As a result, certain practices that were performed by firms in the last century are now done differently and no longer accepted because of their harm to the environment. In the past indeed, there was no or little concern regarding sustainable practices and with respect to the damage that firms may inflict to the environment. Technology development can enhance sustainable practices by ensuring improved efficiency and better use of resources. Nevertheless, it often occurs that the availability of these technologies has the opposite effects: results in increased pollution and resource overuse (Rout et al., 2020).

Hopefully, thanks to very advanced technologies firms can be sustainable in their everyday routines. The industry shift towards Industry 4.0 (I4.0) paradigm (the Fourth industrial revolution) makes it possible and it is characterized by these technologies. The latter offer efficient solutions for energy savings, control of emissions, machine maintenance (Garetti & Taisch, 2012). Nonetheless, I4.0 does not imply inevitable sustainability: sustainability and I4.0 should be considered jointly, i.e. the former should be “the very core of the Industry 4.0 strategy” (Piccarozzi, Aquilani & Gatti, 2018, p. 19). What is more, it represents a central issue when planning innovation and formulate new strategies (Adams, Jeanrenaud, Bessant, Denyer & Overy, 2016). In agricultural sector, the paradigm shift is known as Agriculture 4.0, which improves traditional farming practices that allow farms to ensure sustainability of the agricultural sector and agrifood production processes as well as transparency of their operations (Spanaki, Karafili & Despoudi, 2021). In addition to agriculture, it can be adapted to every sector, industries and companies regardless of their dimensions.

The objective of this paper indeed was to assess the technological level of companies of different size, specifically micro, small, medium and large companies. The rest of the article is organized as follows: a literature review was conducted on sustainability and how I4.0 can support and enhance it, then the methodology to analyze the questionnaire is shown. The last part presents a discussion based on its results.

### ***1.1 Sustainability and Industry 4.0: a literature review***

In this section, sustainability and I4.0 as well as the role of the latter in enhancing green practices in meeting the principles of sustainable development are examined.

Sustainability is a wide concept that stresses out the importance to preserve resources such that the future generation can make use of them. Indeed, sustainable development recognizes the interdependence of environmental –the impact of natural resources and pollutant emissions –, social - impacts of innovations on communities where the organization carries out its business - and economic – about economic efficiency - systems (Khan, 2016). Their balanced integration performance of human lives within the society, environment, and economy are to the advantage of current and future generations (Geissdoerfer, Savaget, Bocken & Hultink, 2017). From the 1970s, the three are commonly referred as the pillars of sustainability, although some works include other dimensions such as institutional, cultural and technical (Purvis, Mao & Robinson, 2019). However, it is possible to argue that these additional dimensions are already included in the three pillars. Another name to refer to them is, among the others, three bottom pillars (TBP). To affect the pillars are externalities of socio-environmental and economic effects (El Baz, Tiwari, Akenroye, Cherrafi & Derrouiche, 2022).

A more specific concept of sustainability for firms is business sustainability. This is the ability to generate resources with the aim to compensate factors of production (i.e. inputs), to replace used assets, and to invest to continue competing (Barbieri, Vasconcelos, Andreassi & Vasconcelos, 2010 cited in Kuzma, Padilha, Sehnem, Julkovski & Roman, 2020) positively affecting the society as a whole (note that the basic pillars are included in this definition too).

Moreover, today's businesses that are sustainable must effectively fulfil social, financial, and profitability objectives and it can contribute to significant financial and environmental problems (Javaid, Haleem, Singh, Suman & Gonzalez, 2022). The environmental and social dimensions of sustainability should be considered with equal importance of economic ones, the most studied pillar (Piccarozzi, Silvestri, Aquilan & Silvestri, 2022) – namely profitability in business and market share – when formulating strategies (Kuzma et al., 2020). Only in this way, firms can aspire to be really sustainable since all the three pillars are valued and balanced. economic pillar is also.

Even the choice of suppliers is relevant if a firm aspires to be truly sustainable. Apple and Dell had suppliers whose employees had to work in dangerous conditions for the electronics; Nike and Adidas' suppliers were dumping toxins into rivers in China. In order to avoid these undesirable behaviors, firms have to establish long-term sustainability goals and demand first-tier suppliers (the closest suppliers to the firm) to set their own long-term sustainability goals; the overall sustainability strategy should include lower-tier suppliers too (Villena & Gioia, 2020). There exist diverse tools to perform supplier sustainability assessments (Lee & Kashmanian, 2013 cited in Matthes, Kunkel, Xue & Beier, 2022).

According to the literature, it seems to be a correlation between innovating firms and sustainability. Nidumolu, Prahalad and Rangaswami (2009) argue that innovation is a great supporter of sustainable development and a source of competitive advantage (cited in Lazaretti et al., 2019). From the literature review by Piccarozzi et al. (2022), it is generally possible to find a positive relation, not always precisely quantifiable, that emphasizes “a positive potential impact of innovations on sustainability dynamics”. Thanks to innovation, companies can advance their processes and improve their products by using more eco-friendly materials, be more efficient in the production and reduce their wastes.

I4.0 represents a group of innovations that not only increase companies' efficiency, reduce costs, can beat “traditional” companies, and they can comply with the other two pillars of sustainability keeping at the same time quality standards high. It positively affects the socio-environment and economic externalities (El Baz et al., 2022). For instance, if on the one hand many job positions are disappearing, new job opportunities are being created. Advanced technologies can increase safety and enhance working conditions: risky and repetitive tasks are starting to be performed by machines. According to various authors, social welfare can be improved too. This thanks to a promising growth of minimum wages due to “skill intensiveness” (El Baz et al., 2022) that would reduce economic inequality; increased global accessibility of goods and services and their affordability for production cost reduction and satisfying the demands of the individual customer making personalized solutions (customization of goods).

These technologies and the blurring of reality and virtual world are the true essence of the I4.0. Digital automation of sustainable energy processes is among the essential factors that Industry 4.0 technologies can enhance. Note that some technologies have an indirect effect on sustainability (e.g. augmented reality) (Chiarini, 2021 cited in Piccarozzi et al., 2022). Regardless of whether the influence is direct or indirect, the enabling technologies pursuing the economic and environmental pillars of sustainability are Autonomous Robots, Additive Manufacturing, Cloud Computing, Autonomous Robots, Cybersecurity and Augmented Reality (Ramirez-Peña, Sánchez Sotano, Pérez-Fernandez & Batista, 2020). Then, the technologies that should be integrated and that can contribute to the social principle of sustainability are Big Data, Blockchain, Simulation, Internet of Things and Artificial Intelligence (Piccarozzi et al., 2022). Moreover, digital technologies offer different chances to improve both data availability and verifiability of sustainability claims of supply chains. I4.0 enables data collection of sustainability-related data at different stages in the supply chain (carbon emissions in logistics



and the recyclability or reusability of discarded products) thanks to e.g. radio-frequency identification (RFID) (Rane & Thakker, 2019 cited in Mattheus et al., 2022).

Next section summarizes the essential challenges firms have to face to perform and successfully upgrade their technologies and innovate, in general.

### ***1.2 Implementing technologies of Industry 4.0***

The digitalization of companies is not always smooth due to challenges and barriers firms have to deal with. They range from those of financial nature and operational, to those related to the human being and to the strategic ones (Marcon, Marcon, Le Dain, Ayala, Frank & Matthieu, 2019). In different sector/industry a variation of barriers and the importance given to them can change. As the size of companies increase, financial opportunities increase too. Financial constraints would be a big problem for smaller companies due to their difficulties in purchasing the latest available technologies, which in turn would increase the gap between bigger and smaller ones. Furthermore, training to use these technologies is better done in bigger companies, whereby more resources (time and money) is and can be dedicated to it. Training is different with respect to technological and financial opportunities available to firms of different sizes and industries (Boothby, Dufour & Tang, 2010). More generally, big companies and small ones do not have equal opportunities in the area of Industry 4.0 (Horváth & Szabó, 2019). Indeed, big companies have higher driving forces and lower barriers than small and medium enterprises.

In addition to the human resources barriers of necessary training to acquire competences to use effectively novel technologies, psychological ones are relevant too. Among them, resistance to change is so significant. That may be rooted in organizational culture. Several studies (e.g. Hansen, 1992, Jaumandreu, 2004; cited in Lousã & Gomez, 2017) found that a negative relation exists between size of company and culture of innovation support (e.g.: Chandler, Kellerand & Lyon, 2000; Rebelo & Gomes, 2011 cited in Lousã & Gomez, 2017). In addition to it, company's age seems to be negatively related to innovation.

## **2. Data and Methods**

The aim of this article was to assess differences among micro, small, medium and large companies for what concern their technological level. Hence, this study will test previous studies' outcomes. It is assumed that the firms that have higher technological level (i.e. more I4.0 novelties) are more sustainable than traditional ones. The hypothesis was thus formulated, which is based on the literature and previous studies.

### **H1. Bigger firms have available more advanced technologies than smaller firms.**

As such, a closed-ended questionnaire was sent to Slovak- and Italy-based companies by email. The respondents were mainly owners and managers. It is made of three sections, of which the first two parts were necessary for the current study. Table 1 sums up the features of each section.

**Table 1: Section of the questionnaire**

Type of questions	n° questions	Examples
Sample characteristics	12 Q.	e.g. <i>work position, years employed, location, industry, and size of company</i>
Likert-like scale	28 Q.	About <i>personal, marketing and customer, strategic and technological innovation</i>
Ranking	04 Q.	About barriers to I4.0 of <i>strategic, organizational and human nature</i>

Source: author's elaboration based on own questionnaire.

The sample totals 102 answers (62 from Italy and 40 from Slovakia). They operated in many different industries and sectors – more than 30 -, which can be grouped into two major types: manufacturing (or product) and service industries. Service industries are usually involved with customers (final user or B2B), without making any product, but delivering it. Firms belonging to product industries make tangible products instead: for example, car manufacturing, furniture and heavy machinery. Of the product group (63 companies), mechanical and electrical engineering (13) were the main companies belonging to this category, followed by commerce (5) and agriculture (4). To service companies, more than half are financial and professional services (23 over 37). Note that 2 answers were removed as not classifiable. Among the surveyed companies, compared to 2020, 37 enjoyed better economic situation, it was unchanged for 31 of them and 34 experienced a worsening of it. In 38 of them, foreign investors contributed to the capital structure and just 4 companies were owned publicly or by the State. Taking into consideration the dimension of companies, the sample comprises: micro ( $\leq 10$  employees), 26, small (10-49 employees), 22, mid-sized (50-249 employees), 26, and large companies ( $\geq 250$  employees), 28.

Work positions of respondents were grouped under 4 labels: lower manager (28), top managers (28), owners (22) and others (grouping other positions, 24). Qualification titles started from pre-university title to post-graduated education. Respondents in possession of a post-graduate title (included PhD) were 65% of the sample. Lastly, 58% of respondents were employed in their companies for more than 5 years.

The second part comprised Likert-like scale questions, ranging from 1 to 7. 1 means total disagreement and 7 total agreement with a statement. Every time the mean of each question was greater than 3.5 (the center value), the particular technology was assumed to be not only installed but also commonly used by the companies of each category. For the analysis of the differences of one category with another, statistical tests were performed. In this concern, being the data ordinal (and so not normally distributed), it was opted for Kruskal-Wallis test, which is non-parametric and it is used for the analysis of differences in case of more than two groups (for example company size that comprises 4 groups: micro, small, medium and large firms). Because the test does not say much about where the differences lie, Bonferroni post-hoc test was used any time Kruskal-Wallis was significant.

### 3. Results and Discussion

In Table 2 the mean for each category is reported (see the Appendix for the corresponding question). Means lower or equal to 3.5 are highlighted in red. Note, that as the number of employees increases (and so the size of the firm), the score for each question related to technology becomes greater. Overall, with the exception of micro firms, all companies of the sample have adopted and used the latest technologies. H1 is thus corroborated. The only exception is Augmented Reality and Virtual Reality, which are not so popular among the studied firms (average score is never greater than 3.5). Interestingly, Q4 (end-to-end supply chain) is fairly common among all companies, even among micro ones.

**Table 2: results of the questionnaire**

Firms	Q1	Q2	Q3	Q4	Q5	Q6
Micro	3.88	3.35	2.85	3.54	2.23	4.50
Small	4.86	4.00	3.23	4.00	2.41	5.73
Midsized	5.65	5.31	4.31	4.50	3.08	5.42
Large	5.54	5.36	4.54	5.18	3.50	5.86
<i>Average for the sample</i>	<i>5.00</i>	<i>4.54</i>	<i>3.76</i>	<i>4.33</i>	<i>2.83</i>	<i>5.37</i>
<i>Sig. Kruskal-Wallis test</i>	<i>.005</i>	<i>.000</i>	<i>.002</i>	<i>.009</i>	<i>.019</i>	<i>.025</i>

Source: Author's own calculation based on questionnaire

Due to the lower score and the significant difference with respect to the other firms, it was investigated further. More specifically, the industries and sectors in which each micro firm operates were observed more in detail. The majority of them is involved in the financial sector. Surprisingly, most of them do not make use of Big Data, and do not have a digital vision. This would be expected from firms making bakery products, which score 1 on average, similarly to commerce (mean = 1). Agriculture related firms (included farms) never score higher than 3. Kruskal-Wallis test confirms that there are statistical differences among groups. Thanks to Bonferroni post-hoc, the mentioned differences can be identified: for all technologies, micro firms and large companies statistically differ. For Q1 (digital vision), Q2 (Big Data usage) and Q3 (Artificial Intelligence), differences are to be found between micro and midsized firms too. Lastly, small and large firms vary for the usage of big data.

The reason why these differences are present might be due to the greater financial possibilities of large companies and to the sector in which the latter do their business. Investments are indeed key for the 4IR, as without them, the digitalization process cannot be performed. Taking advantage of I4.0 is challenging, particularly for SMEs, as it requires significant investments in technologies (Vaidya, Ambad & Bhosle, 2018; Agostini & Nosella, 2019).

Besides these findings, related questions were about smart-working, popular after the spread of the COVID-19 pandemic. According to the respondents of firms that have smart working it accelerated the process towards a 'smart' company" (mean = 5.55), i.e. their companies speeded up the adoption of technologies 4.0.

### 4. Conclusion

This paper was about the link between sustainability and I4.0 and the importance of pursuing both of them. Thanks to sustainable practices, resources can be preserved for future generations

and can improve conditions of current generations. Sustainable practices are well-regarded by firms' stakeholders who reward them by being loyal and – as for consumers - purchasing their products. The transition of firms, regardless of the industry in which they operate, towards I4.0 can guarantee sustainability. The main condition that must be met is the centrality of sustainability in the I4.0 implementation strategy. Latest technologies of this industry shift can positively affect the three pillars of sustainability by providing technologies that increase safety and improve working conditions of employees, new job positions for the latter, energy savings and CO2 control emission, increase in wages and improve availability and affordability.

Implementing I4.0 in companies presents several challenges and obstacles to surmount. These were identified in the literature in some studies (e.g. Marcon et al., 2019). They are of different nature, varying from operational, strategical and human resources. More specifically, resistance to change, financial opportunities and time to dedicate to training.

The questionnaire confirmed the results of previous studies, as the size of companies increase, the organizations have more investment opportunities for the latest generation of technology. Moreover, it emerged how micro firms are so different with respect to other firms scoring significantly lower than them to the questions related to the technologies 4.0 they have and use.

Perhaps, the funds and incentives provided by the Slovak and Italian governments as well as the European Union (European Green Deal) will not only make it easier the digital transition but also reduce the gap among the companies. Having always as priority sustainability in the strategy of firms 4.0, the overall result of the transition will be firms pursuing sustainable practices.

#### 4.1 Limitations

The study has some limitations. These regard the geographic area and the impossibility to generalize the results since the sample size is not so large. In fact, the sample comprises companies of two European countries and only a hundred of answers collected. Future research may aim at analysing the results in other countries situated in other continents. Potential shortcomings derive from the nature of close-ended questions as well.

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## Appendix

Questions from the questionnaire:

Q1: Your company has a digital vision clearly stating strategy and culture needed to support digital transformation.

Q2: The use of big data analysis has increased in the last years in your company.

Q3: Artificial Intelligence (AI) is extensively used in your company.

Q4: Supply chain is end-to-end planned in your company.

Q5: Augmented Reality (AR) and Virtual Reality (VR) are used by employees, among the other applications, for self-learning and training.

Q6: You believe that in the next future new technologies will increase your company's profits.

Q7: Smart working made you and your colleagues to deepen your technological knowledge.

Q8: In certain ways, smart working accelerated the process towards a "smart" company.

## Promotional tools to promote online sales: An MMORPG game's approach.

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### Abstract

*This paper aims to identify the most effective & essential promotion techniques among Romanian consumers of World of Tanks (WoT). It is recommended to use and maintain a specific tone of voice to address the male audience aged 26 and 33 years. First of all, according to the answers in the survey, most players learned about WoT from a friend, which suggests that we approach a message and a strategy for attracting new customers/players through the eyes of current players. The strategy of a reference program by which any player invites another friend to play with him is recommended. Second, implementing strategies to highlight medium tanks in the World of Tanks award store can be beneficial because, according to the answers in the questionnaire, the medium tank is the favourite of the majority when it comes to the most frequently played vehicle. Moreover, when we talk about the most purchased prize facilities, in the first place, comes the premium account, and the existence of some offer packages is essential in the process of purchasing WoT premium features. By linking these preferences, the creation of special offer packages, that contains an average tank of medium generation to purchase a substantial package of premium account, may be appropriate. Thirdly, although most of the respondents declared a net monthly income of over 2500 LEI (510 EUR) they also claimed that the temporary price reductions and the receipt of discount coupons influenced them to a considerable extent and the programs. Continuity programs are one of the most important influences in the acquisition process. We discovered that monthly net income influences the decision of the purchase. Analysing these aspects, we consider that the Romanian WoT player is a price-sensitive customer. As a result, strategies to stimulate them should include attractive price packages and regular discounts.*

**Keywords :** Gaming, Online sales, Promotional tools

**JEL Classification:** M30, M37, M39

### Introduction

Online games have become an essential part of daily entertainment in recent years. Among online games, massively multiplayer online role-playing games (MMORPGs) stand out for their richness of in-game plots and elements. Unlike other kinds of online games, MMORPGs attract many loyal users willing to pay money for virtual items. In MMORPGs, players enter a virtual world with many other players (Mäntymäki & Salo, 2011) and need to interact with them to accomplish the tasks or goals in the game. The enjoyment players receive from the game comes from the gaming experiences' richness and the communications derived from the player's using its characters to interact with others (or a team, a community).

MMORPGs' popularity and profit opportunities have made it valuable for researchers and operators to investigate the factors that enhance the participants' intention to purchase virtual articles. Previous studies have studied virtual item purchases in worlds such as Second Life (Animesh, Pinsonneault, Yang, & Oh, 2011) and Haboo Hotel (Mäntymäki & Salo, 2013). Exploratory and empirical analyses reveal some factors leading to virtual item purchase, including technological factors like interactivity, sociability (Animesh et al., 2011), customizations (Guo & Barnes, 2009; Yee, 2006), decorations (Mäntymäki & Salo, 2015); gaming factors like an achievement (Yee, 2006), perceived network size (Mäntymäki & Salo, 2013), character competency, effort expectancy, performance expectancy, quality of virtual



world (Guo & Barnes, 2009); value factors like perceived usefulness (Mäntymäki & Salo, 2013), perceived values (Guo & Barnes, 2009), and predictable profits (H. Lin & Sun, 2010); and emotional factors, such as flow or enjoyments (Animesh et al., 2011; Guo & Barnes, 2009; Huang, 2012; Mäntymäki & Salo, 2013). Existing researches only focus on the technological factors in virtual item purchase and less on the power of the online promotional pull and push techniques. The aim of this study was to determine the effectiveness of the push and pull online marketing strategies in the sales of World of Tanks purchases.

Video game industry is the economic sector involved in the development, promotion and monetization of video games. This industry includes dozens of disciplines, jobs and companies that generate income exclusively from this field. This industry is constantly growing in terms of the types of games you can try, the revenue from the games and the competition. The video game industry reached 42.8 billion US dollars globally in 2019 (Statista, 2019).

By game type, they are divided into action games, action-adventure, adventure, role-playing games, simulation games, strategy games, games with and about sports and other notable categories such as party games, casual games and others. In the following I will briefly present the game type Massively Multiplayer Online RolePlaying Game (MMORPG) or in other words online role playing games that have a very large playerbase.

MMORPGs in turn branch into 8 categories: action, browser MMORPGs, construction, exploration, first-person shooters, puzzle-type, space simulation and social MMORPGs. According to a report by SuperData (SuperData, 2016), free-to-play MMORPGs account for 92% of the playerbase and 87% of the revenue of the entire MMORPG market. Despite the fact that a game is free (free-to-play), the category of F2P games actually generates significantly higher revenues than the category of P2P (pay-to-play) games. This is largely due to players purchasing extra in-game benefits such as "premium" accounts.

World of Tanks(WoT) is the first MMORPG of its kind, a team-based game based on battles between World War II-era armored tanks. WoT offers players a choice of over 500 tanks (faithful replicas of actual tanks used in war), which can be upgraded according to playstyle and role. This game is a "client" game, which means that to be played it must be downloaded to the laptop/computer. After creating an account, the player can choose from several branches of development. They are: Germany, U.S.S.R., U.S.A., France, United Kingdom, China, Japan, Czechoslovakia, Sweden, Poland, and Italy.

## Literature Review

### 1.1 Virtual article purchase

Several empirical types of research have been conducted to investigate the factors of virtual item purchase. For example, Guo and Barnes (2009) applied focus groups to investigate purchase intentions. The results showed that the quest system's perceived enjoyment, character competency, and requirements acted as primary reasons for purchasing virtual items. Animesh et al. (2011) analyzed technological factors (e.g., interactivity and sociability), spatial factors (e.g., density and stability), and flowed in virtual item purchase in Second Life based on the stimulus – organism – responses (S-O-R) framework, and found that flow played a dominant role in buying behaviors. Mäntymäki and Salo (2013) found that perceived usefulness, ease of use, enjoyment, network size, and availability substantially impacted the intention to purchase in Haboo Hotel.

Further, Mäntymäki & Salo (2015) suggested that in Haboo Hotel, the most frequently mentioned reasons for purchase among teenagers were the benefits of premium membership, decoration, and fun. Above all the studies, researchers have explored some antecedents of purchase intention which heavily rely on technological factors. There are also various types of research on other factors, such as using continuous adoption (Zhang et al., 2014) and user knowledge sharing (Zhou et al., 2014) under the context of other virtual communities. However, most of previous studies on virtual product purchase pay little attention to the factors that relate to the effectiveness of the push and pull online marketing strategies.

### ***1.2 Push and Pull strategies***

A push/pull strategy refers to the way in which information and products move between consumers and a manufacturer. Specifically in marketing, this strategy refers to the focus of the promotional efforts used to sell a good or service. In a push strategy, suppliers “push” their goods toward consumers, and in a pull strategy consumers “pull” information or goods that are suitable for their needs. A pull strategy is defined as a promotion strategy (focused on consumers rather than on members of the marketing channel in order to facilitate the flow of a good or service from a manufacturer to end-users (consumers). Conversely, a push strategy is defined as a promotion strategy focused on marketing intermediaries (wholesalers and retailers) rather than on consumers in order to facilitate the flow of a good or service from a manufacturer to consumers. (Sheth et al., 2010).

## **Research methodology**

**2.1 Research question:** Are the online promotional techniques used today effective, in the context of a low number of active players?

This paper aims to analyze the effect of online promotion sales techniques on consumer behavior in the online game World of Tanks.

### **2.2 Objectives of the research:**

1. Pointing out the promotional techniques that have a substantial impact on the decision purchase;
2. Pointing out in which way the promotional techniques influence the decision of purchase;
3. Analyzing the impact of income on promotional techniques with above-average influence;
4. Pointing out the importance of the socio-demographic profile the purchase process.

### ***2.3 The research design***

We chose to conduct the marketing research using the quantitative method. In order to achieve this quantitative research, we used the survey based on an online questionnaire. We chose this method because we want to identify concrete data from respondents.

## ***2.4 The period of the research***

The data collection was carried out with the help of the members of the Facebook group "World of Tanks Romania", the only group dedicated to this game for Romanian players. At the moment of the study the group had 14,134 members. The questionnaire was launched on May 31, 2019, at 19:20 and it took 48 hours to collect the 200 responses (217 people responded, but 17 answers were considered invalid) considered valid (the people who played or still playing WoT and who have purchased premium content at least once). For completing the questionnaire it needed 5 minutes, on average.

## ***2.5 The design survey***

In making the questionnaire, we used simple and easy-to-understand questions, in the usual deadlines to have a high response rate. I started the questionnaire with a greeting and with the presentation, after which we explained the topic of the research and the reason why it was being carried out the research. After this, we requested the respondent's cooperation in completing the questionnaire, assuring them that not will take more than 5 minutes for completing the survey.

## ***2.6 Sample and procedure of sampling***

Unfortunately, Wargaming does not provide data about its players. We have identified the total number of players globally in a given year, but we needed the number of players from Romania, so we chose to target the Facebook group "World of Tanks Romania", which, as the said It has 14,134 of members active. Marketing research was conducted on a sample of 200 World of Tanks players from Romania, what the have purchased at least once a premium content in World of Tanks.

For sampling populations, we have chosen to use the method sampling probability of group.

## **3. Findings**

For the results of this research we used SPSS for correlations.

Objective no. 1: Pointing out the promotional techniques that have a substantial impact on the decision purchase;

For achieving this objective we used a comparison of average of the results collected from survey respondents for each question used. The answers vary of from 1 – “not important at all” until 5 – „It is very important”.

For respondents, the continuity programs are important for the player's game experience, these granting, on average, a grade of 4.36. This is somewhat natural, since they are World of Tanks players who have been playing since the beginning of this game, for more than 8 years, and the continuity programs are essential for their stimulation. In second place in the importance of promotional techniques we can find the bonus packs, having a rating over 4 (very important). This emphasizes very well the importance of bonus gifts that the customer receives upon purchase. At the opposite pole, there are contests, raffles and the support of charity events, with the lowest grades offered by the respondents, with an average of 3.83 and 2.01 respectively (It is important in a small measure).

Objective no. 2: Pointing out in which way the promotional techniques influence the decision of purchase

To achieve this objective, we used "descriptive statistics" of the results collection of the respondents survey for every question used. Responses vary from 1 – "it does not influence me" until to 5 – "it does influence me in a great measure". Thus, the most effective promotional technique is holding of in-game events. This technique is a frequently used one in the field of gaming, often used as a method of "refreshment" wish to play the game.

In second place in the ranking of the most influential techniques are discount coupons and offer packages. This denotes that respondents are sensitive to price, falling in the category of the economical customer. And among the least influential are sampling and internet reviews. They consider themselves neutral or little influenced by such techniques.

The objective no. 3: The impact of income on promotional techniques with above-average influence

The premise from which this objective starts is the desire to analyze the influence of the most well rated promotional techniques to which the respondents answered with a one answer above average of 3 (neutral), namely, of offer packages, of temporary price reductions, of coupons discount and of in-game events.

For this objective we used Pearson correlation and Sig value to compare the results and analyze the hypotheses.

Monthly net income influences the decision in proportion of 17.9% the respondent to opt for the offer packages to the detriment of the single offers.

Net monthly income indirectly influences 51.1% the respondent's decision to opt for temporary price reductions.

Net monthly income indirectly influences 62.4% the respondent's decision to opt for discount coupons.

In-game events are not influenced by respondents' income.

The objective no. 3: Pointing out the importance of the socio-demographic profile in the purchase process.

3. 60% of survey respondents learned about World of Tanks from friends. This technique (referral) is common in the gaming industry, with most players recommending the game to at least one friend

The interval 20:01 – 00:00 is the most frequent time interval in which the respondents spend the most time in the game, this is due to the fact that most of these respondents are employed.

The medium tank is the type of tank preferred by the respondents of the questionnaire, with a proportion of 21%. The preference for this type of tank is purely subjective, as each vehicle has a different strategy and playstyle.

The premium account is overwhelmingly purchased by more than 50% because it facilitates the game experience, giving the player extra options compared to a non-paying player

Payment by bank debit card remains the most used payment method, in the past the Paysafe card was very popular, but nowadays the most convenient and secure method is online payment.

98% from respondents are men, and 2% are women.

Most of the respondents are in the 26-33 age range, followed by those in the 18-25 age group, most of the respondents live in urban areas (82%). More than 2500 lei net (approx. 510 EUR) monthly is the income of the majority of 55% of the respondents. This is also due to the fact that most of them are employed and are between 26 and 33 years old.

68% of respondents stated that they are employed, which is related to the time interval in which the most time is spent on the game (20:01 – 00:00), age and average monthly income

57% of respondents completed a bachelor's degree, which again correlates with age range, average monthly income, and employment status.

#### Romanian World of Tanks player profile

The Romanian World of Tanks player, who makes at least one purchase, is male, employed, aged between 26-33 years, the last level of education completed is a bachelor's degree, lives in an urban environment, has a net monthly income of exceeds 2500 lei (approx. 510 EUR) and is convenient with online payments by bank card. He trusts his friends' recommendations, is very active in the game between 20:01-00:00, likes to play medium tank a lot, and the premium account is indispensable in his gaming experience.

### Conclusions

This research sought to identify the most effective and important promotion techniques among Romanian World of Tanks consumers, as a result, based on the socio-demographic results and the consumer profile, the necessary adjustments for the promotional content should be made. For example, it is recommended to use and maintain a specific tone of voice for addressing the male audience, aged between 26 and 33 years.

First, according to survey responses, most players learned about World of Tanks from a friend, which suggests we approach a message and strategy for attracting new customers/players through the lens of current players. The strategy of a referral program by which any player invites another friend to play with him is recommended in this case. For example, one can set up a "recruitment" program by which a story of the commander (the current, inviting player) and the recruit (the invited player) is composed.

Second, we recommend implementing strategies to highlight medium tanks in the World of Tanks premium store. According to survey responses, the medium tank is the majority favorite when it comes to the most frequently played vehicle. And when we talk about the most purchased premium facilities, indisputably, the premium account stands out in first place, and the existing offer packages are important in the process of purchasing a WoT premium account. By linking these preferences, we suggest creating special offer packages, in which a mid-generation medium tank is offered with the purchase of a substantial package of premium account days.

Thirdly, although most of the respondents declared a monthly net income of over 2500 LEI (approx 510 EUR), they also claimed that temporary price reductions and discount coupons influence them to a considerable extent, as well as the continuity programs are part of the most significant influences in the acquisition process. Analyzing this aspect, we consider that the Romanian WoT player is a price-sensitive customer. As a result, we recommend that strategies



to incentivize them include attractive price packages and periodic discounts. Last but not least, in-game events commemorating various historical events make players more active, and attractive offers during the events usually result in more purchases.

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# Data Type Taxonomy for ESG Performance versus ESG Risk Research: Meta-analysis From 1441 Empirical Studies

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## Abstract

*The concept of environmental, social, and governance (ESG) is first proposed by the United Nations in 2005, which aims to attain the Sustainable Development Goals (SDGs). At a time when the society is facing great challenges of environmental and economic development problems, ESG and its practice has become a heated discussion and an increasingly popular research by scholars. However, there exists many insufficiencies in the ESG framework waiting for improvement such as the relevance of the investment and the construction of the index system. Our expected finding is to analyze the data of 1441 previous ESG academic research collected from Web of Science from 2005 to 2021 by using the meta-analysis method to explore the visualization of the data types, correlation and corresponding of ESG performance versus ESG risk. Expecting to form an application prospect of related fields that can be used for ESG research. We also aims to design a data structure to demonstrate what kind of data paths can be used to further improve the ESG research architecture and to enrich the content of the ESG community.*

**Keywords:** Meta-Analysis, Sustainable Development, Data Structure, ESG Evaluation System, ESG Risk

**JEL Classification:** G11, G14, L00, O20, Q50

## 1. Introduction

The ESG assessment system, which focuses on the three assessment directions of environment, society and Governance, has been widely recognized worldwide. Relatively systematic ESG rating agencies such as MSCI and Thomson Reuters have emerged internationally, and there are also ESG evaluation indexes compiled by professional institutions such as CSMAR and China Securities Index in China, aimed at the evaluation services domestically. With the rapid development of the ESG evaluation system, its impact on Corporate Social Responsibility (CSR) is self-evident, so the empirical test of the correlation between ESG and Corporate performance is particularly important. This paper will explore the relationship between ESG and corporate performance based on a meta-analysis by combining existing empirical studies and economic theories.

Through a review of relevant literature, it is found that the influence of ESG level on corporate performance is not consistent. Since the research on ESG is still in the exploratory stage, the empirical research conclusions on ESG and corporate performance have not formed a standardized conclusion. According to the research of Li Jiangtao and Pan Yijiang (2022), ESG performance has a positive promoting effect on corporate financial performance and media attention, and media attention plays a mediating role. Based on the ESG rating data and the



shareholding ratio of institutional investors, the empirical results of Li Gang (2022) show that the improvement of ESG performance of enterprises will have a negative impact on institutional investors, and then reduce the financial performance of enterprises. Friede (2015) conducted a meta-analysis of more than 2,000 empirical studies, which showed that 50% of the studies showed a positive correlation between ESG performance and financial performance, 40% showed that ESG performance and financial performance were mutually causal, and only 10% believed that there was a negative correlation between ESG performance and financial performance. Zhao Weiqi and Liao Xinyi (2021), in their study using ESG rating data as a proxy variable for corporate social responsibility (CSR) (based on industry perspective), argued that: First, When controlling for industry effects, the relationship between CSR and financial performance is not obvious. What's more, based on different industries, there is different evidence of the relationship between CSR and financial performance. In the first type of manufacturing, there is a significant positive relationship with information transmission, software and information technology services, while in other industries, there is a non-positive relationship.

It can be seen that there are subtle differences in the original data and specific evaluation methods used in the above research, and there is a certain heterogeneity in the research results, so no more general and universal conclusions can be drawn. Based on the above situation, the meta-analysis method can provide a more scientific research means, and at present, there are few meta-analysis studies in related fields.

Meta-analysis is a literature review method of quantitative analysis, which can use statistical principles and methods to quantitatively analyze the results of multiple independent empirical studies in the same research direction, so as to further solve the problem of inconsistent conclusions of independent studies. In this paper, the meta-analysis method is used to conduct a comprehensive statistical and econometric analysis of the data results and research conclusions of different empirical studies based on the ESG index system, in order to obtain more general conclusions.

Several difficulties need to be solved in this paper.

I. The ESG evaluation system is based on the information disclosure system. At present, China is still in the stage of voluntary information disclosure, and the current information disclosure system is highly opaque and imperfect.

II. The volume of current empirical research on ESG and enterprise performance is not large and is still in the embryonic stage. Some articles that are more in line with common sense or have statistically significant results are more likely to be accepted and published. In addition, some articles under study have not been retrieved, which may lead to a certain bias in the literature selected in this paper.

III. The ESG indicators under the current evaluation system are heterogeneous, and there are significant differences between the ESG structures and indicators compiled by various international rating agencies. For example, MSCI covers 10 topics and 37 risk issues, while Thomson Reuters covers 178 indicators in 10 fields, and introduces subtracting items in the calculation. And there are subtle differences in the disclosure standards and norms of the same indicator.

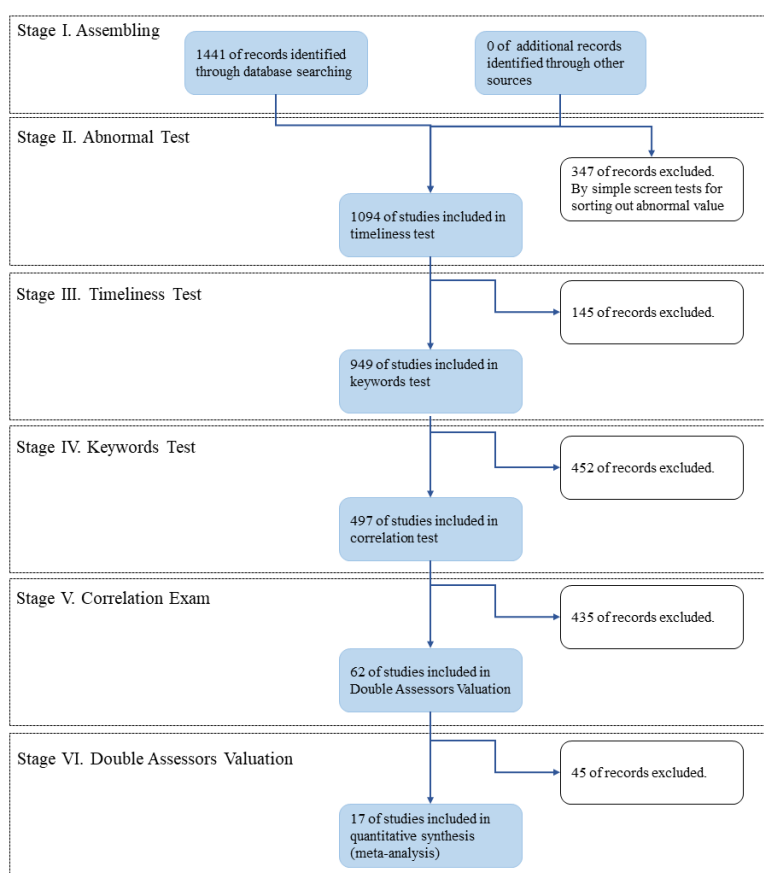
IV. There are differences in ESG indicators among different industries, and deviations exist in the required or voluntary disclosure of data and the focus of indicators. This paper is expected to provide guidance and reference for the correlation and influence mechanism between CSR and corporate performance based on the ESG evaluation system.



### 3. Search and Screening Process

According to the original data of 1441 articles, “ESG” is the topic of search, SCI (SCI-EXPANDED) and SSCI (Social Science Citation Index) are chosen as the targeted database in the Web of Science Core Collection (WoS Core Collection), the time span is set as of 2022, and the document types are “Article and Review Article”. After the selection of articles and review articles, which is also the selection of many review works, and conducted simple screen tests for sorting out the ones out of form or with an abnormal value, 1094 articles are shortlisted for meta-analysis processing, forming the second stage data. The effectiveness of articles for a period of time is taken into consideration, so articles with a publication in recent 10 years, which is the year of 2012 and beyond is chosen for further processing, and 949 articles are left as the third stage data. We have to make sure the articles that we analyze are close to the main discussion topic of our article, so we observed the keywords of each article and picked out those with “ESG” or phrases similar to it, remaining 497 articles to be the fourth stage data. Besides ESG, “risk” is also an emphasis of our research. We processed a deep-going filtrate to guarantee the articles that we analyze have close integration to “risk”, which we are the main discussion that we’re going to focus on. In this part, the articles are cut to a number of 65. After that, we use the “double assessors evaluation process” to make the result better. In order to ensure the accuracy of the data, we manually verified the literature data pre-processed by Cochrane Standard to eliminate discrepancies in the raw data maintaining the authors’ names, affiliations, and keywords. The double assessors evaluated the 65 articles proceeded through the filtrate, and elected 17 articles with a high-quality content and also clear formulation, indication and presentation. The process is shown below (Figure 2).

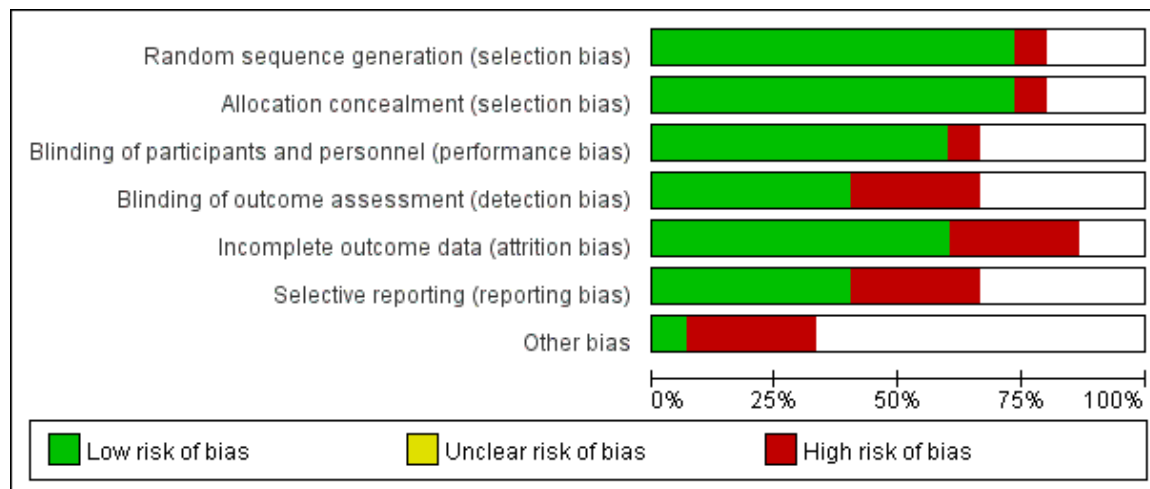
**Figure 2: Literature Search Result and Specific Screening Process**



A total of 17 articles were included, all of which were real-world empirical studies. The Cochrane Standard was used to evaluate the quality of the documents, and all of them were high

quality and real-world retrospective cohort studies. We analyzed and evaluated the risk of bias of the 17 articles that we've chosen, and the results is shown in the graph (Figure 3) (Figure 4).

**Figure 3: Risk of Bias Graph**



**Figure 4: Risk of Bias Summary**



### 4. Meta-analysis and Conclusion

Reviewers, both common and those who use the vote-count method, are just briefly introducing the general situation of research in this field. In order to determine the statistical study of the research results of the same topic under the View of meta-analysis methodology, attenuated ( $r$ ) and disattenuated ( $p$ ) results (1) determined Standard Error (SE) are needed to be measured to calculate 95% of the confidence interval (2).

$$SE_r = \frac{\sqrt{\hat{\sigma}^2 \bar{r}_i}}{\sqrt{n}} \text{ and } SE_p = \frac{\sqrt{\hat{\sigma}^2 \bar{p}_i}}{\sqrt{n}} \quad (1)$$

$$CI_L = 0 \pm 1.96 (SE_{r/p}) \text{ and } CI_U = 0 \pm 1.96 (SE_{r/p}) \quad (2)$$

In which  $\bar{r}_i$  is the true variance for the mean of attenuated meta-analysis and the  $\bar{p}_i$  is the corresponding variance for the mean of disattenuated meta-analysis.

The risk variable is obtained by integrating the Bias and Difference existing in 17 different studies, and the specific integration method is referred to *The impact of sustainability governance, country stakeholder orientation, and country risk on environmental, social, and governance performance (2016)* by Bryan W. Husted and Jose Milton de Sousa-Filho and combined with the objective reality of different studies. The meta-analysis results (Figure 5) are shown as follows:

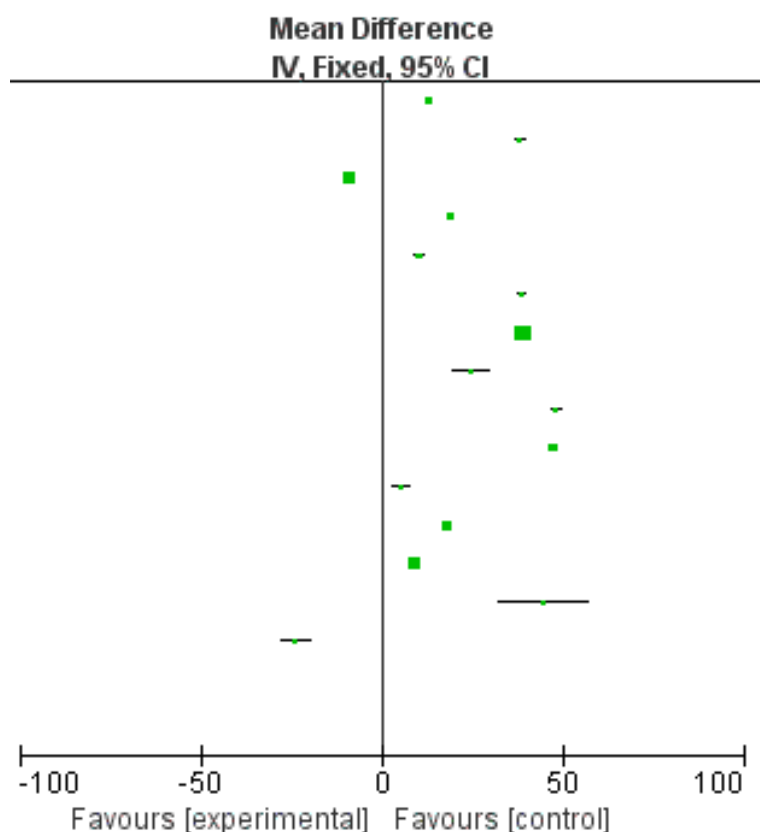
**Figure 5: Meta-analysis of the Correlation of ESG Performance and Risk Variables**

Study or Subgroup	ESG performance			Risk			Weight	Mean Difference IV, Fixed, 95% CI
	Mean	SD	Total	Mean	SD	Total		
Ariadna Dumitrescu , Mohammed Zakriya 2021	39.25	13.02	3578	26.33	9.44	2939	5.3%	12.92 [12.37, 13.47]
Bryan W. Husted , Jose Milton de Sousa-Filho 2016	63.78	25.04	1347	25.54	14.43	1347	0.7%	38.24 [36.70, 39.78]
Caterina Di Tommaso, John Thornton 2020	0.64	0.32	1539	9.27	6.1	1539	17.1%	-8.63 [-8.94, -8.32]
Darren D. Lee, John Hua Fan, Victor S.H. Wong 2021	74.2	14.88	2241	55.2	4.02	2241	3.9%	19.00 [18.36, 19.64]
Iman Harymawan 2021	41.4	9.655	459	30.9	11.77	459	0.8%	10.50 [9.11, 11.89]
Jannik Gerwanski 2020	60.16	15.91	2196	21.4	11.11	2196	2.4%	38.76 [37.95, 39.57]
Julian F. Kolbel, Timo Busch, et al. 2017	43.89	7.12	3431	4.77	0.85	3431	27.7%	39.12 [38.88, 39.36]
Klarissa Lueg, Boris Krastev, Rainer Lueg 2019	42.433	41.92	295	17.678	16.075	295	0.1%	24.75 [19.63, 29.88]
M. Kabir Hassan 2021	53.4	17.7	1371	5.1	11.8	1371	1.3%	48.30 [47.17, 49.43]
Michael Shafer , Edward Szado 2020	56.23	8.7	3195	8.61	8.66	3195	8.8%	47.62 [47.19, 48.05]
Mohammad Hassan Shakil 2021	49.4548	15.5933	630	44.0167	24.7565	630	0.3%	5.44 [3.15, 7.72]
Muhammad Atif, Searat Ali 2020	19.94	12.86	5206	2.07	1.56	5206	12.9%	17.87 [17.52, 18.22]
Paolo Capelli, Federica Ielasi, et al. 2021	43.19	5.67	3880	34.13	7.387	3880	18.6%	9.06 [8.77, 9.35]
Roy Cerqueti, Rocco Ciciretti, et al. 2021	64.92	442.66	5234	20.31	67.75	5234	0.0%	44.61 [32.48, 56.74]
Tânia Menezes Montenegro 2021	40.43	11.11	165	64.23	22.83	165	0.1%	-23.80 [-27.67, -19.93]
<b>Total (95% CI)</b>			<b>34767</b>			<b>34128</b>	<b>100.0%</b>	<b>20.87 [20.74, 21.00]</b>
Heterogeneity: Chi <sup>2</sup> = 862.06, df = 14 (P < 0.00001); I <sup>2</sup> = 100%								
Test for overall effect: Z = 323.90 (P < 0.00001)								

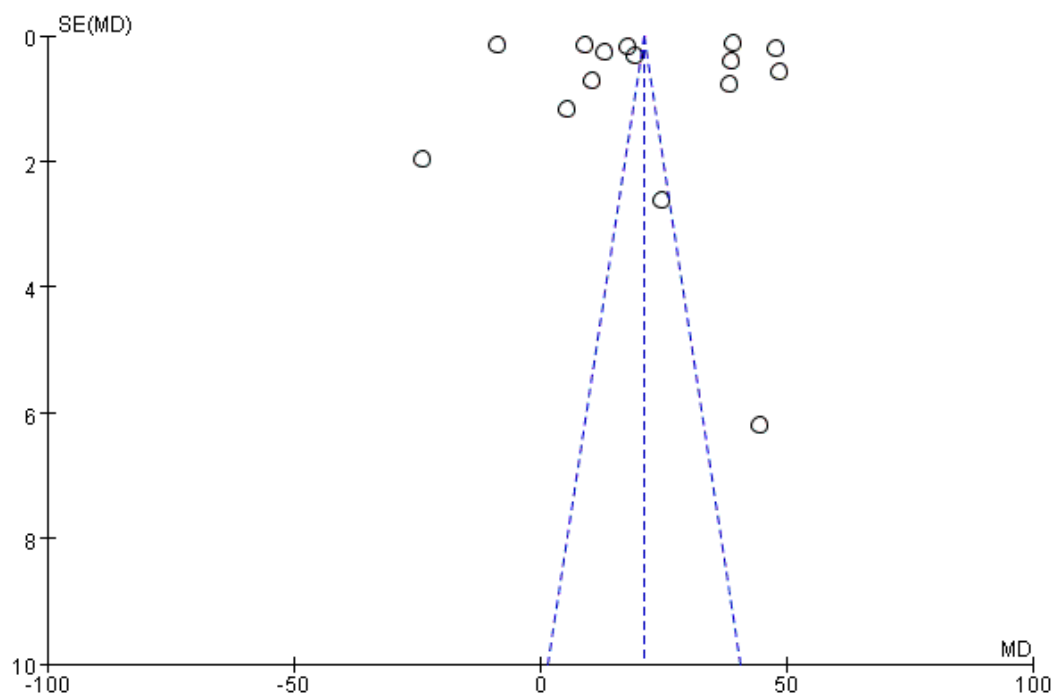
The heterogeneity test results showed that  $I^2 = 100\%$  and P was no greater than 0.05, indicating an extremely severe heterogeneity, and the results were not statistically significant (Figure 6). The pooled analysis of random effect model can not be compared with the pooled analysis of fixed effect model (Figure 7).



**Figure 6: Forest Plot of Meta-analysis of the Correlation of ESG Performance and Risk Variables**



**Figure 7: Funnel Plot of Meta-analysis of the Correlation of ESG Performance and Risk Variables**



We've also elected 10 example articles (Table 1), formed the result by the discussion and evaluation of the two assessors, which is representative and typical in the aspect of ESG-risk.

**Table 1: Representative Examples Article of ESG-risk**

Serial number	Author (Publication year)	Literature source	The main idea
1	Bryan W. Husted , Jose Milton de Sousa-Filho (2016)	Journal of Cleaner Production	The degree to which each one contributes to ESG performance varies. In addition, institutional context clearly matters.
2	Klarissa Lueg , Boris Krastev , Rainer Lueg (2019)	Journal of Cleaner Production	Managers benefit from these insights by better understanding how sustainable practices and disclosing information on them can improve the market's assessment of a company's systematic risk.
3	Michael Shafer , Edward Szado (2020)	Accounting & Finance	Investors consider strong ESG practices to be insurance against left-tail events rather than wasteful investment borne out of managers' own values or self-interest.
4	Tânia Menezes Montenegro (2021)	Sustainability	Not only the importance of national governance in mitigating tax evasion but also the relevance of the mediating effect of national governance on the relationship between CSR and tax evasion
5	Alessio Venturini (2022)	International Review of Financial Analysis	Emphasis also placed on investors' beliefs about climate change risks, and related asset pricing implications are analysed.
6	Ariadna Dumitrescu, Mohammed Zakriya (2021)	Journal of Corporate Finance	CSR aimed at specific stakeholder groups tend to mitigate future crashes. In contrast, firms' environmental initiatives and governance characteristics seem to have trivial effects on stock crashes.
7	Roy Cerqueti, Rocco Ciciretti, Ambrogio Dalò, Marco Nicolosi (2021)	Journal of Financial Stability	Relative market value loss of the High ESG ranked funds is lower than the Low ESG ranked counterparts in the time span with lower volatility.
8	Paolo Capelli, Federica Ielasi, Angeloantonio Russo (2021)	Corporate Social Responsibility and Environment Management	dispersion of ESG scores within a country, sector and year is a risk factor that would be helpful in predicting the volatility of financial assets.
9	M. Kabir Hassan, Laura Chiaramonte, Alberto Dreassi, Andrea Paltrinieri (2021)	Research in International Business and Finance	Sharia-compliant firms obtain a larger risk mitigating effect for greater levels of ESG scores.
10	Mohammad Hassan Shakil	Resources Policy	Firm's negligence on ESG and involvement in ESG controversies moderates ESG-total risk nexus. women's weak participation on board considerably moderates and escalates the association between ESG and financial risk.

## 5. Discussion

In our research, 17 empirical studies were included in this study, and most of the included data were from research points with a high degree of ESG-risk correlation. However, the results from the heterogeneity test showed extreme heterogeneity, and the innovation points and defects of this study are summarized as follows:

The risk factor variables are secondary subjective variables, which are obtained by determining dynamic weights based on a series of original variables, such as Return on Asset(ROA) and TobinQ Ratio. Due to the different data volume, data caliber, data processing, research methods and even the descriptive statistical analysis of the same variable used in all the studies, we used the method of subjective evaluation coupled with the Analytic Hierarchy Process to obtain the risk factors from the original research according to the particularity of different studies in order to measure the risk factor, a complex system that is difficult to quantify completely. Because the sample size and variables selected by this method are difficult to be consistent due to the difference between different studies, the risk factor variables measured in this study may be biased, resulting in serious heterogeneity of the final meta-analysis results and lack of reference in statistical significance. On the one hand, risk factors and other variables with complex standardized measures and difficulty to avoid subjective bias are still difficult problems in the field of economics and business science. On the other hand, it also indicates that the coupling study of simple meta-analysis on complex system variables needs a further step of data processing.

Meta-analysis has a relatively objective and scientific performance in integrating different research results, summarizing original data for comprehensive analysis and measuring bias and effect size in many conflicting conclusions, and taking into account the quality of independent research. This is also the reason why this study chose to adopt Meta-analysis to further quantitatively estimate the effect degree on the basis of the original ESG review. However, Meta-analysis developed from RCT medical experiments is still not a mainstream research method in business science and economics, and lacks detailed and effective reference models.

When involves to quantitative research of complex system, merely meta-analysis method is easy to transmit to a high heterogeneity result. To solve this problem, it is needed to use meta-regression to determine the major source factor of heterogeneity to the complex system, and use Sub-group analysis to subdivide object of study to draw a more accurate conclusion. After that by using sensitivity analysis to test Leave-one-out sensitivity and transform the merge model, and using the Egger or Begg method to proceed publication bias test for the final processing. Above is the Heterogeneity direction of this meta-analysis and review study, and also the inevitable question about Heterogeneity in the field of economics and business science when Meta-analysis is used in the methodology.

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## Study on the Construction of ESG System in Developing Countries: Evidence From China

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### Abstract

*The ESG (Environment, Social and Governance) investment evaluation system is an appraisal system methodology based on the concept of sustainable development and built on a disclosure system to measure the sustainability and financial capability of companies in the green economy. With the rise of the concept of sustainable investment and the implementation of the dual carbon policy, ESG investment in China has embarked on a fast track of development, but as it is still in its infancy, there are still many issues to be improved in the operation process. This paper will first enumerate the problems encountered in the operation process through three dimensions: information disclosure, evaluation system and market investment, and then explore the main problems through case studies to seek possible directions for solutions. And then based on the above research to comb the connotation of ESG system from the definition, methodology, advantages. Finally, on the basis of exploring the corresponding solutions to the existing problems, it provides an empirical reference for the construction of ESG-related systems in developing countries in the world market. It also explores possible solutions for the sustainable development of developing countries and the global economy against the backdrop of a macroeconomic downturn in which the global economy has been hit by the corona-virus, international political turmoil and the recurrence of mini-financial crises.*

**Keywords:** Controversial events , ESG, Risk management, Sustainable investment, Sustainable Development

**JEL Classification:** G11, G14, L00, O20, Q50

### 1. Background

In recent years, with the concept of corporate social responsibility becoming a global consensus and the rise of the concept of sustainable development, non-financial indicators such as environmental impact, social contribution and governance capability of listed companies have increasingly become a key concern for governments and investors.

ESG combines the three dimensions of environment, society and governance, providing an integrated framework for sustainable development and helping investors to judge whether a company's business approach is in line with the concept of sustainable investment, so that investors no longer limit their investment to the financial performance of the company, but make a more comprehensive consideration on the basis of the company's environmental, social and governance performance. This is not only in investor's own interest, but also an important means of changing corporates' behavior in a socially beneficial way, and thereby can be counted as a form of responsible investment.

The United Nations Principles for Responsible Investment (UNPRI) has also found that environmental, social and governance factors have an impact on portfolio performance ,thus



encouraging all parties to adopt and collaborate on the six principles, which include incorporating ESG issues into the investment analysis and decision-making process, promoting acceptance and implementation of the principles within the investment industry, and seeking appropriate disclosure on ESG issues by entities invested.

Among all the factors, the environmental ones are particularly important. With the deepening of the global greenhouse effect, climate change and carbon neutrality have become global hot issues. From the 1990s to the present, the international community has adopted three important international legal documents to address climate change, namely the *United Nations Framework Convention on Climate Change* (1992), the *Kyoto Protocol* (1997) and the *Paris Agreement* (2015), which have laid the foundation for the release of ESG and sustainable development-related policies; On 15 April 2020, the Council of the European Union adopted, by written procedure, A Framework to Facilitate Sustainable Investment, providing a uniform classification system for enterprises and investors across the EU on the identification of environmentally sustainable economic activities; On September 22 of the same year, the Chinese government proposed at the 75th session of the United Nations General Assembly that "China will increase its independent national contribution, adopt more vigorous policies and measures, strive to peak CO<sub>2</sub> emissions by 2030, and strive to achieve carbon neutrality by 2060." China's carbon reduction targets not only demonstrate the responsibility of a great power, but also meet the international consensus on green development with the goals of 'carbon neutrality' and 'emission peak'. The implementation of these strategies will have a profound impact on many industries around the world. Whether it is structural changes in the energy industry or further breakthroughs in green technology, carbon neutrality is expected to play an important role in guiding industry trends in the coming decades; both investors and companies, each individual has the obligation to follow the guidance and contribute to the early achievement of this goal, so the trend of energy saving and emission reduction for each company has become inevitable.

Furthermore, a review of relevant domestic and international studies reveals there is a certain correlation between ESG and corporate performance.

Gray, Shadbegian<sup>1</sup> (1995) and Filbeck, Gorman et al.<sup>2</sup> (2004) argue that increasing environmental input increases the cost of the firm and brings economic loss to the firm, therefore the two factors are negatively related. The results of Hang Song et al.<sup>3</sup> (2017) show that there is no significant relationship between environmental performance and corporate performance. However, some scholars such as Vachon, Thourmy<sup>4</sup> (2012) argue that the efficient use of natural resources can bring more economic benefits to firms. Chinese scholars such as Jun, Lu and Shuyan, Jiao<sup>5</sup> (2011), on the other hand, argue that environmental disclosure and corporate performance are negatively related, but environmental inputs can lead to increased economic benefits.

However, some studies have shown that the relationship between ESG and corporate performance depends on different industries and companies: Andreas<sup>6</sup> (2007) argues that environmental performance in a particular industry is not correlated with corporate financial performance. Xuan, Chen and Weide, Chun<sup>7</sup> (2010) also concluded that, in overall, environmental performance is positively correlated with financial performance; however, the correlation between environmental performance and financial performance is not significant in different industries. Walley, Whitehead<sup>8</sup> (1994) argued that environmental improvement activities can improve the economic performance of a firm; when environmental improvements are made passively, environmental performance has a negative or no correlation with financial performance.

In addition, other scholars' studies have shown that how ESG affects corporate performance is not always constant, for example, Jing, Chen<sup>9</sup> (2019) found that for the long term, ESG has a significant positive correlation with financial performance; for the medium term, ESG has a positive correlation with financial performance; and for the short term, the correlation between ESG and financial performance is not significant.

In summary, with the new economic development model of high-quality economic development and carbon neutrality as the core driver and the rise of sustainable investment concept as the premise, the practice of ESG has been a major trend, which is of great significance to both enterprises and investors. However, the international academic research mostly lies in the study of correlation between ESG and corporate performance. The experience in the study of problems in its operation process is still insufficient. Therefore, this paper aims to sort out the implementation and problems of ESG in the operation process, and try to propose solutions, which can help improve the relevant defects in ESG field and have practical significance for the development of global ESG system.

## 2. Data and Methods

The fundamental problem that currently limits the development of the global ESG system is the inadequacy and lack of objectivity of the information data used to make the assessment. Information disclosure is the first step as well as the foundation of the following steps. The power of ESG to change a company depends on how much information investors and rating agencies can obtain to determine whether a company meets ESG requirements, i.e., the extent and reliability of information disclosure. Therefore, incomplete information, missing data and falsification are the root of a series of problems that arise subsequently. However, since the current global economy is in an overall downward trend due to a series of problems such as the impact of the coronavirus, many enterprises are not operating well, thus leading to a generally low quality of information disclosure. Given that ESG is a system based on the information disclosure system to select indicators and methodology to build an evaluation system to provide investors with measurement criteria for investment, this paper will illustrate the existing problems in the ESG system from three aspects: information disclosure, evaluation system, and market investment issues.

### 2.1 Information disclosure issues

#### 2.1.1 Disclosure framework to be regulated

One of the difficulties in ESG information disclosure is the lack of data and the inconsistent disclosure caliber, which is a problem that exists all over the world. In China, for example, according to the statistical data of *ESG Questionnaire Report of A-share listed companies in 2021*, 1147 A-share listed companies disclosed ESG-related reports by the end of 2021, which is more than three times of the 371 ESG reports disclosed in 2009, showing that the awareness of ESG disclosure is gradually increasing. Although the quantity has improved, the quality of disclosure still needs to be improved, especially the high rate of missing data and poor uniformity of environmental information of some enterprises. The lack of standardized ESG information disclosure guidelines and standardized ESG information disclosure rules makes enterprises in various industries have no concept of the information that needs to be disclosed so that they cannot reasonably select the content of disclosure, resulting in low relevance of disclosure. What's more, some companies may tend to deliberately avoid information that may have a negative impact when disclosing, and selectively disclose a large amount of information that is beneficial to their own performance promotion at the same time. Such selective

disclosure can lead to uneven quality of disclosure, incomplete information, different caliber of disclosure, information asymmetry of quantity over quality, and the problem of "reporting good news but not bad", which is difficult to evaluate as a key factor for investment decision.

### *2.1.2 Corresponding laws and regulations are not yet perfect*

Whether the information disclosure is comprehensive and truthful is related to the accuracy of ESG assessment results. Many countries or regions with an early start in ESG have detailed laws or standards to safeguard the sources of disclosure information required for ESG assessment. Countries and regions with typical international ESG information disclosure systems, such as the United States, the European Union and Hong Kong, China, have made provisions for disclosing corporate ESG information: the United States emphasizes that all listed companies must disclose the impact of environmental issues on company operations; the European Union only makes mandatory information disclosure for heavily polluting companies and adopts the principle of voluntary information disclosure for other companies; Hong Kong, China, requires listed companies to disclose ESG information in accordance with the *Environmental, Social and Regulatory Reporting Guidelines* and require some indicators to be explained without disclosure. Although the above three have different focuses on information disclosure, their regulations contain the requirement of mandatory disclosure of enterprise ESG-related information. In addition, there are different principles for ESG information disclosure internationally, typically GRI, ISO26000 and SASB.

However, in many developing countries and some developed countries, due to the late start of ESG, the construction of information disclosure system is relatively backward, and this has revealed a series of problems such as corporate fraud and ESG greenwashing. For enterprises, they can hide their negative impact on the environment and society through false information, which is a common motivation for "greenwashing".

For investors, investment decisions based on misinformation can undoubtedly increase investment risk significantly. In countries where ESG-related systems are well established, "greenwashing" and falsification of information are the key issues to be monitored. In June 2022, the U.S. Securities and Exchange Commission (SEC) launched an investigation on Goldman Sachs Group Capital Management's ESG mutual funds, with the aim of examining whether there are information disclosure and "greenwashing" issues in ESG assessments across industries. Back in May, the SEC had fined BNY Mellon's investment advisory division \$1.5 million for misrepresentations and omissions in ESG fields while managing its mutual funds, which resulted in some investments not being ESG reviewed. The SEC's attention demonstrates the significance of disclosure and corporate "greenwashing" in ESG investments.

At present, some of the problems exposed in ESG information disclosure in China, such as corporate falsification and low access to data, are mainly caused by the current phenomenon that ESG information disclosure in China is mainly voluntary for enterprises. Compared with voluntary disclosure, the corporate information obtained mandatorily is not only more comprehensive and real, but also makes ESG assessment results more authoritative. In 2018, the Ministry of Ecology and Environment informed Jiangsu Huifeng Bio Agricultural CO., LTD. of a series of problems such as illegal disposal of hazardous material waste, illegal disposal and transfer of hazardous waste, and secret discharge of highly concentrated toxic wastewater, and then ordered the local authorities to rectify them. However, the corporate had previously vigorously publicized its corporate greenness, which was undoubtedly a cover-up of its illegal behavior and a "greenwashing" of the company with serious consequences. This further confirms that mandatory disclosure is now the focus of ESG disclosure construction in China.

**Table1: ESG Related Policies from China**

Year	Policies or Events	Description
2015	<i>Environmental Protection Law of the People's Republic of China</i>	Special requirements for corporate environmental information disclosure and monitoring
2016	<i>Guidelines for Establishing the Green Financial System</i>	A relatively complete green financial policy system has been established
2018	<i>Code of Corporate Governance for Listed Companies</i>	Establishes the basic framework for ESG information disclosure
2020	<i>China proposes "double carbon" target</i>	Make requirements for China's green financial services in various industries
2020	<i>Measures for the Administration of Trading of Carbon Emissions Rights (Trial Implementation)</i>	Further requirements for carbon emissions information monitoring in relevant industries
2020	<i>Plan for the Reform of the Legal Disclosure System of Environmental Information</i>	Make provisions and requirements for mandatory corporate disclosure
2021	<i>Guidelines on Investor Relations Management for Listed Companies (Draft for Comments)</i>	Include ESG content to encourage disclosure of carbon reduction measures and effectiveness
2021	<i>Guidance on Environmental Information Disclosure for Financial Institutions</i>	Encourage environmental information disclosure to the financial industry

### 2.1.3 Lack of a credible ESG database

Although there are abundant sources of information and data required for ESG ratings, usually including corporate annual reports and social responsibility reports (CSR) released by enterprises, as well as passive media reports and data released by government departments, the scope of ESG itself is too broad and scattered, and its connotation is difficult to define so far, and there is a large amount of textual descriptive information that is difficult to verify, which makes it difficult to establish a credible database and thus makes it more difficult for investors to screen and integrate ESG-related information.

## 2.2 Assessment system problems

### 2.2.1 Rating system standards are not yet unified

At present, there are many ESG rating systems but no unified standard, and most of the international mainstream rating agencies such as MSCI ESG, Thomson Reuters ESG, Goldman Sachs ESG, etc. have the problem of strong subjective factors, which also have certain influence on the results of ESG rating. China's ESG system is still in its infancy, mainly based on the rating system of SynTao Green Finance. But there are also huge differences with foreign rating mechanisms, for example, the weight of 37 key indicators of the MSCI will be determined based on the industry in which the company is located, and usually the weight of each indicator is between 5% and 30%, while the rating method of SynTao Green Finance uses vote-count to divide in into 10 grades from A+ to D. In addition to the three primary indicators E, S and G, there are 1 secondary indicator, 52 tertiary indicators and 75 industry indicators. Since there are many differences between the two in terms of methodology, strengths and weaknesses, and client groups, even if the same company uses different methods and models, different ESG scores may be obtained.



In addition, most ESG agencies at home and abroad disclose limited details of their ratings in order to protect their commercial secrets, which lead to its lack of transparency and independence, thus making it difficult for investors to accurately evaluate and judge their ratings.

## 2.3 Market Investment Issues

### 2.3.1 The "greenwash" issue brings more ESG risks to investors

Greenwashing, that is, the pursuit of profit in the name of environmental protection but not related to environmental protection, thus misleading to the public because of the label of environmental protection. At present, many listed companies, driven by interests will promote their products as green, low-carbon and environmentally friendly, and regard ESG as a tool to enhance corporate image or a move to passively meet regulatory requirements, instead of truly integrating the concept of sustainable development and ESG into corporate development strategies and management.

At the same time, with the rise of ESG and sustainability topics, the number of investors upholding ESG concepts is increasing. The global ESG investment is on the fast track of rapid development. According to Bloomberg's estimation, global ESG assets are expected to exceed \$53 trillion in 2025, accounting for more than one-third of total assets under management, and many fund products are also attracting capital sources under the banner of ESG and sustainable investment .

However, a large portion of these fund products are not worthy of the name. Some fund managers take advantage of the defect where ESG data disclosure norms are not uniform and rating standards are temporarily ambiguous to label pseudo-ESG investment products, which only bear the name of green finance but do not meet ESG investment standards, as environment-friendly products. Since the market's enthusiasm for ESG investment continues to rise, by exaggerating the environmental benefits, sustainability and risk resistance of the products to attract investors who are hard to distinguish the real from the fake, which will undoubtedly mislead investors, thus leading to the chaos of "greenwashing products" everywhere.

In 2020, Deutsche Asset Management (DWS) was accused by former Chief Sustainability Officer Desiree Fixler of making misleading statements that more than half of its \$900 billion in assets were invested in accordance with ESG standards in its annual report. On May 31, 2022, about 50 German police officers raided the offices of Deutsche Bank and its subsidiary Deutsche Wirtschaftsprüfer (DWS) to search DWS for alleged "greenwashing" of ESG funds, and obtained some key evidence. Asoka Wöhrmann, CEO of DWS, announced her resignation after the search and the company's stock fell by more than 5% on the same day.

The ESG system is built to avoid and prevent ESG-related risks to a certain extent, but the widespread of "greenwash" products makes it contrary to the purpose, which brings more ESG risks to investors' investment.

### 2.3.2 Lack of attention to controversial ESG data by investors in developing countries

Although ESG is a system built on a disclosure system, relying on disclosure data, it should also be judged with an emphasis on controversial data. Controversy data is a useful supplement to negative ESG information because it covers a wide range of issues and involves issues that companies try to avoid. In addition, controversial events can also reflect a company's ESG risk management capability. The occurrence of controversial events can affect investors' recognition



of a company's environmental, social and governance aspects, which in turn affects the performance of a company's stock price and trading volume.

The current domestic and international rating systems incorporate controversial data in different ways, with foreign countries giving higher weight to ESG controversial events, while domestic rating agencies, although they have started to realize its importance, still do not pay enough attention to it, resulting in investors' lack of attention to it as well.

In China, for example, according to the statistics of Securities Times·China Capital Market Research Institute, since 2006, a total of over 3,800 negative environmental events have occurred in A-share manufacturing listed companies and their important subsidiaries. And on the first trading day after the release of negative environmental events, compared to the CSI 300 index, the stock price of listed companies fell by about 0.14% on average.

In contrast, international secondary markets react more significantly to negative environmental events. A scholarly study indicated that listed companies in the U.S., U.K., Germany, and Finland experienced a cumulative average decline in share prices relative to the market benchmark index of about 3.6% in the 20 trading days before and after the announcement of negative environmental events (2003-2006). Listed companies in Korea experienced a cumulative average share price decline of about 9.7% relative to the market benchmark index in the 3 trading days before and after the release of negative environmental news (1993-2000). According to a study by Bank of America-Merrill Lynch, major ESG-related controversies have shrunk the market value of U.S. companies in the Standard & Poor's 500 Index (S&P 500) by nearly \$534 billion between 2014 and 2019. As can be seen, a greater weight is given to ESG controversies abroad than at home.

### 3. Case Study and Key Issues to Explore

#### 3.1 Case Analysis

In the context of the basic strategy of sustainable development and the rise of new concepts such as "carbon neutrality", "emission peaking" and green economy, ESG-related research in China has started to develop in a spurt. Since 2018, a number of start-ups or leading enterprises have carried out pilot work in the field of ESG and achieved certain results. However, ESG in less developed countries is still in its infancy and there are many problems as mentioned above, so this paper takes the leading enterprises in the new energy vehicle industry at home and abroad as an example for horizontal comparison, explores and studies their practice in ESG system respectively, and summarizes some potential risks and problems as well as the corresponding solution directions.

##### 3.1.1 Global Tesla

Tesla, as the initiator and leader of new energy vehicles, has a role to play in promoting the development of new energy vehicles that cannot be ignored. While it should have positive environmental benefits from a product perspective, thus contributing to sustainable development. However, even with its macro-level push for environmental protection, Tesla itself is not a company that values ESG. On the environmental front, the biggest problem is that its production process is not environmentally friendly. But Tesla has not committed to a carbon emissions and carbon neutrality program to date, which inevitably affects its score on the environmental front.

On the other hand, in its 2022 first quarter report, Tesla said it was under investigation by a California government agency for waste disposal issues. In late 2020, the company was also

financed 12 million euros by the German government for not recycling batteries in an environmentally friendly way. Taken together, these events show that even though Tesla has pushed the auto industry to be more environmentally friendly and green, it does not pay enough attention to environmental protection itself, which will inevitably lead to Tesla scoring lower than its peers in environmental aspects. At the same time, the negative environmental impact will also reduce Tesla's image in the public mind, which will indirectly lead to debate on social issues.

In contrast to the environment, Tesla has a lot of shortcomings and controversies in social issues. For example, it has been facing product safety and quality controversies, including delivery delays, battery design flaws, Model S crash and fire accidents, solar panel fire accidents, and safety concerns about the automatic assisted driving system. Within the Chinese market alone, there have been numerous hardware problems for Tesla in recent years, including brake failure, autopilot malfunction, battery problems, etc., which have largely reduced Tesla's reputation in the public mind. Not only that, Tesla's self-driving vehicles have been involved in a number of casualty accidents. The National Transportation Safety Administration (NHTSA) has repeatedly asked Tesla to strengthen the supervision of self-driving vehicles, and also suggested that they use the self-driving protection measures used by Ford and General Motors, but Tesla did not respond and did not make significant improvements.

In addition, Tesla's performance on worker management, health and safety issues has been unsatisfactory, with allegations of denial of health insurance for injured employees, disregard for employee privacy, and obstruction of employee unionization. In this regard, the number of violations at Tesla's California plant from 2014 to 2018 is three times the total number of violations by the top 10 U.S. car companies, according to standards set by the U.S. Department of Labor's Occupational Safety and Health Administration.

In the above series of events, both home and abroad, although Tesla is ahead of its peers in terms of technology, its performance in terms of society, employees and environmental protection does not reach the middle level of the industry. Such frequent and extensive negative news will obviously bring down Tesla's reputation and lead to a further decline in its ESG score.

In terms of corporate governance, Tesla's board independence, CEO duality and insider directors are the most significant problems, even causing shareholder proposals and legal complaints. In the case of SolarCity merger, for example, Musk, as a director of Tesla and SolarCity, eventually completed the acquisition for a high price of \$260 million. Tesla shareholders filed seven lawsuits immediately after the merger was completed, suing the company and Musk for concealing the fact that SolarCity was facing bankruptcy, overbidding for the merger, ignoring conflicts of interest, breaching fiduciary duties, and failing to adequately disclose facts related to the merger.

A sound senior management system and decision-making structure within a company is the foundation of a company's long-term, stable growth, and is also a key to the "governance" score in the ESG index. Apparently, Tesla does not meet that requirement. As a pioneer in new energy vehicles, Tesla has been kicked out of the S&P 500 ESG Index and its stock price has been low for a long time, reflecting the impact of the company's poor ESG performance on its business soundness.

### 3.1.2 BYD

As a leading company in the new energy vehicle industry, BYD has published social responsibility reports for many years since 2010 and has achieved good results in many rating systems. In March 2022, BYD became the first car company in both China and the world to

declare that it would stop producing fuel vehicles. But in May of the same year, it was embroiled in controversy over the Changsha pollution incident. It is suspected that the improper treatment of exhaust gas emissions at BYD's Changsha plant caused hundreds of children in the surrounding area to suffer from unexplained nosebleeds, even adults who also suffered from vomiting and dizziness. However, the factory refuses to admit it, insisting that its exhaust emissions meet government environmental standards. Regardless of whether the truth is caused by negative externalities resulting from the Changsha factory's improper handling of pollutant emissions, this negative incident has to some extent cast a shadow over BYD's image and also exposed a large number of ESG risks. Therefore, based on the ESG evaluation system, this paper uses the ESG evaluation methodology to analyze where the long-term sound operation and sustainable development risks of BYD enterprises lie as follows:

### (1) Negligence for related topics

Since its inclusion in the MSCI rating system, BYD's performance has been relatively good compared to its industry, with the grade it has received has always been A. However, from the Changsha pollution incident, it can be found the two issues of "labor management" are at a backward level. According to the tests and inspections BYD has received, the main health hazard on its production line is volatile organic compounds (VOCs), which are generated from the painting process in the vehicle painting workshop. However, this is not the first time BYD exposed shortcomings in exhaust emissions, there are records showing that BYD had a similar incident as early as 2016 and was punished. But after that it still repeatedly exploded as many as 13 environmental incidents, which shows that its companies do not pay attention to the problem of factory pollution.

### (2) The problem of "reporting good news but not bad news" exists in CSR reports

A good CSR report should be able to provide rating agencies and investors with an objective and effective basis for judging and investing, but according to BYD's 2021 CSR Report, the company has the problem of "empty slogans without initiatives". For example, the report states that the group's overall vision is to "meet people's aspirations for a better life with technological innovation", but there are no broken down, specific and achievable goals; besides, BYD hopes to "strictly control emissions" and "effectively reduce pollution", but there are also no relevant initiatives or data to illustrate how to achieve these intentions. In addition to the pollution incident and the negative environmental events over the years, BYD did not achieve those two goals above.

### (3) Lack of ESG risk awareness by corporate management.

Corporate executives do not systematically have data on relevant ESG governance initiatives, thus having no means or energy to manage and control them and assess performance. It shows that the corporate management has weak control over corporate ESG risks, which is not conducive to effective risk control.

In summary, the negative externalities caused by BYD's emissions have not only affected the health of the surrounding residents, but also laid a hidden danger for the safety and health of its workers. It is true that BYD's expanding production capacity has brought huge profits and made it a new energy star company, but after a detailed analysis it can be found that there are a lot of ESG risks. What's more, the handling of controversial incidents is not very appropriate, which is not conducive to the sustainable development of the company in the long run. If they continue to choose to ignore the laissez-faire approach and have an empty vision without clearly establishing environmental and social sustainability goals, their future ESG ratings will also be discredited, ultimately affecting investors' choices.

### 3.2 Major issues to explore

Controversial events can not only reflect a company's ESG risk management capabilities, but also affect investors' recognition of a company's environmental, social and governance aspects, which in turn affects the performance of a company's stock price and volume.

However, unlike Tesla, BYD's negative events did not cause much volatility in the capital markets. From the performance of the capital market, BYD fell 3.86% in A-shares and fell 5.95% in H-shares on the first trading day after the suspected pollution incident was exposed by the media. But on the next day it stabilized and rose slightly in A-shares, and rose 8.47% in H-shares at the same time. The company's share price was not affected by this negative environmental events. As mentioned earlier, not only BYD, but also the market "punitive response" to negative environmental controversies of listed companies in developing country is often not obvious. ESG failure has become the norm for A-shares.

The reason for this can be that the handling of controversial events is relatively simple, and the penalties are too low to cause significant direct economic losses or long-term deterrence to listed companies, which indirectly make secondary market investors believe that ESG controversial events usually have little impact on company development and performance.

In addition, ESG system is applicable to measure the long-term investment development of a listed company. However, at present, most Chinese secondary market investors pursue short-term profit-seeking investment with immediate effect. So they still pay more attention to financial indicators and are not sensitive to issues related to ESG controversies, which shows that ESG concept has not been fully integrated into the Chinese market that the culture of ESG investment has not been fully formed.

Therefore, this paper draws on international experience to briefly review the handling of controversies in the international rating system, thus proposing some directions for improving the contradictions in the ESG investment market in developing countries.

For example, MSCI ESG considers that the generation of a controversial event indicates that a company may have structural problems in risk management. Its approach to controversial events is to grade the severity of the event based on its impact on two dimensions, namely environmental or social, and then to deduct the critical matter score by continuously monitoring the controversial events.

Thomson Reuters ESG evaluates controversial data separately from disclosure data, i.e., ESG controversial events are scored separately to obtain the ESG controversy score, and the ESG composite score is recorded as ESGC by combining it with the separate ESG score in the absence of controversial events. This scoring method increases the weight of controversial events in the overall ESG score, while reducing the impact of corporate disclosure bias.

The S&P Dow Jones & SAM ESG Rating System indicates that if a company has a controversial event, it first measures the extent of its negative impact and then adjusts its score downward for the corresponding indicator through the MSA multiplier. MSA (Media & Stakeholder Analysis) measures how companies respond to environmental, economic and social events that have a significant impact on their financial position and core business. An MSA multiplier is obtained from a professional assessment and used to adjust the initial calculated metric scores. The greater the impact of a negative event, the greater the percentage reduction in the score.

According to the above, optimizing the ESG scoring system, increasing the weight of controversial events on ESG scoring, and adjusting the scoring according to the way companies handle controversial events is an effective way to further influence investors and companies and thus optimize the ESG investment market. In other words, ESG investment can only become a kind of value investment when the practice of ESG concept can simultaneously enable



enterprises to avoid business risks, investors to make profits and regulators to implement policies smoothly, i.e., when the three form a closed loop of benefits.

ESG investment can only become a kind of value investment when the practice of ESG concept can simultaneously enable enterprises to avoid business risks, investors to make profits and regulators to implement policies smoothly, i.e., when the three form a closed loop of benefits.

At present, there is still space for progress in ESG investment in developing countries. Enterprises and investors still need to improve their understanding of the connotation of ESG investment assessment system, which will help enterprises and investors to better form ESG consensus, thus improving ESG adoption rate and optimizing ESG investment market. Although the international definition of the connotation of ESG has not yet been unified, many organizations and institutions have put forward definitions under their own views. Through the above case exploration, this paper also composes the connotation of the system from definition, methodology and comparative advantage, providing empirically meaningful reference for the unification of ESG connotation.

## 4. Internal combing

### 4.1 Definition

ESG investment evaluation system mainly consists of three evaluation directions: environmental, social and governance, which is a new and important evaluation system methodology for China's sustainable development strategy and global sustainable development concept in practice. Compared with the traditional evaluation system that focuses only on the financial status and profitability of enterprises, ESG focuses more on evaluating the sustainable development and green economy financial capability of enterprises. It aims to provide review and guidance for enterprises, investors and social macro-regulation departments to practice sustainable development and reproduction. Since the connotation and definition of ESG is too broad, this paper will define the ESG investment assessment system from different perspectives based on the above content as follows:

#### 4.1.1 ESG is a risk evaluation tool

From the perspective of investors and stakeholders, ESG is a systematic methodology of corporate value and risk that focuses on non-financial performance such as environmental, social and governance, and can be used as a tool to assess risk. Compared with the existing traditional investment evaluation system, ESG focuses more on the risks and opportunities faced by enterprises in the future long-term development. Therefore, investors can understand whether an enterprise has the ability to develop sustainably and make a preliminary judgment of investment risks through ESG evaluation, so as to avoid investment risks caused by non-financial issues and maximize the benefits for investors and stakeholders.

#### 4.1.2 ESG is a risk management tool

From a corporate perspective, ESG integrates three dimensions: environmental, social, and governance, and provides an integrated framework for companies to monitor and manage the non-financial risks they face that are different from traditional risks. By integrating ESG into an enterprise risk management framework, identifying and fully understanding various ESG-related risks, using ratings and indices to assess the financial impact of ESG risks and performance, and then managing key risks with the help of the framework, companies can align their risk management and sustainability management, with a comprehensive understanding of



current and future ESG risks and their financial impact, thus gaining competitive advantage through effective risk management by managing risk effectively.

#### *4.1.3 ESG investing is a responsible investment*

From the perspective of sustainable social and economic development, ESG investment is measured by environmental, social and governance factors, and its intention is to control and guide the investment orientation by promoting the concept of green, society feedback and efficient governance, so that people's investment will be attracted to the enterprises with better performance in the above criteria and distant from the enterprises with pollution and undesirable factors. In this way, high-quality enterprises will receive more resources and attention, thus achieving the promotion of environmentally and socially friendly concepts. Such an investment evaluation system with the concept of sustainable development as the core idea is a concept of responsible investment.

#### *4.1.4 ESG investment evaluation system is empirical in nature*

As an instrumental methodology in the reality of sustainable development strategies, the ESG investment evaluation methodology, like most corporate strategy and investment evaluation models, has a distinctly direct empirical character, i.e. an investment evaluation system that is developed through observational analysis of research data, mathematical and empirical case studies, in order to formulate or test theoretical hypotheses, with the expectation that the results will have direct practical reference.

#### **4.2 Methodology of ESG evaluation system**

The ESG evaluation system is a graded and tiered systematic evaluation based on three major aspects: E (Environmental Protection), S (Social Responsibility), and G (Governance), and is supported by theories of Sustainable Development, Economic Externalities, and Corporate Social Responsibility. Based on reasonable information disclosure, the ESG performance of the company is measured and scored in three areas: environmental protection, social responsibility, and corporate governance, and their respective subdivisions.

#### **4.3 Comparative advantages of ESG assessment systems**

Through the control of the development rules of the financial investment field and the concept of sustainable development strategy, the ESG investment evaluation system, which was born under the guidance of the new concept of "green finance", can exercise the traditional corporate financial investment evaluation system to provide reference indicators for the capital reproduction process and capital accumulation, while paying more attention to the long-term development of the company and the combination of economic efficiency and social responsibility. Faced with the reform and development of socialist market economy into deep water, mechanisms such as market development needs to be further improved. There is still potential to regulate the financial structure of socialist market economy that the increasingly serious demographic problems under the aging trend need to be solved at the level of pension, education and housing. But the traditional performance analysis focusing only on the financial situation of enterprises is gradually difficult to cope with, especially in the context of the coronavirus, which give rise to economic development slowdown and many other problems. Meanwhile, the evaluation system of performance analysis that focuses too much on the current

financial statements of the company is macro-limited, which makes it difficult to reflect the market and society's predicted revision of the company's overall future operating earnings and non-economic earnings.

## 5. Insights and Suggestions

ESG investment in China is currently on the fast track of development, but as mentioned above, there are still many issues to be resolved, mainly exists in six main areas:

- (1) The disclosure framework needs to be standardized
- (2) Corresponding laws and regulations are not yet perfected
- (3) Lack of a credible ESG database
- (4) The standard of rating system is not yet unified
- (5) The "greenwashing" issue brings more ESG risks to investors
- (6) Lack of attention to ESG controversy data by investors

These are also major issues that many developing countries' ESG systems are facing so that are also useful as a reference. In addition, the significance of ESG system construction is to help companies to achieve sustainable development of the global economy by effectively managing environmental, social, and governance-related risks, thus calmly responding to the severe challenges they are facing globally. Especially in the current context of macroeconomic downturn with the impact of the coronavirus, international political turmoil, and frequent mini-financial crises, it is more relevant to develop and improve the ESG system.

To further promote the improvement of ESG investment assessment system in developing countries so as to achieve the ultimate goal of sustainable economic development, combining the above issues, case studies and international experiences, this paper proposes the following six recommendations:

1. It is recommended to improve the information background disclosure framework.

At present, most international ESG in developing countries is still in its initial stage, but the international ESG market has developed rapidly in recent years, which provides opportunities for developing countries to explore the ESG market. However, compared with the current ESG evaluation system in some developed countries or regions, ESG evaluation system in developing countries has many shortcomings, which requires learning from international advanced ESG evaluation experience. After a long period of development, the international ESG rating market has been standardized. And although the ESG evaluation contents of different institutions have different focuses, they all have a clear framework for corporate information disclosure. Collecting and disclosing corporate information under the framework required for ESG evaluation is an important own condition to ensure accurate ESG evaluation results.

2. It is recommended to improve the relevant disclosure policy and transition from voluntary disclosure to mandatory disclosure.

At present, some developing countries are still in the stage of transition from voluntary disclosure to mandatory disclosure, but some enterprises may conceal or falsify information that is unfavorable to them when disclosing their own information, which requires policy protection of information disclosure. In countries or regions where the ESG evaluation system is well established, there are regulations on corporate information disclosure, and they have been improved over time. Developing countries where ESG evaluation has just started should

also continue to improve their policies on mandatory corporate information disclosure to provide safeguards for ESG evaluation.

3. It is recommended to further improve ESG basic data services and cooperate to build a diversified ESG database.

The main source of ESG data is self-disclosure by enterprises. A sufficient amount of data can constitute a complete and comprehensive ESG database, which can better serve the ESG evaluation. Therefore the quantity and authenticity of basic data become the key to ESG evaluation system, which developing countries still needs to strengthen. On this basis, countries can work together to build a diversified ESG database, break the restrictions between countries, so that the ESG database can be enriched and improved, and the most critical data can be extracted quickly and easily during the evaluation process, which not only improves the efficiency of the evaluation, but also increases the diversity and reliability of the self-generated ESG evaluation system.

4. It is recommended to design assessment indicators and weights in accordance with different national situations and policy directions.

As a common green valuation index in the international arena, when selecting the ESG indexes and setting weights, it should be taking into account that not only the important indicators of international investors' concern, but also with typical localized features, so as to make the valuation system more comprehensive and practical. According to the different national conditions and economic development of each country, some evaluation indicators with local characteristics should be added or subtracted appropriately or the weights should be adjusted within a reasonable range. For example, since China is now at the stage of overall well-off, whether enterprises are involved in poverty alleviation and other projects can be used as an indicator. Not only China, but also each country has different development characteristics. Differentiated indicators and weights can make ESG evaluation more realistic and make up for the shortcomings of the current international ESG evaluation system which is not fully adapted to the different market needs of each country.

5. It is recommended to establish a common classification catalog to improve the capacity of multiple constraints.

A commonly accepted green financial classification catalog can be established to improve the comparability, compatibility and consistency of international green financial classification standards, as well as to prevent the proliferation of "greenwash" projects to a certain extent.

In addition, regulation and market should be mobilized together to curb "greenwashing". First of all, on the regulatory side, the threshold of ESG investment products should be raised by issuing relevant laws and regulations to set strict minimum disclosure standards for ESG-labeled investment products; at the same time, the assurance efforts of the independent third-party should also be strengthened by introducing a special ESG investment product green assurance agency to monitor the data disclosed by ESG investment products, thus improving its validity and objectivity to avoid misleading investors. misleading investors. Secondly, on the market side, financial institutions should make complete and truthful disclosure of ESG investment products' prospectus and other materials. For instance, funds should make clear explanation on how to choose appropriate strategies to achieve their goals and what different stock selection methods and criteria are involved.

6. It is recommended that greater weight should be given to topics related to controversial events.

The ESG scoring system can be optimized by taking reference from international experience, dividing ESG controversial events into four levels: minor, moderate, serious and very serious.

And the controversial event score should be separated from the disclosure score. By calculating the controversial event score independently and then including it in the ESG composite score together with the disclosure score, the weight of controversial events can be increased. Besides, additional points should be added and subtracted for the company's ability to deal with controversial events, and the latest ESG score should be adjusted in a timely manner to maintain the timeliness and authenticity of the ESG score.

ESG investment originated in Western, while developing countries, with emerging market economies as the mainstay, have developed more rapidly than developed markets in Western. However, since they continue to face multiple pressures such as environmental development, population density, and economic development, in addition to its later pursuit of sustainable development goals than in developed markets, there are still many areas that need improvement in the ESG field.

Especially in the current context of the epidemic, it is a severe test for the resilience, risk resistance and sustainable development strategy of enterprises. Therefore, It is even more essential for enterprises to keep pace with the times by paying attention to the merits of corporate performance, strengthening corporate information disclosure, paying attention to ESG-related risks, and strictly requiring the performance of enterprises in environmental protection, social impact, and corporate governance. At the same time, in the general environment of emerging market economies, promoting the development of ESG system to improve the sustainable operation capability of enterprises is not only conducive to effective management of ESG risks and sustainable economic development, but also responds to the global trend of sustainable investment to reduce the financing cost of projects in line with sustainable investment principles. In addition, in order to further form ESG consensus, developing countries can, under the coordination of all parties, hold seminars to promote exchanges and consensus among countries in the field of ESG, reach consensus on ESG-related topics to carry out economic, policy and academic exchanges and cooperation, thus improving economic sustainability through green finance, sustainable investment, ESG risk management, etc., which jointly enhance international competitiveness and influence.

Economic development requires enterprises to be good front-runners, and enterprises are important roles in economic development. Companies with good performance drive the development of individual industries and promote the progress of the new economy, while companies with flaws are not only riskier but also cause harm to economic development. Therefore, the adoption of ESG evaluation system and related regulatory policies can enable companies to have better performance and create a better economic engine. The development of green finance is moving in a new direction with the adoption and popularization of the ESG concept as well as the construction and application of an ESG investment assessment system model.

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## Turning to a sustainable shipping sector: Blue economy prospects in Greece

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### Abstract

*This study analyzed the transition from anthropocentric economic development to sustainable development with the central pillar of blue growth and its importance for modern societies. The study focused on the shipping sector and its need to adopt sustainable strategies promoting the European Union's policies to create a blue economy. For a deeper analysis, a case study was conducted for Greece and its shipping sector using the SWOT analysis to determine the prospects that exist for the blue transition in the country. The findings were quantitatively assessed and led to important conclusions.*

**Keywords:** Blue economy, Shipping, Greece, Blue growth, sustainability.

**JEL Classification:** Q01, Q56, Q57, Q25.

### 1. Introduction

Human societies, from the dawn of their formation, have based their wealth and growth on the environment (T. Everett, et al, 2010). In short, societies depend on the environment in various ways. Firstly, for everyday survival humans have to consume goods originating from the environment, like food and water. Secondly, creating activities closely related to raw materials and other environmental sources, what we know today as businesses, for capital accumulation and survival in a structured economy (T. Everett, et al, 2010). All sectors, primary, secondary, and tertiary, base their activities on the environment in numerous ways, showing the close relationship between humans and the environment.

#### 1.1 Transition from anthropocentric economic development to sustainable development.

Many scientists have depicted this relationship, focusing on different factors. Malthus explained how the exponential growth of population and the inability of future planet resources to suffice its needs, but technological progress surpassed this theory. Kuznets analyzed how economic growth can depreciate social sustainability, and in a diversified form of this theory, showed how economic growth without ecological awareness, can contribute to environmental pollution (T. Everett, et al, 2010). All views contain 'turning points' and 'means' to avoid further environmental degradation and societal threats. As I mentioned technological advancement, and structural changes, like less production and consumption, can alter the results of human activity. But, the most important function is behavioral changes on the basis of our societies and human thinking towards the environment, leading to today's known as sustainable development.

Until now, the above-mentioned, and mechanisms of economic development responded only to the growth of population and capital leaving the environment vulnerable to obsolescence from human activities. The term sustainability manages to solve these obstacles and change for better human behavior in all life sectors.

### ***1.2 Sustainable development and the blue economy.***

For the last decades, economic growth has taken a primary role in the pollution caused to the environment, resulting in obstacles to its development models (Paul Blaschke et. all, 2019). The growing environmental awareness has led to the conclusion that if the development models do not change, there will be no economic and social development without ecological sustainability. With that being said, current development methods will soon, if not already, become obstacles to human well-being.

Several studies have shown that most mega-cities and the majority of smaller communities accumulate in coastal areas for better utilization of ocean resources (Paul Blaschke et. all, 2019). Firstly numerous marine species are part of our food pyramid, while the local water, in various cases, is used for desalination and for water supply. Maritime transportation was originally developed for long-distance travel and was further technologically evolved before other means of travel were invented. Today, maritime transportation is strongly used for trading goods, and other activities such as fishery, and cruising (Paul Blaschke et all, 2019). Contiguity with ocean activities developed fully self-functional communities and economies today known as cities. This means that the existence of a potential port creates migration flows towards it, leading to the development of different sectors (industry, services) that support directly and indirectly the surrounding activities (G.S Dwarakish, 2015).

### ***1.3 Blue growth and its importance for modern societies***

The coexistence of a port and a structured community close to it can create a causality relationship between both sides as mentioned above. This causality has externalities, to the regional environment, I will consider direct pollutants the ones from the ocean activities due to the port's existence, and indirect pollutants the ones from the supporting land activities of the city. Direct pollutants can be water and energy waste from the port, and also sea contamination from ship corrosion and chemical leaks, which can lead to the obsolescence of fish populations and biodiversity. Indirect pollutants can be gas emissions or chemical leaks from the city and industry activities, with even more pollutants that won't be mentioned. In conclusion, the existence of a port with its shipping activities, and the current societal structure lead to constant environmental contamination. As I mentioned above this is also a problem for local communities, due to their dependence on environmental resources. A weaker environment and contaminated sea populations firstly lead to surplus and demand issues and in long term will lead to economic recession. Then, the regional society will face increases in poverty and inequalities. It is made clear that the sustainability of human activities is even important for our societies, which leads to the conclusion that both ports and cities have to develop sustainable activities. This study also focused on ports as part of the shipping industry.

### ***1.4 Sustainable development goals and the term of Blue Economy***

The term blue economy refers to the sustainability built around ocean-related sectors, as stated by the World Bank. It's the transition of blue sectors, the ones that are interacting with the sea, towards sustainability, in a way that ocean activities won't be a threat to the sea's ecosystem's balance, and will steel provide means for economic growth. The blue economy is essential for the environment, economy, and society, in a way that is explained by the holistic nature of the seventeen sustainable development goals (David O. Obura, 2020). Several scientists have connected the 17 SDGs with the term Blue economy, and not only the directly related ones, SDG 14 (life below water) and SGD 8 (decent work and economic growth). (Ki-Hoon Lee et all, 2020)

The holistic nature of SDGs shows that a transition to sustainable blue growth will eventually lead to economic growth, environmental wealth, and even poverty and inequality reduction (David O. Obura, 2020). Firstly, a well-functioning sector with new supporting jobs, 'blue jobs', will provide income to many civilians, and will boost the economy's growth. For the private sector, sustainability works like a competitive advantage that attracts more customers, and investors interested to cooperate with such companies, and in long term other companies adopt such strategies. Over time, a sustainable blue

economy is built, that supports social well-being, without intensifying environmental threats and degradation, impacting all seventeen SDGs.

### ***1.5 Sustainability in the shipping sector.***

The shipping sector contributes just 3% of global transportation gas emissions (IMO, 2018), an insignificant amount at first sight. But the industry contributes to various ocean sectors and provides services to other sectors as well. Fishery, ocean mining, offshore, and many other activities like tourism need the shipping sector's services, which makes the shipping sector's blue transition important (K. Johnson, et al. 2018).

The form of the sector's activities can depict environmental sustainability in the shipping sector. Ships and ports must be environmentally healthy, due to the first overseas activities and the latter as a magnet for ships in a region, which leads to the reshaping of the industry to a lesser polluting one. The shipping sector must alter its fuel sources to more environmentally friendly ones, optimize the water and energy management in the ports, minimize the gas emissions and other pollutants from vessels, and complete vessel recycling. The goal must be biodiversity and ocean population protection, and stability of the ecosystem. (H. N. Psaraftis, 2019)

The shipping industry must be socially and economically sustainable to be considered a blue sector (H. N. Psaraftis, 2019). Firstly, healthy operation in an easily accessible market and cooperation with other sectors will sustain economic growth without creating market failures. Secondly, safety and security of employment and healthy conditions in the work environment can secure jobs that will provide individuals with healthy and sustainable work environments. Free trade has already secured various countries with utilities and goods that helped inequality and poverty reduction, and overcome existential issues. The above mentioned, among others, are some sections that sustainable shipping can positively influence. (H. N. Psaraftis, 2019)

## **2. Data and methodology**

A case study of Greece's shipping sector was conducted through the method of SWOT analysis. The country was chosen due to its ocean activity's contribution to the national GDP, and the importance of its shipping industry worldwide, information that is further analyzed below. Another reason was that most of Greece's megacities and various smaller communities are built on coastal areas for the optimal utilization of marine resources, depicting the dependency of the Greek economy on the ocean environment. Considering all the above, a strong environmental awareness and action must be part of the country's activities, because its economic growth depends on environmental wealth. This study aimed only at the shipping sector as a part of Greece's blue economy, and to answer whether the shipping industry is mature enough for a sustainable transition and how close the activities are to the term blue economy.

In the S.W.O.T. analysis findings from other researchers, related to Greece's shipping activities, were categorized as strengths, weaknesses, opportunities, and threats, depicting the sector's state. Organizational reports were also used for behavioral absorption from both stakeholders and external organizations.

### ***2.1 The Greek shipping industry.***

Greece's blue sectors provide jobs to approximately 300000 individuals and contribute around 7% of the country's GDP. The shipping sector, on 2022, was reported to own 5514 vessels (Union of Greek Shipowners, 2022), and approximately 700 of them have a national greek flag (UNCTAD, 2021). The greek shipping industry plays an important role in the global shipping sector, owning 21% of the global fleet, and 59% of the EU's fleet (Union of Greek Shipowners, 2022). The magnitude of the Greek fleet depicts the reasons why Greece's shipping sector must be influenced toward sustainability.

### 3. Results

#### 3.1 IMO's and EU's regulations.

The latest sustainable strategies contribute, directly or indirectly, to the 17 sustainable development goals due to their exact depiction of the term 'sustainability' for human activities.

The international marine organization has already, since 1970, managed to bring the term sustainability to the marine economy through conventions, regulations, and laws that apply to the participant countries (European Maritime Safety Agency, 2021). Gass emissions reduction, shipwreck pollution management, biodiversity, and coastal communities protection are the main goals of the IMO and today are applied in many European's union countries.

Greece is a member of many conventions related not only to sustainable shipping but also to other ocean activities and is currently applying the corresponding laws and regulations. The Greek ministry of marine affairs and insular policy (2021) has already structured strategies for the IMO's regulations implementation. MMAIP aims to create a monitoring unit that will cooperate with other units for the optimal implementation and improvement of the laws (Ministry of marine affairs and insular policy, 2021).

European Union also applies laws for marine activities, that exert more influence, due to the fact that they are flag blind, thus, EU restrictions must be fulfilled by all companies, ports, and ships that are part or entering EU's territories (European Maritime Safety Agency, 2021). The European Green deal, and other regulations, aim to gas emissions decrease, water, and energy waste management, environmental quality, etc. In the field of social sustainability, the EU strives to preserve free trade and extend it by conducting deals with third countries, and is also aiming to ship recycling, through the creation of recycling companies (European Maritime Safety Agency, 2021).

Both IMO's and EU's laws are hindered by the lack of supply companies to reach the immersing demand for alternative sustainable fuels and recycling centers (Union of Greek Shipowners, 2019). Countries are led to unfulfillment of the regulations, preserving social and environmental unsustainability, and that can be seen through the 17 SDGs report for Greece. All goals are unfulfilled and the ones closely related to the blue economy have major challenges to face ahead before they are considered complete (Sustainable development report, 2022).

#### 3.2 S.W.O.T. Analysis.

##### 3.2.1 Strengths

Greece's biggest advantage is its geographical position, which has helped the greek shipping sector to grow in the number of vessels and the use magnitude of greek port activity, as stated above Greek companies own 21% of the global shipping fleet (Union of Greek Shipowners, 2022).

Most companies already apply EU's and IMO's regulations for sustainable shipping, sustainable vessels are already a small part of the greek fleet (Union of Greek Shipowners, 2022). The same applies to the greek TEN-T ports that have already altered their activities to avoid huge environmental impacts and waste of resources. A great example is the port of Igoumenitsa with the ALFION project, which aimed at water and energy management, decreasing the waste of resources per activity, even though the activities increased. It is understood that Greece has already made the first steps to sustainability.

A great strength of the sector is that most companies are middle-sized enterprises, which leads to a perfect competition sector with open market entrance (C. Pissaridis, 2020)). This is something that stakeholders also state, for a number of subsectors, like bulk carrier activities (Union of Greek Shipowners, 2022). The shipping sector is usually insignificantly affected by government policies, as stated by the Pissaridis development plant in 2020, leaving the sector to operate freely without governmental influence.



### 3.2.2 Weaknesses

Greece has a weak legislative framework for sea activities, like shipping, that can lead to dangerous navigation, violation of laws, and accidents. As observed by the Archipelagos institute, the lack of control organisms contributes to illegal activity and environmental degradation. Most importantly, weak control mechanisms can refute any statement and activity that denotes as sustainable or legally compliant. As it is absorbed in D. Banousis' (2019) research most Greek stakeholders in various blue sectors, don't fully understand the term blue economy and by that, sustainability can't be completely depicted in current plans.

The term blue economy is also insignificant for the public sector and the government. In the last governmental development plan (C. Pissaridis, 2019) the shipping sector's growth wasn't a 'priority', and the blue economy term wasn't included in the plan, showing that even though environmental sustainability is a priority, there is no direct plan for ocean sustainability and blue growth in the shipping sector. Greek shipping is at a comparative disadvantage and left behind in sustainable policies, these slow down the process of transition to the sustainable blue economy, as there are more problems to be solved to have positive results.

### 3.2.3 Opportunities

Greece's biggest ports, as mentioned, are surrounded by big cities with sectors that can contribute to the transition to blue growth. For example, various universities, research centers, and start-ups can be involved with research plans and investment proposals, which will eventually lead to sustainability, not only environmental but also social, due to new job positions. Close industrial zones and other sectors in the city can also provide the means for extending projects like the Igoumenitsa port, or monitoring shipping activities close to the port.

A great opportunity for social sustainability is the magnitude of the greek fleet and the EU's regulations. As I mentioned above, these regulations are flag-free, and the EU also reports that extension of free trade is a priority (European Maritime Safety Agency, 2021), while Greece's massive fleet provides services globally. EU's extension of free trade will allow the Greek fleet to grow, even more, to provide services to more countries in need, leading to inequality and poverty reduction. EU's environmental regulations will secure the sustainable and ethical growth of the sector, influencing a big part of the global shipping fleet. The holistic nature of the SDGs shows that each SGD can influence the other, meaning that social, economical, and environmental sustainability co-exist and grow together (David O. Obura, 2020).

Potential cooperation of the social enterprises with the shipping sector can provide economical and socially sustainable growth. Most SE employees are highly educated and can contribute to various sustainable projects (D. Banousis et al, 2016), mainly in close-distance shipping, mostly helping the Greek environmental, economical, and social communities. Lastly, MMAIP's plants are still considered opportunities, due to their non-application in this specific time period, from the provided resource material.

### 3.2.4 Threats

The past two years have shown that the shipping sector is indeed sensitive to demand and supply volatilities (K. Johnson, et al. 2018), geopolitical affairs, and worldwide issues like COVID-19 (Union of Greek Shipowners, 2019). With that being said, the shipping sector is threatened by the pandemic's demand and supply changes, like the need for medicines. Another issue is the trade wars that can evolve between countries, which will have a social impact, due to the inability of the sector to provide services to countries in need (Union of Greek Shipowners, 2019). Environmental disasters can be considered indirect threats that can affect subsectors or 'customers'. External factors are threatening the shipping activity, but they also indirectly affect the blue transition creating various obstacles that disorient the industry.



Another threat is that industries in international competition tend to decrease their environmental impact by transferring it to other countries or making false statements about their sustainable activities. It can be addressed as 'greenwashing' (Kenton W., 2022), and it can refute the company's statements and reports. That virtual sustainability is also addressed as a 'race to the bottom' environmental Kuznets curve, where a country's economic growth doesn't affect the environment, meaning that there is no improvement due to the outsourcing of pollutants to other countries still leading to environmental degradation (T. Everett, 2010). That is a threat to the shipping industry because the companies are working under perfect international competition, and sustainability can be considered a competitive advantage for a company, without actually investing in it.

#### 4. Conclusions

The findings can be considered imbalanced. Greece has indeed adopted blue strategies, and the private shipping sector has included sustainability in its plans, but several gaps exist that can undermine them. There is also no clear answer to Greece's state about the blue transition.

Greece's shipping industry, as a private sector, is working towards a sustainable blue sector, through the alignment with EUs strategies, and with alternative sustainable investments. As greek stakeholders state, new investments for environmentally friendly vessels are being made, that meet the EU's and IMO's sustainability expectations, and with the EU's flag-free laws, it can be assured that a big part of the global fleet is indulging sustainable regulations. The involvement of the ports is also important environmentally, mainly for the mediterranean sea where the greek ports are placed. The already implemented strategies and the opportunities that exist can extend the Greek shipping activity sustainably.

The government is applying environmental regulations without investing in the shipping industry's development through blue growth, slowing down the adaptation process due to a lack of governmental 'investments'. Secondly, the Greek legislative system doesn't protect the ocean, regional communities, and the sector from illegal activities. Archipelagos institute (2010) observed a big amount of ships that traveled without a flag, and the Aegean sea is prone to accidents, due to Greece's lack of control organisms and a strict legislation system. This comes to contradict the above paragraphs because even though some first steps are being made, there are big gaps in important factors that structure the sustainability of the sector.

In conclusion, Greece has already started the blue transition, with the existence of essential gaps, that seem to place the sector's state at a very early stage. The opportunities that exist can indeed provide the means for a faster and optimal blue transition, which will also help the Greek shipping sector to become also economically and socially sustainable. The clarification of the term blue economy is still unknown or incorrectly translated, thus companies and governmental organizations must understand the importance of sustainability, and not falsely use it as a competitive advantage.

Further research is needed to address whether Greece is aligned with other countries. It is necessary to examine whether Greece is at a good level compared to other countries of the European Union, but also countries with similar size of shipping fleets, for strengthening the conclusions about the stage of Greece's transition to the blue economy through the shipping sector. A deeper understanding of the stakeholders' and companies' perspectives, as well as the government's, is also important, for addressing their perception of the term blue economy.

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## The Covid-19 Pandemic as an opportunity for a judicial reconstruction; From the legal concerns of J. Habermas to the cultural opportunity of D. McAdam

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### Abstract

*One of the main goals set for achievement by the UN by 2030 concerns institutions and justice. The present thesis aims at a theoretical proposal for the reconstruction of the law, based on the judicial and communicative theory of J. Habermas. Initially, it describes the more general theory of Habermas, which, starting from the Kantian concept of rational communication, results in its political and judicial expression. Next, the concept of "cultural opportunity" is described, by analogy with the "political opportunity" introduced by the works of the theorist of social movements Doug McAdam. The aim is to propose, on the one hand, a view of the legal order, as an entrenched expression of the will of society, and on the other hand, a cultural exploitation of the recent Covid-19 pandemic, for the realization of the Habermasian proclamations. The pandemic, that is, which has dynamically brought to the fore the concept of diaspora in the community and reminded us of the obligation to respect the rights of the Other, can be the cultural opportunity for the rational reconstruction of the law, with its contribution to the revival of important forgotten concepts, such as that of the Community and our rational communication.*

**Key words:** Cultural Opportunity, Habermas, McAdam, Law, Pandemic.

**JEL Classification:** Z13, Z18, Z19

### 1. Introduction - Origins and objectives of Habermas' theory

The German philosopher Jurgen Habermas, through his voluminous and multifaceted work, developed a philosophical theory based on rational communication between free Subjects, which would differ from previous theories that examined the rightness of human actions from a Subject-centered and intuitive point of view. This new intersubjective and communicative theory was eventually introduced in his monumental work "The Ethics of Communication" (Habermas, 1997) and brought new ideas to the field of Western intellectualism.

Western philosophy, which after Descartes was unable for years to leave the perspective of the solitary knowing Subject, combined with the denunciatory discourse of the Frankfurt School, prompted Habermas to seek an alternative course of examination of both social ontology and reason, on an objective basis, which would be outside the individual and at the same time shaped by it (Potamianou, 2004). In this direction, he explored the possibilities of language, borrowing elements from Wittgenstein's analytical philosophy, believing that this communication, through the rational understanding of the acting Subjects, could raise claims of universality (Dolas, 2008). He therefore elaborated a new theory of truth, according to which there was a shift of epistemological interest from the relation of the knowing subject to objective reality to the relation of rational understanding between subjects and their views. In other words, the truth becomes a "claim of power raised by the interlocutors", which remains to be critically examined on the basis of the "best argument" (Stylianou, 2002). The roots of course of this project go deeper than the time of Habermas and can be traced back to the monumental work of Kant, who was the first to try to reconcile the concepts of the subjective and the objective through the concept of Critical Ability (Kant, 2000), which would bridge cognition and theory with Reason

and Practice (Dolas, 2008). Building on the above thoughts, Habermas proposes a new theory, the communicative theory, establishing the field of intersubjectivity of the "area" that lies outside the boundaries of the individual person.

### 1.1 Communicative Theory

In developing his positions on the Ethics of Communication, Habermas distinguishes two central axes, as Stylianou rightly observes (Stylianou, 2002). The first concerns a theory of society and around this the German philosopher sets out his views on social evolution and social phenomena, moving away clearly from Marxist positions, while at the same time making an effort to demonstrate the reasons that make linguistic communication appropriate and necessary nowadays. The second concerns a theory of language, which Habermas elaborated in detail, and relates to the inherently intersubjective - and therefore communicative - use of language.

Having developed these thoughts, Habermas extends his reasoning even further, entering the field of social ontology and moral -political action in particular. As emphasized, the new ethics proposed by the German philosopher is intersubjective and constituted in non-subject-centered terms. This has implications, as is logical, for the perception of what is right, which is no longer set outside the individual and is a goal to be achieved, and is composed by all the individuals involved in the communicative process, since they all co-create their common 'truth'. Thus, the rightness or wrongness of an action is removed from personal meanings and is based on the communication of people, no longer on the basis of their personal beliefs but on the basis of what has been proposed; on the basis of what has been pre-agreed, which will make communication between them possible (Dolas, 2008). Habermas thus proposes a peculiar social contract, which will no longer concern the rulers and the ruled, but all participants in the social process, all those involved in the public sphere.

In order to strengthen these thoughts, Habermas knows that he needs to delve further into the subjective application of his theory, that is, its reception by the social. In studying a process of the emergence of the Subject, he suggests that a legitimate way to act is through the perspective of the other, through the development of a particular moral empathy (Dolas, 2008). This is, according to Habermas, the most ideal way of internalizing external and institutional norms, since subjective behavior will reflect the external communicative ethics that is required for communication to be possible. He thus manages to analyze self-consciousness in terms of communication rather than metaphysics, as was the case with the philosophers of Modernity.

Another crucial issue that Habermas addresses is the separation of agency into two categories and also touches on the subjective view of citizens. On the one hand, Habermas understands that people engage in a series of rational acts with a private purpose in mind, and on the other hand that they sometimes orient their actions towards their rational communication. The first, Habermas calls instrumental agency because of the instrumental use of rationality to serve personal ends. The second one he calls strategic, as it is through this that it will be possible to achieve overall communication. If people's action is unambiguously oriented towards serving their personal interest, then it would inevitably be immoral, since individuality would be projected at the expense of intersubjective well-being. Therefore, in order to ensure the morality of goals, subjective goals must be reconciled with social goals and thus, not only to achieve but also to constantly strive for communicative intersubjectivity (Outhwait, 2004) (Dolas, 2008).



## 1.2 Law

These views of Habermas were naturally extended to the field of law. Continuing his reflection on the rational application of law by citizens, he inevitably enters into an earlier theoretical debate on what law is, what is its relation to morality and whether it is applied obligatorily or voluntarily by citizens (Pantazopoulos, 2022). In attempting to demonstrate the dynamic and voluntary participation of citizens in the shaping of law, it resorts to a series of steps. First, he understands that an act must not only be legal, but the agent "must act not only obligatorily, but also spontaneously", that is, there must be a moral impulse (Dolas, 2008). In this way, Habermas distances himself distinctly from the prevailing 'command theory' of his time, according to which law is exhausted only by the commands of a political sovereign to his subjects (Bix, 2007) and argues that the fusion of morality and law is possible, arguing that morality is only possible through the application of law (Dolas, 2008). Habermas proposes a liberatory view of law, whereby through the mutual assignment of certain rights for the sake of their harmonious coexistence, people will regard law as a necessary condition of their rational communication. In other words, the existence of the rule is a necessary condition not only for the containment of absolute egoism but for total communication. Thus, human rights are not exclusive to individuals but derive from agreements that result from rational consultation (Dolas, 2008).

Habermas emphasizes the unifying dimension of law for the societies, saying that only the sense of voluntary enactment of self-limiting rules can create a sense of unity for them. He also stresses that Western civilization has reached a point of rational organization of its society, so that law constitutes a "post-conventional" cognitive domain, since it is organized according to principles that can be fully justified (Athens indymedia, 2007). Finally, it is worth noting that the state should ensure the institutionalization of rational communication of citizens, the legal crystallization of their expressed communicative statements (Habermas J., 2006). Therefore, law is the institutional result and the theoretical precondition of rational communication, resulting from the mutual restriction of certain rights for the benefit of the whole and its rational institution.

In conclusion, Habermas elaborated a communicative theory that would break through the narrow limits of the unbroken individual-centered and subject-centered view of morality and law and examine them on a rational and intersubjective basis. This perspective is quite radical not only because it opens new horizons for the political self-understanding of citizens but also because it puts them in front of their responsibilities for the rational organization of their society.

## 1.3 Cultural Opportunity

The peculiar crisis condition that occurred during the spread of COVID-19 has had a catalytic effect on the way we perceive ourselves not only as such, but also as part of a larger whole. If anything has become clear in recent years, it is largely the uncertainty and inability to anticipate developments. For this reason, although no one is in a position to draw safe assumptions or know what is going to happen, we must acknowledge the imprint that the coronavirus pandemic is already leaving on the course of history. Undoubtedly, crises such as this have proven not to leave the character and identity of society unchanged. A sense of fear has now become embedded in the collective unconscious due to the current health crisis, as well as multiple crises - economic, climate, etc. - of recent years. This paper, among other things, highlights the necessity of restructuring society and the reconstitution of the ecology and composition of the community, in terms not only of medical but above all collective, on the basis of communication. Such an attempt is articulated in the writings of the internationally renowned political scientist of social movements Doug McAdam, who - like many other analysts - engages



with the concept of social movements and tries to understand their ontology and etiology. In short, their nature<sup>1</sup>.

McAdam has been prolific and widely known within political theory for his concept of 'political opportunity', as well as for his contribution to the study of movement organization and formation. Despite the fact that it focuses on kinematic action and under what conditions it can be favored in the political system, it also introduces the central concept of this project, that of "cultural opportunity" (Papanikolopoulos, 2020). In particular, as he states, the concept of cultural opportunity consists in *"dramatization of a downward contradiction between a high cultural value and ordinary social practices"* (McAdam, 1994). This dual condition is crystallized on the one hand in the existence of a high cultural condition, in this case Public Health, and on the other hand in an ordinary social practice, i. e. the usual way of making sense of individual rights by the average citizen, which culminates in a contradiction between them. Although at the political level conditions are evident that constitute opportunities for restructuring the system and for the formation of social movements, as for example classical theorists point out in the cases of intense industrialization and urbanization at the beginning of the 19th century (Kornhauser, 1959), corresponding political opportunities can work in a way favorable to excluded groups, either by undermining the stability of the political system, or by increasing the influence of an individual rebellious group. Since, of course, in the first case conditions of political crisis are fueled, the aim is to achieve the second (McAdam, 1982). The distinguishing difference, then, with similar cases of political opportunities lies in the fact that cultural opportunities trigger fundamental social changes, not on the basis of political positions, but on a high cultural reconceptualization.

Having made clear how the two cases above can be differentiated, a number of questions arise - whether, for example, cultural opportunities are shaped by the wider political system or to what extent they retain their autonomy from it (Bourdieu, 1996). Furthermore, are there periods and circumstances when cultural opportunities are more favorable or recognized and therefore more easily exploited for social reconstruction? The common denominator in this distinction is the recognition of opportunity as such. No circumstance, however objectively clear, can trigger the corresponding mobilization if it is not visible to the actors and perceived, indeed, as an opportunity (Hollands & Vail, 2012). Of course, people and the subjective meanings they attribute to their situations mediate between action and opportunity (McAdam, 1982). By extension, it is not the antecedent bonds and group structures that mobilize people, but the interactive frictions and discussions that take place and succeed in creating shared meanings, concepts and collective identities that feed and legitimize collective action (McAdam, 2001). However, we should clarify that opportunities support the organization and constitution of movements, since they do not provoke but facilitate their manifestation (Seferiadis, 2017).

This project seeks to highlight the pandemic as a cultural opportunity and to use it for the implementation of the Habermasian promises on the rational reconstruction of the law and the revival of the community. By reiterating the definition as formulated by McAdam himself, the contradiction between Public Health and the way the average citizen understands individual rights is no doubt expressed in a leading issue. The experience of recent years testifies to the birth of this gap due - among other things - to the weakening or even lack of the concept of community. Its importance clearly lies in the fact that it is at this level that coronavirus control measures are implemented and thus the spread of coronavirus is prevented. This period should

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<sup>1</sup> For a thorough review of movement theory see. Seferiadis, S. , "Confrontational politics, collective action, social movements: an account", Hellenic Political Science Review, 27 (1), (2017): 7-42, as well as the main works of the prolific McAdam, cf. for example: McAdam, D. 1982. Political process and the development of Black insurgency, 1930-1970. Chicago: University of Chicago Press.

therefore be recognized as a cultural opportunity that aims to reinvigorate the community and rethink the way in which each individual perceives himself or herself as an individual and ultimately as part of a larger social whole.

## 2. Data and Methods

The subject of this paper is investigated, analyzed and evaluated through the study of a numerous of bibliographic sources. In this project it is considered that the best way to achieve its goals, considering its nature, is carried out through the process of literature review. Drawing material on the one hand at the primary level from the monumental work of Jürgen Habermas and Doug McAdam, on the other hand from a plethora of secondary sources, the delimitation and establishment of the theoretical framework is achieved, which in turn makes it possible to study the central theme. The analytical engagement with the bibliographic material establishes the theoretical framework that preceded it and contributes to the critical approach of its principles in the attempt to highlight the importance of the Community and how it can be reconstructed.

## 3. Results and Discussion

The new situation that has been shaped by the Covid-19 Pandemic has created new concerns among citizens regarding their institutional self-understanding but also about the terms of their political cohabitation. The epidemiological data that emerged on a daily basis created anxiety and insecurity among citizens (Dionysakopoulou, 2021), while the restrictions imposed, mainly the curfew and compulsory quarantine, raised questions regarding their legality and constitutionality. There were many cases of citizens who rushed, as soon as the Pandemic broke out and the request for the impending restrictions arose, in search of various legal texts, on which they based the inalienable and non-negotiable right of their self-determination. Although the debate on the correctness or legality of restrictions is impossible to expose here, let alone coincide with the individual views on correctness of the communicants, especially in an era of post-truth, what matters is the way in which (Dionysakopoulou, 2021) some citizens have treated the concept of rights: as irrefutable, defensive and protective mechanisms, against a power that they considered exogenously, that is, that it is exercised fraudulently and oppressively, against their freedoms, with the result that they cannot understand the legitimacy of restricting their rights, when this is required by exceptional circumstances such as the Pandemic. Automatically, then, we would say that, in relation to limitations, they adopt a view of the law, which is more akin to a theory of imperatives than to a voluntary application of the law, the claims of which they are even unable to understand, in full the so-called absurdity of the limitations and their constitutional provision. In other words, they do not understand their participation in the rational constitution of the law and put forward an individual-centered and insightful prospect of its conception.

On the other hand, the epidemiological data that were in the center of interest with the outbreak of the Pandemic, brought citizens into first contact with the forgotten concept of *Community*, since, as is well known, Public Health does not care individually about each Citizen but focuses on the health image of the whole community (A. Philalithis, 2020). The spread concerns an event by definition intersubjective and the concept of Health ceased, by virtue of a contagious virus, to concern exclusively the sick. Furthermore, it was shown that, due to the pandemic, people trust experts more (Wellcome\_Global\_Monitor, 2021), which reinforces the rationality of citizens in their thinking and action. This seems to reinforce Habermas' view that modern science (in this case medicine) is a 'post-conventional' cognitive domain, since the majority of

citizens perceive it to be based entirely on completely demonstrable principles. The new health situation therefore brought to the fore some positive elements, which could be used as cultural acquisitions for the post-covid era.

Based on the above, we are able to argue that, with the cultural exploitation of the Pandemic and some aspects of it, we can be optimistic about a dynamic rationalization of the law and a participatory and communicative reconstruction of it. Citizens' communication, if based on the principles of their free and equal participation, can bring about a substantial change in their institutional self-understanding and, therefore, a significant change in their legal thinking. In other words, if it becomes possible, on the occasion of the pandemic, to reconstruct the concept of community, equal members of which we are all, and to rethink the concept of the Other, whose life is as important as ours, then it will be easier to realize that for the sake of Others we are called, on the one hand, to institutionalize and on the other hand to balance our individualities. And then it may be possible to listen to our legal culture pedagogically by reflecting on certain social dimensions that have been more or less forgotten.

#### 4. Conclusion

With the sweeping passage of postmodernity and the parallel abandonment of all the great theoretical narratives that defined modern thought, modern man is called upon to reconceptualize many aspects of his life, with the aim of finding the best possible way of organizing both his private and political life. Jurgen Habermas, who dealt extensively with the constant reformulation of these demands and confronted with the most important theoretical schemes of the older than himself thinkers, proposed his communicative theory, in an attempt to liberate modern man from previous conceptual rigidities and to bring him to the forefront of political and social creation. This will be made possible by the use of language, which will be the most important tool for virtual communication and the free and equal participation of all in the public debate.

At the same time, the Covid-19 Pandemic, which unexpectedly broke out around the globe, brought about significant changes in the way citizens perceived the legal order and confronted them with concepts with which they had not previously confronted. The most important of these is the forgotten concept of community, which in so many aspects has been declined, due to postmodernity, which promoted individuality at all levels of human life.

However, with the concept of cultural opportunity of Doug McAdam as a vehicle, it may be possible to exploit certain aspects of the Pandemic, for the benefit of society and citizens. Although in the most brutal way, this new sanitary condition has brought the concepts of the common good and common security to the forefront, through the strict imposed restrictions, these concepts can and is possible to use them culturally, for the optimal reinterpretation of social reality. And Habermas's theory, we believe, can be an ideal tool in the above process.

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## On the impact of economic globalization on the sustainable development of enterprises

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### Abstract

*Economic globalization brings opportunities and challenges at the same time. As an important measure of economic development, how enterprises should respond to the challenges brought by economic globalization is something that all enterprises are constantly exploring and studying. As a connector, economic globalization provides a platform for China to communicate with international exchanges. Multinational companies, as the protagonists of economic globalization, can implement the localization model to develop markets in the face of different regional differences and cultural differences, and in the face of suspicion and mistrust of customers in foreign places, enterprises should persevere, put their own core competitiveness into practice, and gain customers' trust with strong strength. As an enabler, it has a great impact on small and medium-sized enterprises, which are already facing difficulties in financing, lack of innovation, and lack of "craftsmanship" among employees, and it has expanded the competitive market for small and medium-sized enterprises. In the face of all the problems, companies can take advantage of economic globalization to meet this challenge by developing financing channels through the huge market, introducing excellent foreign technologies, achieving digital transformation of enterprises, and taking advantage of their small scale to spread their footprints all over the country. As participants, state-owned enterprises are the first to bear the brunt and need to reform to adapt to the economic globalization, and in the face of the dilemma of "political" and "economic", the problem can be solved by the innovation of management models, such as classification and regulatory reform, and more open and transparent information disclosure.*

**Keywords:** Global economicization, business, sustainable development

**JEL Classification:** G14,G15,G38,M21

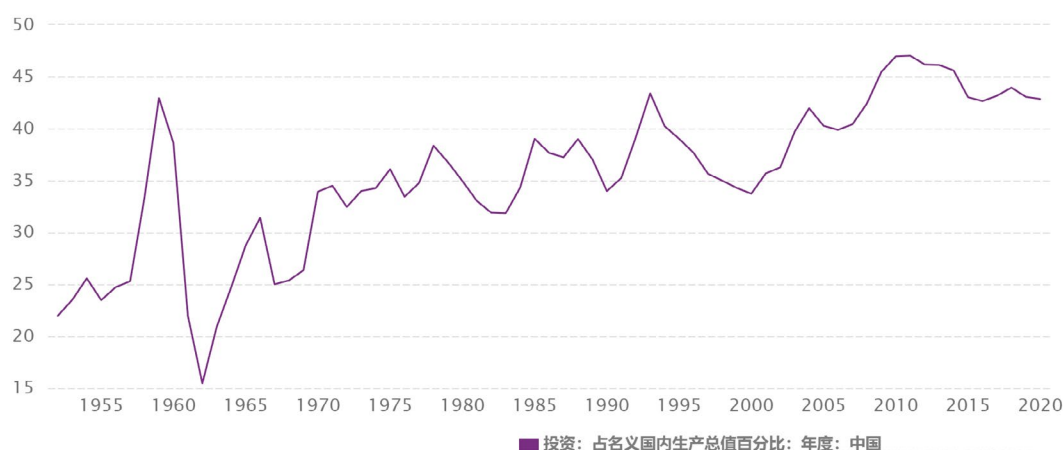
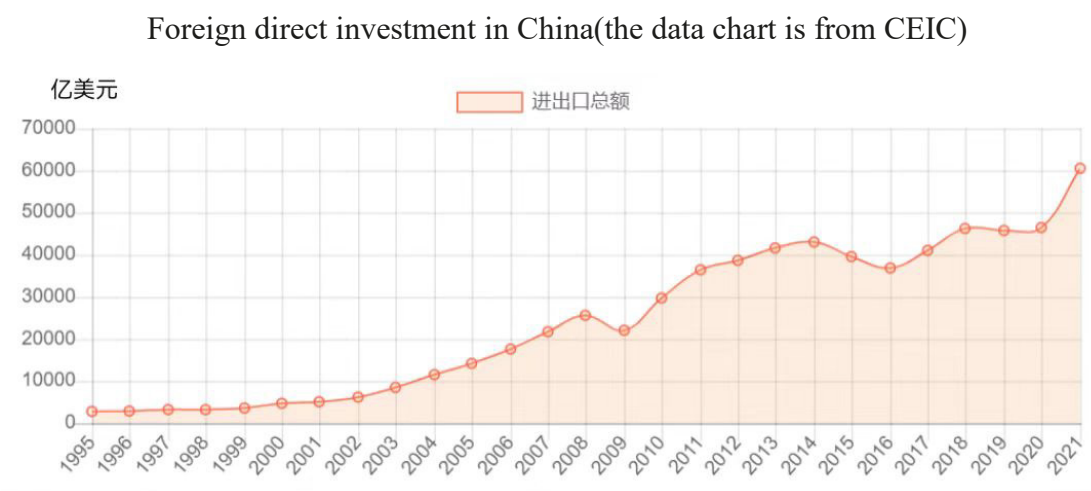
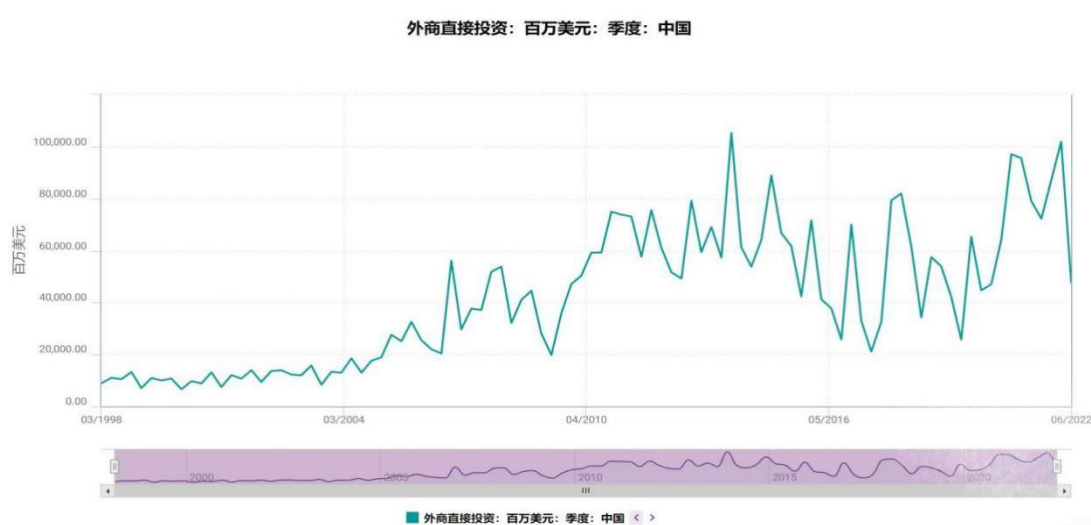
The arrival of the coronavirus pandemic has hit the national economy hard, and the promotion of sustainable development of enterprises is facing more challenges, which is a problem faced by all countries in the world.

### 1. Economic globalization and sustainable development of enterprises

Economic globalization, as a manifestation of the globalization in the economic field, specifically refers to a development trend of a global scale system of economic activities across national borders through the processes of international trade, capital movement, technology transfer and service trade. [1] In foreign countries, scholars now commonly use KOF globalization indicators to study the impact of globalization on economic growth. In the KOF indicator system, economic globalization is measured through two indicators: foreign direct investment and import and export trade volume. A graphical study of the data on both foreign direct investment and import/export trade volume shows that the overall trend of economic



globalization has been on the rise in recent decades, and its impact on China's economic development has been increasing.



The concept of sustainable development was first introduced in the World Outline for Nature Conservation, published in 1980. Later, in 1987, the World Commission on Environment and Development (WCED) published "Our Common Future", in which the concept of sustainable development was formally used. In the context of global warming, the focus area of sustainable development lies in environmental protection. It is only in the past decade that, under the influence of globalization, the call for "community of human destiny," "mutual benefit and coexistence," and "common prosperity and common prosperity" has become increasingly vocal. Since then, scholars at home and abroad have been conducting research on sustainable development of enterprises. Among them, a representative one is Cohen (2008), who suggests that corporate managers should break through the narrow prism of corporate governance and explore a broader governance mechanism for sustainable development.[2] The second is Wagner (2009), who elaborates on the issues related to sustainability governance in his paper and calls for corporate boards to enhance their understanding of sustainability.[3] Domestic scholars' research on corporate sustainability governance mostly starts from corporate governance to explore the sustainability of corporate development. Feng Xuan (2008) explored the corporate governance factors affecting the sustainable development of listed companies in China, and she concluded that a sound corporate governance structure and effective governance mechanisms are the driving force for enterprises to achieve sustainable development, and this is used to measure the ability of enterprises to develop sustainably.[4]

## 2. The role of global economization in the transformation of enterprises to sustainable development

### 1.1 Connectors

As a connector, economic globalization connects trade, capital, technology, information, and services across national boundaries, providing China with a platform for international economic exchange. Multinational enterprises are the main carrier of economic globalization and the main force of global economic development. As a business entity integrating production, trade, finance and technology development, multinational corporations are the most active participants in the world economy and the most important power carrier of contemporary international economic relations. With the "double cycle" proposed, the role of multinational corporations is particularly important. The development of multinational companies in the macro aspect can promote the world economy, promote the development of international capital flow, accelerate the process of economic integration; in the micro aspect, can drive the development of the national economy, effectively solve part of the employment problem, to learn more about the diversity of technical information, but also help to reduce the problem of information gap. In the United States, the largest 50 multinational companies accounted for 63% of the United States foreign investment, the United Kingdom accounted for 71%, Germany accounted for 51%, Australia accounted for 96%. Through their global financial trade, multinational companies promote the global allocation of resources and deepen people's sense of identification with economic globalization. [5]

Take Huawei, a giant in the field of communications, as an example. Ren Zhengfei once said: "A company needs a global strategic vision to be strong; a nation needs to learn the essence of global in order to prosper; a company needs to establish a global business ecosystem in order to survive; an employee needs to have the heart and skills of the four seas to reap the benefits of a distinguished career. " In 1987, Huawei was founded to make an indelible contribution to China's semiconductor and communications business. Early in the enterprise's establishment, Ren Zhengfei put forward an ambitious and prescient goal: to make Huawei a global company. From 1996, Huawei gradually entered the overseas market, and the first step was to Russia,

which has a deep industrial base and technology level, but Russia was distrustful and dismissive of the newcomer Huawei. In this way, a professional localized marketing team was established to form a solid marketing network, and a joint venture company was set up in the region to develop the market in a localized mode. Eventually, Huawei spent three years taking small contracts that local business giants were reluctant to do, exchanging cost-effective products and strong execution for more customers, and since then, Huawei has grown at a rate of nearly 100% every year in Russia. After conquering the Russian market, Huawei has entered Thailand, Africa, the Middle East, Asia Pacific, CIS, Latin America, Europe and the United States, Hong Kong and other regions, despite the difficulties during this period, but Huawei always rise to the challenge, can not see the customer to understand the customer to find opportunities; prejudice against "Made in China", invited a large number of experts and scholars entrepreneurs to The United States cut off the supply of chips, in addition to immediately start independent research and development of chips, Huawei is also in full swing in the construction and promotion of global 5G, to date, Huawei has become the world's largest communications equipment manufacturer, with the world's largest number of 5G technology patents.

Huawei's success in developing overseas markets did not happen overnight. What are the lessons to be learned from Huawei's success for other multinational or international enterprises that want to develop international markets to achieve sustainable development in the context of economic globalization? According to some scholars, the first is to adhere to the customer-centric core concept to guide technology research and development, not just a slogan; the second is the grassroots innovation gene and R & D technology accumulation, Huawei has been implementing 95% of inherited innovation and 5% of disruptive innovation; the third is that Chinese enterprises should give up price war when internationalizing, low price strategy to beat rivals will eventually form vicious competition. [6] In addition, I think there are several reasons: the first is to combine with the locals and implement the localization model to develop the market. Huawei's excellent talent localization strategy brings in 75% of local talent to work in overseas offices, and it will cooperate with local universities to provide relevant training to develop the technical talent needed in the future. Second, the company's highly competitive compensation and bonus benefits attract most of the talent and strengthen the company's cohesion and motivation.

## 1.2 Promoter

Economic globalization, as an enabler, has greatly contributed to the rapid development of the world economy, and also pushed enterprises to make corresponding responses, especially for small and medium-sized enterprises. Whether they can come up with perfect solutions to meet this challenge is directly related to the future survival of enterprises. Compared with large enterprises, small and medium-sized enterprises are smaller in size and more labor-intensive industries, which can effectively solve the employment problem faced by the country. In addition, they are also the right hand of large enterprises, and are conducive to the organization of specialized collaborative production, which is the main productivity of the national economy and social development. Among the enterprises in the world, SMEs account for more than 90%, contributing 60% of China's GDP, 50% of tax revenue and 80% of urban employment, so the status of SMEs is self-evident. Therefore, the constraint and promotion role brought by economic globalization to SMEs cannot be underestimated.

### 1. 1.1 Problems faced by SMEs.

Under the globalization of the economy, there are constantly multinational companies in the domestic market, leading to increasingly fierce competition in the market. coupled with the original problems of small and medium-sized enterprises, various problems are in front of them.

1.1.1.1 Due to the difficulty of financing and the lack of capital, most small and medium-sized enterprises have old and backward equipment technology, and do not have enough funds to introduce advanced technology and replace advanced equipment, so in the long run, the productivity of enterprises is declining day by day, and they cannot compete with other counterparts.

1.1.1.2 the lack of innovation capacity of enterprises, most small and medium-sized enterprises are relying on imitation, following the large enterprises "according to the book", it is difficult to create enterprise characteristics of the product, no own core competitiveness, it is difficult to obtain active development.

1.1.1.3 Due to the uneven distribution of work processes and profits, workers only get a small portion of their wages, and due to the global market competition pressure brought by economic globalization, laborers have been squeezed.

#### 1.1.2. *Effective response measures*

The globalization of the economy has brought great pressure to SMEs, and the exposure of competitors and original problems in the global market has made it necessary for SMEs to come up with a set of countermeasures to meet this challenge, and I think SMEs can start from the following points.

1.1.1.1 The key to solving the problem of talent and technology introduction is to solve the financing problem of enterprises. Some scholars believe that efforts should be made in the following areas to alleviate the financing problem in the survival dilemma of SMEs in China: promoting relevant legislation and improving the institutional environment for enterprise development; improving the guarantee system and multi-level capital market, innovating enterprise financing channels; fiscal and tax policies should be more active and effective, and appropriately to financial policies tilt. [7]

1.1.1.2 Invoking the excellent advanced technology at home and abroad and keeping pace with international economic development, it is worth paying special attention to the digital transformation of small and medium-sized enterprises. (Digital transformation refers to the digital transformation of traditional enterprises by combining various aspects of production, management and sales with cloud computing, Internet and big data to promote the digital transformation of business such as R&D and design, production and processing, and operation and management of enterprises.) Digital transformation can promote the development of intelligent manufacturing, networked collaboration, personalized customization, service extension, digital management and other new technologies and new models and new business models for small and medium-sized enterprises. [8] Can be more quickly integrated into the wave of economic globalization.

1.1.1.3 Using the characteristics of small and medium-sized enterprises with small business scale, flexible business mechanism, high marketability and closer to customers, timely understanding of market demand, accurate adjustment of business direction, "small is good", starry among customers to provide convenience as an advantage, not only can expand the scope of business, but also improve visibility.

1.1.1.4 We will change from passive to active, develop our own core competitiveness, provide "unique" products and services, and strive to develop in the direction of "small but specialized, small but excellent, small but precise" to produce "precise, sharp, special and excellent" products.



### 1.3 Participants

The development of economic globalization, in which every country participates, as the micro foundation of global economic governance, the leading player in global value chain enhancement, and the leading player in global harmonious development, the development of state-owned enterprises is the key concern of all countries. General Secretary Xi Jinping pointed out, "State-owned enterprises are important, critical and irreplaceable, and are an important relying force of the Party and the State. State-owned enterprises should reform and innovate, and constantly improve and develop themselves. We must consistently adhere to the Party's leadership of state-owned enterprises, consistently deepen the reform of state-owned enterprises, and strive to achieve higher quality, better efficiency and better structured development.

State-owned enterprises are, to some extent, a mapping of a country's political system, governance effectiveness, cultural system, and social development, and the development of SOEs is directly related to the state of the national economy. SOEs currently account for about 20% of investment, 5% of employment, and up to 40% of output in the world economy. [9] One fifth of the world's largest companies (the top 50 Fortune 500) are SOEs today, whereas only one or two SOEs could be found on the list more than a decade ago. [10] In 2019, 11 SOEs are in the top 50 of the Fortune Global 500.

#### 1.1.1 Challenges faced by state-owned enterprises

Although state-owned enterprises have been reformed and improved over the past century, there are still many issues that need constant improvement and innovation to meet the challenges under the influence of economic globalization.

*1.1.1.1 Internal conflicts of state-owned enterprises.* State-owned enterprise is a special existence with both "political" and "economic" characteristics, and its special characteristics also predestine it to face internal conflicts. However, as a public entity, it has a certain political public interest, and the major shareholders of the state-owned enterprises are more inclined to political purposes such as social services and security.

*1.1.1.2 The "North's refutation" in SOE governance.* There is a persistent conflict between the ownership structure that maximizes the monopoly rent of the ruler and his group and the efficient system that reduces transaction costs and promotes economic growth, so that when the power center faces competition and transaction cost constraints, it will tolerate the persistence of inefficient property rights structure. This is known as the "Nooth paradox". [11] In the case of SOEs, SOEs need to accomplish certain political tasks, do some long-term public welfare projects with no return, and give some subsidies and benefits to consumers with corporate resources, which is beneficial and positive for society and the public. Driven by the maximization of monopoly rents, the consequence of SOEs exercising their privileges is to cause unfair market competition to the detriment of consumers' interests, forming an undesirable cycle that leads to the inefficiency of SOEs.

*1.1.1.3 Information disclosure of SOEs is not open and transparent enough.* Non-listed enterprises are not active, open and transparent enough in disclosing corporate information, especially financial information, with a single disclosure target and a single disclosure channel, which is not convenient for the society and the public to monitor them.

#### 1.1.2 Reforms faced

In order for state-owned enterprises to achieve long-term stable and sustainable development, to bear the burden of the country's stable economic operation, and to provide the country with



good protection in transportation, food, energy, and medical care, it is urgent to carry out reforms in these areas.

*1.1.1.1* Innovation of its own management model to improve the operational efficiency of SOEs and avoid bureaucratization, administrativeization, and bloat, and more importantly, to avoid becoming an excuse for privatization. This can be done in terms of corporate organization and culture building, corporate grassroots governance and resource integration to improve the operational efficiency of SOEs. [12]

*1.1.1.2* Improve the legal framework. The types of SOEs are often complex and diverse, and relying on the generalized Company Law and SOE regulation system cannot fully address all issues in the development and operation of SOEs. It is worth mentioning that in 2015, the Central Committee of the Communist Party of China and the State Council issued the Guiding Opinions on Deepening the Reform of State-owned Enterprises, which began to promote the classification reform and supervision of SOEs. The classification reform divided SOEs into commercial category 1, commercial category 2 and public welfare category, adopting different regulatory models. [13] This reform makes the internal division of labor within SOEs clearer and the supervision more specific and detailed, but in the process of development, it is always found that there are still unresolved problems and the legal framework needs to be improved continuously.

*1.1.1.3* With the development of globalization, it brings convenience and at the same time brings a lot of problems in the environment and the economy. With the emergence of population growth, global warming, and resource scarcity, many countries and companies have made environmental sustainability an important agenda for politics, society, and business. "Environmental, social and governance" (ESG) as a more mature framework and reporting system can be explored and piloted in state-owned corporate governance as a state capital regulatory authority.

The establishment of a socialist market economy with the state-owned economy as the primary goal of market-oriented reform has had a significant impact on the outcome of previous SOE reforms and will continue to influence the direction of future changes in the SOE sector. [13]

### 3. Conclusion

Corporate sustainability is considered a stepping stone in the process of achieving the world's sustainable development goals. Only by achieving sustainable corporate development can we lay a solid foundation for national and global sustainable development. All enterprises should learn from the experience of domestic and foreign enterprises that have successfully coped with challenges and develop a set of sustainable development programs that are applicable to their own companies, so that they can make better use of the benefits brought by economic globalization and actively address the market, social and environmental issues brought about by economic globalization.

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## Tourism in the island of Chios and endogenous sustainable development

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### Abstract

*For countries like Greece, tourism is the main industry and the main source of income for their economy. But, apart from the economic benefits that tourism offers, it also creates many other benefits, mainly in human relationships. Tourism has always been the way in which people could learn about each other and get to know their different cultures, through direct communication, in a natural way. In fact, in recent decades' tourism seems like an ideology, and as a basic expression of people's quality of life, which offers them unforgettable memories and many exchanges of feelings. In the case of Greece, the tourism industry is the strongest pillar of its economy and for this reason it is also called the "national industry". Thus, one could say that the impact of tourism is decisive for local development. Taking into account the above, the aim of this essay is threefold: First, present and identify the impact of tourist arrivals fluctuations on the local economy (direct and multiplier effects) of the island of Chios. Second, understand the comparative advantages of Chios Island as a tourist destination. Third, explore how local authorities and other stakeholders plan to increase the number of visitors to the island of Chios through sustainable ways of development.*

**Keywords:** Chios Island, endogenous development, Homer, tourist attractions, visitors

**JEL classification:** M14

## 1. Introduction

### 1.1. Scope

People have been travelers of the world since the moment they realized that they were able to visit other cities and faraway countries in order to quench their thirst of exploration. Curiosity and the desire to gain as much knowledge as possible have been the main factors that make people spend even a whole lifetime travelling to places of interest, locations of natural beauty and historical or religious significance. Advanced technology and several developments in the transport network around the world have made people's travelling much easier and more convenient.

According to Koronakis (2022) over the past few years an intensive effort has sought to reinvent the tourism products of the country and cultivate a sustainable and environmentally friendly image. With new, green, and smart technology and infrastructure, Greece is looking to preserve the country's natural beauty in times of extraordinary numbers of visitors and longer stays – and to achieve a fair distribution of the benefits to local communities.

Tourism and the variety of facilities offered to visitors of a place enable anyone who wishes to open their horizons to experience some great moments with the locals and learn from them.

Trips of this kind are always educational provided that people respect the natural environment of the places they visit and make sure that their activity does not have any negative effects on the areas in which they spend their holiday time. In the last decades' tourism seems like an ideology as well as a key aspect of quality of life inducing interesting alterations and indelible memories.

In the case of Greece, tourism industry is the strongest pillar of its economy, also known as the “national industry”. Thus, it can be advocated that the impact of tourism on the local sustainable development is rather crucial, particularly for frontier regions like the island of Chios.

Therefore, in an attempt to the aim of this work is threefold: *First*, present and identify the impact of tourist arrivals fluctuations on the local economy (direct and multiplier effects) of the island of Chios. *Second*, understand the comparative advantages of Chios Island as a tourist destination. *Third*, explore how local authorities and other stakeholders plan to increase the number of visitors to the island of Chios through sustainable ways of development (best practice approach).

## 1.2. Literature review

### 1.2.1 Locality

Although locality is a concept that is deployed in several academic papers, nonetheless there is no widely accepted (Christofakis, 2000). Although one can agree fully with Lowe et al. (1995) when they claim that 'rural localities might be able to play to their strengths', it must also be recognized that the meaning of 'locality' was largely de-activated and deconstructed during the epoch of modernization and that it has only recently been reconstituted.

At the same time, it must be acknowledged that locality as such contains no guarantee whatsoever. One could even argue that often endogenous development is blocked not by global factors but by locality itself. Again, we see that there is no general scheme for endogenous development. It is only the careful and detailed exploration of farming styles and other local elements as embedded in particular frames of interaction with 'outside' factors, that can render insights into the prospects for (or the impossibility of) endogenous development (Romano, 2001).

Yet having said this, one cannot but agree with the statement of Lowe et al. (1995) that 'rural livelihoods [and hence 'localities'] could be strengthened locally rather than weakened globally'.

Indeed, visitor rates are higher for the most ‘typical’ market towns. This is particularly reflected in shopping patterns, where there are expectations in terms of local food and crafts. Owing to the need for most towns to maintain their ‘core’ local trade, the paper has also considered the consistency of efforts to encourage both urban visitors with resident populations.

Although there are some parallels, particularly where people have moved to country towns in order to experience their ‘different from the city’ character, care must be taken to balance the potential of attracting urban residents and that of maintaining the rural service centre functional role.

The summer tourism season is in full swing. That’s welcome news for many economies still working their way out of COVID-19-induced economic declines. Craig (2022) suggested that, for people who want to really get away, foreign destinations like Greece — with its iconic whitewashed buildings and soft, sandy beaches — can be an attractive option. The southern European hot spot has welcomed vacationers of all stripes for decades, and its tourism minister still brags that, with a seemingly unending choice of islands, there’s something for everyone.

### 1.2.2 Endogenous development

A well accepted definition of endogenous development has been provided by Ettlinger (2001) as “the ability of transforming the socio-economic system, the ability of reaction to external

challenges, the promotion of social information and the ability of introduction of special types of social adjustment at local level, which favor the aforementioned points". In other words, endogenous development is the ability of a person to innovate at local level.

Local economic development represents an important change in the action objects and in the activities which are related to economic growth. It is about a process during which local authorities and economic groups manage their available funds and act upon new collaborative adjustments and agreements with the private sector or among them in order to create new job positions and to encourage economic activity within a defined economic zone.

The main characteristic in the locally oriented development is the emphasis on endogenous development policies, which use the dynamic of regional human, institutional and local funds. According to Tödtling (2020), entrepreneurship has been at the core of the endogenous development approach since its beginnings.

In recent years, however, more systematic research and policy studies have been undertaken in this field investigating local conditions and regional differences of entrepreneurship and new firm formation, effects on local and regional development, barriers for the start and growth of new firms, and respective policies.

Entrepreneurship is a key element in endogenous regional development, since new firms often originate from the region, they use local talent and labor, and they tend to have more local business and knowledge links. They are, thus, often inserted in local social and economic networks, and embedded in the region. The research on entrepreneurship, however, also shows the limits of this kind of endogenous regional development.

The strategy and policy measures for the support of this attempt must be directed and focused towards:

- The satisfaction of the basic needs of local society and community
- The development of rural areas
- The support of economic activities of tense work
- The promotion of intermediate businesses and works of medium range
- The development of relevant technology which will allow and facilitate full employment and exploitation of natural, human and institutional funds and structures of the area aiming towards terrestrial complete development.

## 2. Methods and Data

Both *secondary and primary data* were collected for responding to the research aims. Secondary data on tourist arrivals were collected from the civil aviation and ports authorities of Chios.

Also, a loose unstructured interview was conducted in July 2022 with the Co-Founder of a local newspaper who is also involved with local initiatives to promote the island as a tourism destination, who provided qualitative data on the comparative advantages of Chios Island as a tourism destination and on how local authorities and other stakeholders plan to increase the number of visitors to the island of Chios through sustainable ways of development. Emphasis was placed on the *Homeric exhibition center* project, as a best practice example of sustainable local development.



### 3. Results and Discussion

#### 3.1. *The comparative advantages of Chios Island as a tourism destination*

The nature of human beings to live new experiences makes them finding new destinations to visit. Some places are well known to tourists but many others are not so touristic and special categories of visitors are seeking to discover such places.

A place like this is Chios, an island very close to Izmir and Cesme which attracts daily many visitors from Turkey whereas, also people from Chios visit Cesme and Izmir. This daily exchange of visitors between the two countries gives the opportunity to meet each other's culture and to make them feel closer to each other. Since April 2022 the number of visitors from Turkey was larger than in Rhodes<sup>1</sup>. The guests from Turkey are the main visitors in the island of Chios and the main reasons that makes Chios a pole of attraction for tourists is its cultural wealth such as its museums, archeological places and historical monuments. Another important factor is the quality of services which provide value for money, including accommodation and food and beverage stores. Further, guests can live in a secure and well-structured amenity with professionally trained staff.

It is also important to underline that Chios is the fifth biggest island of Greece between 6.000 islands and very small islands of which the 227 have habitants. From that one can easily understand how many different options can be offered to the visitors.

Chios has also different types of beaches for all tastes as well as traditional restaurants, cafes, bars and night clubs. In general, Chios can satisfy the tastes of almost every traveler who prefers less organized packages of tourism and choose to explore the area in a more adventure way.

It is also worth mentioning that Chios provides to travellers' different ways of reaching the island in a safe way. The island has two ports which travelers can access from the port of Piraeus and/or other Greek ports and one airport which is under expansion.

Last but not least, Chios has a rich history that relates, amongst others, to "Homer's legacy". For example, the area of "Daskalopetra" is named after Homer (the great poet of Iliad and Odyssey), who according to the local tradition used to teach in the area.

#### 3.2. *Tourist arrivals in Chios Island*

Tables 1-2 present the number of ships, airplanes as well as the number of visitors in the island of Chios during the 5-years period 2016-2021, arriving from the port and the airport of the island.

Studying the Tables one can identify the rapid decline of the arrivals in Chios, especially in the year 2020 when the pandemic was at its pick. This decrease of arrivals created serious problems to every business on the island, especially the most touristic ones.

Starting from the aviation and the maritime companies, which were directly affected, as the states worldwide restricted the cross-country travelling but also the internal transportation was allowed only under strict conditions. In addition, the food and beverage companies which are also related with the tourists have suffered too because of the pandemic restrictions in free travelling.

**Table 1:** *Visitors arriving at Chios Airport (2016-2021)*

Year	Visitors	Number of Airplanes Arrived
2016	182.103	1.962
2017	198.294	2.464
2018	220.264	3.738
2019	210.116	5.338
2020	118.843	1.580
2021	161.857	3.914

Source: Chios Aviation Authority

**Table 2:** *Visitors arriving at Chios Ports (2016-2021)*

Year	Visitors	Number of Ships Arrived
2016	175.027	1.587
2017	184.364	1.588
2018	181.241	1.489
2019	171.644	1.486
2020	84.399	1.242
2021	102.274	1.289

Source: Port Fund of Chios

Thankfully, in 2021 the restrictive measures were to be removed, in the beginning for the travelling internally between different cities in Greece and gradually we came on May 2022 when all measures were removed and people from everywhere around the world could visit again the Greek mainland and the islands without any restrictions. In this very positive environment, which came after the pandemic period, people from every country show a tremendous tendency to visit Greece whereas the Greek government promotes with subsidies also the internal tourism, especially in the Aegean Island among which is Chios.

### 3.3. Plans to develop sustainable tourism in Chios Island

Tourism in Greece is an important economic activity contributing to the GDP of the economy and the improvement of the standard of living of the inhabitants as well as a remarkable cultural influence. *Local authorities seem to have realized that*, it is very important for the local tourist industry to grow but in a steady and sustainable way taking advantage of the local comparative advantages.

Some aspects that can contribute in this direction is *to increase the offered choices for tourists*, to develop the audio network with excellent and modernized means as well as the infrastructure

projects to provide facilities and enhance the popularity of the island. A key criterion that also makes a destination an attraction pole for tourists is the climate and the places of natural beauty.

The proper preservation of the natural environment and the promotion of the history and the cultural wealth will contribute to the increase in the number of tourists on the island. For this reason, emphasis must be given on the field of *alternative tourism* by creating a framework for organizing the services provided, improving the image of rural areas and ensuring that the tourist will be familiar with the daily life of residents through experiential activities. Such an example is the historical analysis and promotion of “Daskalopetra” and the “Homer’s legacy for Chios”.

As already mentioned earlier, Homer is associated with a series of narratives from antiquity to the present day, many of which are symbols and founding myths for local communities but also poles of tourist interest. The place where the project of the creation of a center for the promotion of the Homer heritage of Chios is the area “Daskalopetra”, in Chios.

According to Kamara (2018) and with respect to the historical accuracy of the monuments, it *will be in the right direction the emphasizing on the connection of Chios with Homer through the creation of a museum with a developed surrounding activity area, as a Homeric exhibition center*, which can provide a series of high-quality education and entertainment services.

Furthermore, such a center can be an attractive pole for visitors in Chios in times with less tourist activity in order to enhance the flow of visitors from Europe, the USA and Asia.

The center due to Homer and his subject can be a fine attraction point for local and foreign tourism. The ability to provide the world with images will be of great importance.

Short videos of the exhibits and their operation along with encouragement for visitors’ taking photographs in the center will transfer its image to a huge number of recipients all over the world. However, the center alone cannot be the subject of a remote visit. For this purpose, the center will propose the visit to other points of interest too.

We can suggest at least two different tourist plans, via which the tourism entrepreneurs can be contacted and offered ready-made solutions and suitable material to propagate a short trip to Chios of Homer. The first is the cycle in the Homeric Routes which will bring visitors very close to a series of interesting places to be visited in Chios

- Archaeological museum of Chios
- Korai library
- Homeric Spiritual Center
- Archaic settlement of Emporio, mastic museum
- Locations identified in the folk myth of Homer (Volissos, Anavatos)
- Hiking

The second cycle refers to the female side of the sanctuary and organizes visits to places of worship associated with female nature and presence.

- The sanctuary of Athena in the archaic Emporio
- Nea Moni
- Agia Markella
- The church in the cave of e Galas

Moreover, the island of Chios includes many non-habitable houses on an all-year-round basis which have attracted the interest of those residents who deal with the upgrade, promotion and arrival of travelers to the island.

These houses belong to citizens of Chios who live abroad and either come for short vacation or do not visit the island at all because some of the houses are no longer appropriate for people to stay in. A number of these residences are located in villages of the island which are far from the city, that is, in places where there are no hotels or guest houses.

The local citizens' suggestion is the renovation of these houses in order to host not only their owners but also people who wish to rent them during the period that they are not in use. As a result, the number of rooms available in the island is increased in a way that shows respect mainly towards the environment as the creation of large hotel facilities is avoided.

With this suggestion, trespassing of lands is also avoided as well as the creation of pollutants, rubbish and sewage. However, most of these houses are part of the island's cultural heritage which has to be protected in every possible way.

#### 4. Conclusion

Overall, the possibilities of sustainable local development for the Chios Island are the only way forward and can be achieved by investing on the comparative local advantages related to the unique natural environment of the island, as well as to its rich to history and distinctive culture.

According to the local authorities this can be achieved, by investing on accommodation facilities in the remote destinations of the island so that some unique experiences can be offered to the travelers who will visit the place. As the construction of new structures is impossible, existing ones can be utilized.

Real estate houses and estates of local businessmen or incomers who leave the island can be rented to the local tourist organizations, until their comeback, to serve the needs of a traveler. In this way, tourists will have the opportunity to get to know the lifestyle and culture of the residents as they will interact directly with them. Also, Homer's legacy through the *Homeric exhibition center* project can be a top tourist attraction.

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## Food – the UNwanted Field of Economics

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**Abstract:** *This paper aims to explore, from an economic perspective, the current worldwide situation of food. As part of economics, the food area is vital – one that cannot be excluded from the market. Moreover, the current situation has accentuated the critical state faced by many areas of the world. Inflation, low production rates and various other external factors testify to the need for a sustainable system for food resources management. Therefore, our paper aims to discuss the negative effects of food waste, as well as the advantages of relying on good practices and a sustainable food management system. In so doing, we will first pinpoint some of the negative aspects of food waste, such as pollution, the economic crisis, the need for extra resources in case of demographic growth, or the effects of pesticides. Secondly, we will touch upon the legal frameworks that prevent food waste (e.g. the French law prohibiting the throwing of food by supermarkets). Finally, our study will track obesity rates, in an attempt to compare the extremes of human consumption and the importance of addressing an efficient, standard diet that covers the strictly necessary needs of the individual. This issue is also targeted by the UN, which, through its programs, tries to identify and suggest pertinent solutions to the states and their citizens.*

**Keywords:** *food, food economics, food waste, sustainability.*

**JEL code:** *L66, Q01, Q18, Q56,*

### 1. Introduction

The food sector has been a global issue since the beginning of the times. Humanity is defined by the process of consumption, because it is a purely biologically primary one.

If until recently, the issue of food was well known at national level in parts of Africa or even some of America and Asia, at the moment it has come to be strongly pronounced worldwide in most countries.

Concern for hunger grows as food production has become increasingly expensive and difficult to achieve.

### 1. Legal Framework

At the moment, there is no regulation at European or global level that details a process of reducing food waste or imposing savings measures, but only guides, reports and recommendations.

At the national level, there are also many states that regulate the food field, but more as a recommendation and with an extremely permissive character, because it is an area for which it does not seem natural to constrain or impose coercive measures.

However, there are also states with good food sector legislation, where essential measures are specified to prevent or reduce waste.

For example, France is one of the states that has chosen to save its food by banning commercial chains from throwing food that is still in good condition in the garbage. Also, restaurants with over 180 tables have the duty to pack food unfinished by customers.

Spain is also another contributor to waste prevention that comes with tough but beneficial regulation. Spain imposes fines between 2,000 and 60,000 euros for those who break the rules.

The Iberian legislature requires restaurants to have packaging for food ordered by customers to take home the food left on their plates.

Supermarkets and restaurants have the obligation to provide ways of donating unsold products to NGOs or food banks. They also have the obligation to provide the expired food as feed or to be prepared for compost.

## 2. *Current Background*

Besides the temporary issues related to the war in the eastern part of Europe, the states currently prefer to focus on the development of infrastructure other than agricultural, because the economic agents focus on other fields than those of agriculture and food production. In a world of technology and office work, agriculture and food production seem to be areas only useful to humanity and primary needs, but not the most profitable for economic agents. Therefore, the state and the authorities remain the only precursors of the development of the agricultural field.

The reduction of food production for various reasons (lack of labor force, too high costs, military conflicts have determined the impossibility of the grain production of the most influential state in this area of production, the impossibility of carrying out the activity itself because of the mandatory distancing and isolation measures during the epidemic period, etc.) together with the food waste form a devastating combination of the basic needs among the people.

## 3. *Drought and climate change influence food production:*

Food production is directly affected by the climate and by the harmful phenomena of nature such as drought or why not, floods that destroy crops

Agriculture is an indispensable source of basic food insurance. If it is affected, the range of products made available to people will clearly be affected.

The extreme temperatures caused by climate change have led to drought, therefore the reduction of agricultural crops and the heavy maintenance of animals, therefore the reduction of the amount of meat and dairy products, but also to disasters such as forest or plain fires that have also affected the environment and led to the loss of livestock and wild vegetation.

Hence the imputable need to pay attention to irrigation systems and to find significant water resources.

## 4. *Food branch as a field of economy*

The current context reflects global economic problems even at the level of food products. With the increase in inflation and the reduction of production caused by military conflicts, pandemic situation or climate change, people are forced to reduce consumption on various categories of products and services, including food.

If the food branch is affected, it will therefore be the economy based on it, being in fact a basic one, because food represents a need of humanity, whether it is a risky branch or not for economic agents, this is one necessary for the community, therefore one with very high demand.

At the individual level, the problem of the economy is felt in all products and services, but the food one can also be alleviated by measures to reduce food waste.

Scientists say that the individual tends to buy in excess when he feels the state of hunger, therefore some of the purchased products end up being thrown away by this, representative thus a loss including from an economic point of view at the individual level.

The price rise is also influenced by the reduction of fertilizer production and their increase in price, being an eminent factor in the result of food production efficiency.

#### 5. *UN, parent of the ignorant child called society*

As the main organization of international level that is concerned with the development of a sustainable society, the UN has the 2030 Agenda for Sustainable Development and a global goal that provides for the eradication of hunger. Unfortunately, as the statistics show, it will be almost impossible for the UN's prevention programme to be successful. The current pace shows rather a worsening of the city, not an improvement.

The World Food Programme is an UN's organism which according to the information provided on the official website of the UN::

„-keep global food trade going

-keep the domestic supply chain gears moving

-support smallholder farmers' ability to increase food production”

#### 6. *Food waste is a pollution fact*

We think food waste is not a big deal, we just lose some money and that's it. In fact we better look for the preparing process of the food which is waste.

We waste a lot of water for:

-raising the animals for meat

-irrigate plants

-wash fruits and vegetables

-prepare soups and other foods that require water

The air is also polluted:

-by the food which is thrown and it rots, is produced a greenhouse gas called methane

-by the cows which produce methane

So, if we waste food, we also pollute the environment.

#### 7. *Education, the starting point of a sustainable community*

When we talk about solving problems common to society, education is a factor by which the much desired change can be initiated.

We can modify the infrastructure, we can invest in regulatory systems and tools, but without educating the population, all these aspects are insignificant if the individual does not come to realize their importance and the consequences that can occur if the carelessness persists.

State institutions should introduce courses for this purpose in schools and various educational units, courses on selective recycling, prevention of food waste and natural resources, combating pollution and greening.

The community treats these topics superficially because it does not know the consequences of such global problems. Along with the explanation in the concrete and with the notification.

## 2. **Data and Methods**

### 1. **General Statistics**

-1/3 of global food is wasted

-1.3billion tons / year

-\$750 billion/year global food waste, representing the equivalent of the gross domestic product of Switzerland

-20% of food in the EU is wasted.

-50% of the food wasted is from people's households à 47 million tons / year

-an European wastes about 179 kg/year

-Americans who have the highest percentage of food waste, being 43% according to an american news paper called VOX Media, spend about \$1500 annually/person

-according to the same news site, if we were to do an exercise of imagination, all the wasted food in America in one day, would cover the area of the largest stadium

### 2. **Case study**

On a sample of 37 people, the questionnaire on food waste reflects the extremely low attention that people pay:

Age:

18-24: 5 pers

25-35: 29 pers

35+: 3 pers

Where you live:

City: 11 pers

Countryside: 26 pers

Do you raise animals, grow plants for your own consumption?

Yes: 30 pers

No: 7 pers

If so, what exactly?

Plants: 30 pers

Animals: 24 pers

Has it ever happened that you throw away fruits, vegetables, meat or food products grown by you?

Yes: 28 pers

No: 0 pers

I don't want to answer: 2 pers

Did you know that a good part of the food scraps can be used for the production of compost?

Yes: 6 pers

No: 31 pers

How often do you buy food?

Daily: 21 pers

Once every 2-3 days: 6 pers

Once every week: 2 pers

Once every month: 0 pers

Depending on the need: 8 pers

Do you make a list of the products you buy?

Yes: 14 pers

No: 23 pers

Have you planned a food consumption schedule?

I never plan what I'm going to consume in the next few days: 33 pers

I plan the products to consume according to the day, but most of the time I do not manage to respect the schedule: 2 pers

I made a consumption plan for days and most of the time I respect it: 2 pers



How often do you throw away food?

Daily: 4

Once every 2-3 days: 12

Once every week: 9

Once every 2-3 weeks: 1

Once every month: 0

Once every 2-3 months: 0

I don't know / I don't count it: 11

What products do you throw away often?

Bread: 23 pers

Meat: 4 pers

Eggs: 11 pers

Fruits and vegetables: 27 pers

What you use leftover food for?

Compost: 0 pers

Donate to others: 3 pers

Feed animals: 21 pers

Throw in trash: 13 pers

What weight do you throw in the trash on average per week?

under 300 grams: 2 pers

about 1 kg: 5 pers

2-3 kg: 1 pers

more than 3 kg: 0 pers

I do not know / I did not take this into account : 29 pers

### 3. *Individual case:*

A citizen who lives in the village decided in 2021 to invest in planting eggplants.

According to his statements, he planted on an area of 3000 m<sup>2</sup>. The total production during the summer of 2021 was 9 tons of eggplants. 1.5 tons were not sold because they broke down in the process of growth and collection. The costs incurred for the entire process can be distributed in this way: about 818 euros for the purchase of plants, about 716 euros for the purchase of pesticides, fertilizers and water consumption, 300 euros for labor force and about 200 euros for transport. A total cost of 2034 euros and income of 3122 euros make it seem to be a decent income, but if we were to observe from a quantitative point of view of production and not

economically, we can say that it is a significant loss in terms of the efficiency of sustainable agriculture.

The quantity of 1.5 tons is not only a financial loss, but also a loss of resources such as water, the effort made to maintain the plants, the land that could have been used in the production of other foods, and the possibility of being donated to people who could have used them.

### 3. Results and Discussion

The analyses presented above reveal the need to approach a series of proposals in order to solve or reduce food waste, such as:

- development of new varieties through genetic modifications (sweet onion from THE UK, the huge pumpkin from the US)
- education of citizens since schools and through programs to promote waste prevention, campaigns to notify about the consequences of waste on the environment and the possibility to donate it to people who do not benefit from food daily
- development of smartphone applications to identify their stores and foods that are approaching expiry
- collaboration with states for the production of food goods
- saving water and basic products in terms of agriculture and production
- creating a legal framework for banning / reprimanding food waste and collaboration between food banks and NGOs with the product market / markets / restaurants
- subsidizing producers who have nowhere to sell food; they should donate them to NGOs, and in return to receive money to cover the production layer
- creating the legal framework for imposing the production of compost from expired and altered food among commercial chains
- concluding partnerships between stores and agricultural associations for the collection of compost
- rebuke of water wastage
- promoting the frequent purchase and in small quantities of food (products that are approaching the expiration date can be delivered at home or in pick-up points to convince citizens to buy more often and in smaller quantities)
- promoting campaigns to protect the environment and resources
- training of citizens to use food scraps as compost
  
- less FAST-FOOD, because most throw away unstarted scraps that could have represented a small part of a serving of food for another person
- use perishable foods first and close to the expiration date
- dehydration of fruits to last longer
- putting in empty bags
- creation of compotes with "ugly" fruits

-use small plates, because the tendency will always be to fill them regardless of whether they feel that all the food is necessary or not

-use FIFO method to avoid waste

- the interruption of the financing for monodirectional projects such as the "Tomato Program", because it is an excessive production that is based on a single food product, and the excess leads to waste (the purpose of the program is to produce a certain quantity of tomatoes depending on the extent of the land, but the mandatory quantity to be sold is a much smaller one, and the rest of the production is no longer concerned with either the agricultural producer or the state to check the management of the remaining quantity)

#### 4. Conclusion

A peculiarity of the sustainable community is the good management of food and the prevention of waste.

Although it is necessary for a decent living of individuals, society is still in a stage of knowledge and initiation, but in order to reach the desired results, a collective effort is required, it is necessary to train and educate individuals to realize how important is the smart use of food or its donation to people with such needs.

International organizations will not succeed in preventing hunger if the people do not make the necessary efforts.

In order to reduce the cases of acute famine, donations among each of the citizens should be increased, state bodies should create a favorable framework for the smart use of food and sanction the waste of markets, restaurants and large food producers, courses on food management in educational institutions should be included, mass storage spaces should be built for products that could be donated to food banks or NGOs and then distributed by them.

In conclusion, food waste seems to be a banality in our lives, but it is actually one of the biggest problems of global level that could be solved only by raising awareness among citizens, but also by the effort coming from each person.

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## ENVIRONMENTAL PILLAR OF SOCIAL RESPONSIBILITY OF AGRICULTURAL ENTERPRISES

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### Abstract

*Over the past 60 years, the global food system has shifted from food insecurity to increased dependence on food trade. In 2017, the EU was the world's largest exporter as well as importer of agri-food products (European Commission 2018). However, such international trade in agricultural products leads to a shift of the environmental impacts of agricultural production to other regions. Corporate social responsibility is one of the major issues in the business industry, especially nowadays. It is a topic that concerns many things, including business, the environment and all stakeholder relations, and which is not only related to the company's own benefits but also to the shared benefits of society and the environment.*

*The research paper presents social responsibility, including all three pillars, was analysed on the basis of theoretical knowledge and practical experience gained in specific agricultural enterprises. In the practical part, based on the knowledge gained from the literature, we deal with the application of socially responsible activities with a focus on the environmental pillar in our selected agricultural cooperatives. The essential part of the practical part is completed by a questionnaire survey together with a statistical evaluation of selected questions from the questionnaire survey.*

**Keywords:** corporate social responsibility, pillars of corporate social responsibility, agricultural cooperative

### 1.Introduction

Countless organisations evaluate companies precisely on their corporate social responsibility performance and, despite sometimes questionable methodologies, these aspects attract considerable public attention. Today, therefore, social responsibility has become an essential business priority for every company. The concept of Corporate Social Responsibility (CSR) is related to ethical and moral issues concerning the decisions and overall functioning of a company. Every company should know when and how to carry out certain activities, whether these activities are beneficial or, on the contrary, undesirable for the company. The purposeful and effective use of the pillars of social responsibility is one of the priority prerequisites for the development of a company's strengths. It is nowadays largely one of the cornerstones of building competitive advantage. (Castelo Branco ,M., Rodrigues,L.L., 2006) Corporate social responsibility carries the definition of voluntary actions taken by companies to improve society and the environment with the expectation of increasing competitiveness and reputation. (Orlitzky M., et al., 2011) The concept of corporate social responsibility is based on the assumption that a company does not exist independently of its environment, but, on the contrary, it influences its environment through its activities, actions and in a certain way. At the same time, however, the environment also influences the operation of the enterprise in a certain sense. (Lušňáková, Z., et. al., 2012) The pillars of CSR initially consisted of two main pillars, social and economic, because they took into account all the others. The environmental pillar was included later and became a very important third pillar of CSR. (Mihajlovič, I., 2018) Agricultural enterprises can demonstrate their acceptance of environmental social responsibility by applying quality management. Many agricultural firms are now considering the

environmental consequences of their activities as a means of gaining a competitive advantage. This shift is highlighted by the significant interest in standardised codes such as those found in ISO 14000. These standardised codes are characterised by signatory companies voluntarily committing to a given set of environmental management principles and monitoring by an external party. Government policy makers are also interested in the ability of these codes to address environmental issues related to agriculture. (Juríčková, Z., et. al., 2020) The intensification and expansion of modern agriculture is one of the greatest current threats to biodiversity worldwide. The last quarter of the 20th century has seen a dramatic decline in both the range and abundance of many species associated with agricultural land in Europe, leading to growing concern about the sustainability of current intensive farming practices. Supposedly 'sustainable' farming systems, such as organic farming, are now seen by many as a possible solution to this continuing loss of biodiversity and receive significant support in the form of subsidies through EU and national government legislation. (Hole, D.G., et. al., 2005) the current economic trend leads to unsustainable use of materials and energy, causing a radical loss of renewable and non-renewable resources. In addition, with the rapid development of the economy, the scale of the logistics industry is also expanding rapidly, bringing great convenience to the economy and trade and becoming one of the pillar industries of the national economy. However, with the development of economy and logistics, the problem of ecological environment is becoming more and more prominent. (Zhang, W., et. al., 2020) Reverse logistics is considered to be a key part of green logistics as its main task is to meet environmental objectives. The main objective of green logistics is to recover waste in a way that is economically attractive and environmentally friendly, as it avoids wastage of resources, reduces the consumption of raw materials, reduces the amount of waste stored and reduces energy consumption, thus contributing to the greenhouse effect of gas emissions. (Škapa, R., 2005) Corporate social responsibility (CSR) has long been a research and practice issue. More recently, in response to increasing public scrutiny, it has also gained prominence in the agribusiness sector. (Nikodemová, K., 2020) Corporate social responsibility is a leading channel through which farmers and agribusiness actors can exercise their ethical values. Producers and retailers are increasingly engaging in CSR initiatives to demonstrate their commitment to sustainability issues such as animal welfare and the environment. (Luh-mann, et. al., 2017)

## 2. Data and Methods

The aim of the research work is to provide an overview of the basic concepts related to the topic of the thesis and to find out to what extent employees and employers understand the objectives and context of the application of the environmental pillar of the CSR in the selected agricultural enterprise.

To achieve the primary and sub-objectives of the thesis, the agricultural enterprise PD Veľké Zálužie was selected. The reason for selecting this company was its long-term ability to maintain its position on the domestic market despite considerable competition.

In the selected company, in addition to the current status of the issue, we also examined the methods and procedures for introducing CSR activities into the company's strategy.

The primary data were collected in January 2022 using the questionnaire survey in the electronic written form via Google Forms. The questionnaire survey was submitted to individual employees of the companies and covered social responsibility and activities related to it. Afterwards was acquired information in form of answers of respondents coded into the program Microsoft Excel. The questionnaire consisted of a total of seventeen questions, which included an option to tick one of the possible answers, a multiple-choice option and 1 open-ended



question. Evaluation of results of this survey creates also the main part of presented research paper. For this research paper are used following procedures:

1. Related literature as well as scientific articles to the topic of the research determinants studying, along with data available related to the topic and subsequent processing of these data on the theoretical level,
2. Methods that were used for evaluation and interpretation of results:
  - Analysis: examined issues are resolved into elementary components to examine relations between these components based on particular indicators
  - Comparison: answers of respondents of the questionnaire survey are compared
  - Synthesis: answer of each respondent was evaluated to help us create a whole picture on the subject of matter

Answers were processed into the graphs to show the ratios as well as percentages of respondents' answers. Data collection method choice is important related to costs, question formulation and quality of data. Several years ago, the only choices that were available were between personal interviews, also called face-to-face interviews, telephone interviews and mail surveys, all using paper questionnaires. The biggest difference in these methods is the presence of the interviewer in the data collection process, since in personal interviews as well as telephone interviewing, the interviewer is present at a distance or physically, while in mail surveys, or any kind of online surveys, the interviewer is not present at all (Willem E. Saris, Irmtraud N. Gallhofe, 2014).

### 3. Results and Discussion

A business in which the exploitation of resources and opportunities is a key differentiator represents a sustainable and responsible way of doing business and is in fact an integral part of the strategic management of the cooperative and the pursuit of a competitive advantage in the marketplace. PD Veľké Zálužie strives to be a socially responsible cooperative and is currently implementing certain activities that touch on both the economic, social and environmental aspects of socially responsible business.

In the environmental area of CSR, the cooperative uses fertiliser obtained from its own resources, which fertilises the soil, is a valuable organic fertiliser and promotes the formation of humus in the soil. The manure is a mixture of excrement (excreted animal faeces and urine), bedding, water and feed residues and is continuously dumped on manure heaps located on the cooperative's premises or on fields where manure pits have been set up, after which the manure is spread and ploughed in the autumn of the year.

In connection with crop production, a chemical storage facility is established on the cooperatives, which is approved for the storage of aggressive chemicals, water hazardous and flammable substances. They have steel or stainless steel catch basins and comply with all conditions for the proper storage of chemicals in accordance with the law.

Nowadays, the issue of Corporate Social Responsibility is becoming part of the operation of almost every business abroad and is not exceptional, rather it is becoming a kind of rule. However, we cannot say that about business in Slovakia, because also on the basis of the results of the questionnaire survey we have observed certain shortcomings related to the implementation of socially responsible business and its activities.

In order to ascertain the actual status of the information obtained and to evaluate the overall situation on our chosen farm, we used a questionnaire survey in which we submitted questionnaires for completion by the employees of the individual cooperatives.

At the beginning of the questionnaire, we focused our attention on the identification questions, where we collected the gender, age of the respondents, the highest educational level attained, and the job title in which the respondent holds his/her position.

The total number of employees of PD Veľké Zálužie is 42. Of the total number of employees, 35 employees participated in the questionnaire survey, which represents more than half of the employed, namely 83.33%. The structure of respondents consisted of 22 men and 13 women, which in percentage terms represents 62.86% of men and 37.14% of women.

The age structure of the respondents is made up of all age categories. The largest number of respondents represent the age range from 35 to 49 years, with 14 employees in absolute terms. The second largest group are respondents aged between 50 and 59 years, representing 31.4% of all respondents. In identical numbers, four employees in the 18 to 24 and 25 to 34 age brackets participated in the questionnaire survey. One employee over 60 years of age also took part in the questionnaire survey.

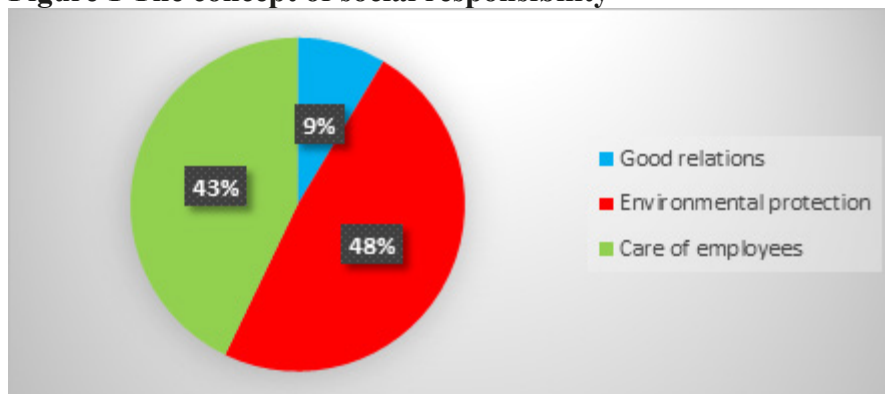
Another of the identification questions focuses on the highest educational attainment of the respondents. Respondents with the highest educational attainment of secondary education with an apprenticeship certificate have a dominant representation, namely 40% of the total number of respondents. Most of these respondents hold a position in crop or livestock production, which does not require higher education. Education in PD Veľké Zálužie is further represented by employees with secondary education with a high school diploma, namely 28.6% of respondents, which in absolute terms represents 10 employees. University education of the second degree has been completed among the respondents 25.7% of respondents, this option was indicated mainly by respondents working in positions of the corporate management. A minority of employees with a university degree I is 5.7% of the respondents.

The next question focuses on the job classification of employees. We found that most of the respondents hold their job position in the company-wide overhead center, almost half of the respondents. The remainder of the respondents work predominantly in livestock and crop production, accounting for 25.7% of respondents from crop production and an equal number from livestock production. One employee from the diagnostic centre and one employee from the kitchen centre also participated in the written questionnaire survey.

The second part of the questionnaire focused on corporate social responsibility, with questions related to this issue being the subject of this part of the questionnaire.

The first question asked what percentage of respondents were familiar with the concept of corporate social responsibility. More than half of the respondents indicated the option no, i.e. that they did not know the concept. The remaining 44.10% had already encountered the term corporate social responsibility.

**Figure 1 The concept of social responsibility**



Source: Own proceeding based on questionnaire survey

In connection with CSR, we further asked what employees mean by CSR. Respondents were given a choice of six answers in total, namely good relations, ethics in business, sponsorship, donation, environmental protection and care for employees. Despite the wide range of options given, respondents ticked only three of the options. The option of environmental protection had the highest representation, with 48.6% of respondents indicating this option. The term social responsibility was used by 15 employees to describe care for employees. Three out of all respondents marked the option of good relations.

The next question was to find out which of the CSR areas employees consider to be the most important. Employees consider the environmental area to be the most important, with 42.9% of respondents saying so. This was followed by the opinion that the most important area is the social area represented by fourteen employees and the least number of employees, namely 17.1%, think that the most important area is the economic area.

Respondents from PD Veľké Zálužie in the next question, which concerned the participation of the cooperative in corporate responsibility, answered 51.4% for the option, no, and the remaining 48.6% of employees marked the option yes, i.e. that they think that corporate responsibility is sufficiently covered in PD Veľké Zálužie.

**Figure 2 The concept of social responsibility**

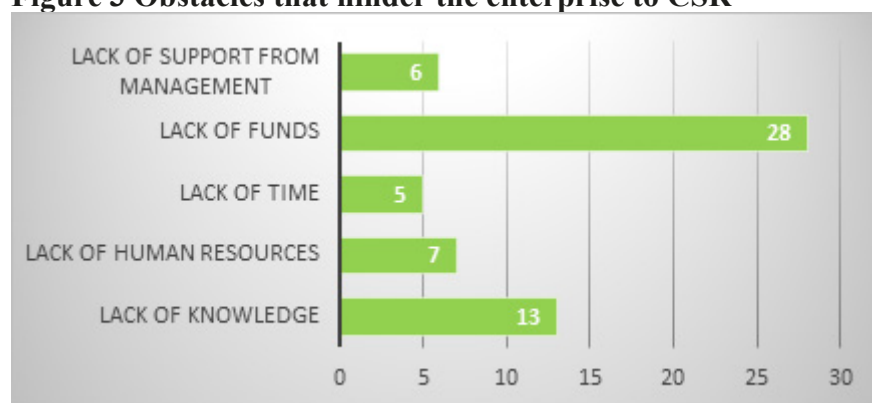


Source: Own proceeding based on questionnaire survey

With this question, we wanted to find out which motives drive a company to be socially responsible. Respondents were given a choice of a total of seven options, namely, applying a code of ethics, employee health and safety, corporate philanthropy, gaining a competitive advantage, long-term sustainability of the business, environmental responsibility, and

enhancing the cooperative's reputation. For this question, respondents were given the opportunity to indicate multiple answers. Most of the employees considered the main motives driving the company to be socially responsible to be the health and safety of the employees, specifically this option was marked 23 times. Responsibility towards the environment was the second most indicated option, with 54.3% of respondents indicating so. Employees also considered the application of a code of ethics to be an important motive, 12 employees indicated so, and 11 respondents thought that long-term sustainability was a motive leading the cooperative to be a responsible business, 28.6% of respondents considered gaining a competitive advantage to be an important motive for applying social entrepreneurship. The remaining two options, enhancing the cooperative's reputation, were cited by 22.9% of employees and three of the respondents identified corporate philanthropy as an option.

**Figure 3 Obstacles that hinder the enterprise to CSR**



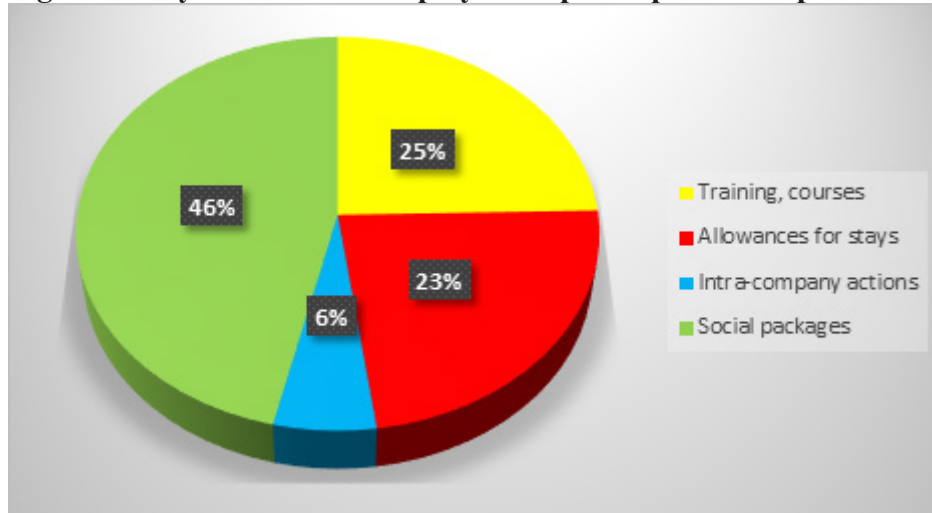
Source: Own proceeding based on questionnaire survey

When asked which obstacles constrain a company to behave responsibly, up to 84.8% of respondents answered that they believe that the obstacle is the lack of financial resources. As many as 39.4% consider lack of knowledge to be an obstacle, which can be attributed to the results of question number 5, based on which we found that more than half of the employees do not know the concept of social responsibility. The third most frequently cited answer was lack of human resources, as the implementation of CSR activities requires considerable effort, which no longer leaves time for the employees. Lack of support from management was viewed by 18.2% of respondents as a barrier and 5 employees cited lack of time.

Every enterprise, regardless of its focus, should inform its surroundings and the public about its activities, especially those that benefit the public and enrich the surroundings. This is mainly because these activities make the enterprise special and different from others, which can bring many benefits. According to the employees, PD Veľké Zálužie publishes its activities through its website, which was perhaps mentioned by almost half of the respondents, but we did not find any such information on the cooperative's website. The staff also stated that the cooperative publishes information through the annual report that the cooperative provided to us, and yet, in relation to CSR activities, they referred to the current situation of Covid-19 disease, and thus did not provide any information on these activities. Our finding is corroborated by 9 employees, a percentage of 25.7% who claim that the cooperative does not inform about CSR related activities. From the data obtained from this question, we can conclude that the enterprise does not use leaflets or media for promotion, which we consider as a negative, because these are forms of promotion that are currently effective and the enterprise can reach the general public with them.

The twelfth question was designed to find out which stakeholders are given the highest priority by employees. According to 62.9% of the respondents, shareholders and partners have the highest priority, 13 respondents consider the employees of the cooperative themselves as the priority stakeholders.

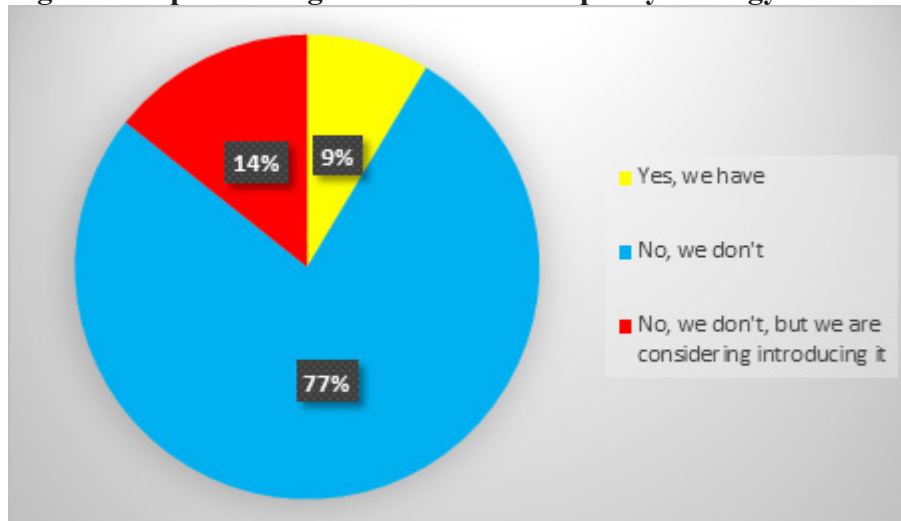
**Figure 4 Ways to motivate employees to participate in corporate responsibility**



Source: Own proceeding based on questionnaire survey

The cooperative mostly motivates employees to participate in corporate responsibility through social packages, as many as 32 employees reported doing so. In almost equal numbers, employees indicated the possibility of training and stay allowances, with percentages of 48.6% and 45.7%, respectively. Intra-company promotions motivated four respondents.

**Figure 5 Implementing an environmental policy strategy**



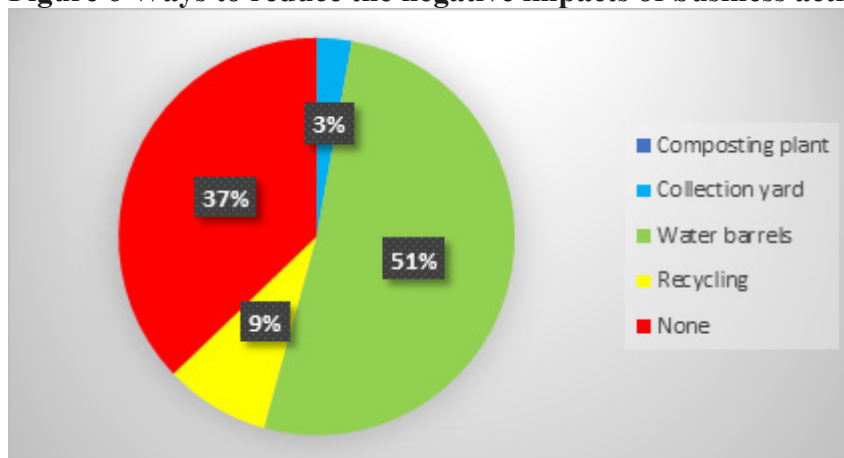
Source: Own proceeding based on questionnaire survey

The majority of respondents (77%) are of the opinion that the cooperative does not have an environmental policy strategy in place, 5 employees confirm this opinion, but complement it with the information that the cooperative is interested in including this strategy in the overall strategy of the enterprise in the future. Three employees from the kitchen and vegetable production centre stated that an environmental strategy is already part of the cooperative's



strategy, but we believe that these employees are not sufficiently involved in the cooperative's internal information and so we consider their answer as an assumption.

**Figure 6 Ways to reduce the negative impacts of business activities**



Source: Own proceeding based on questionnaire survey

The questionnaire shows us that the cooperative tries to reduce the negative impacts of business activities through water barrels, the more directly rainwater is used, the less chlorinated or otherwise chemically treated water is consumed, and the less it is unnecessarily drained into the sewer system where it mixes with oils and other toxic substances from the streets or roads. More than half of the respondents reported that the cooperative uses this method of capturing rainwater, the remaining employees said that the cooperative does not use any of these methods to reduce negative environmental impacts, and one employee, specifically from the kitchen center, stated, However, we checked further with the management of the cooperative and found out that there is no collection yard at the cooperative, the incorrectness of this information can be attributed to the ignorance of the employee, as she works outside the centres dealing with the business of the cooperative. Three of the respondents indicated recycling, we were surprised by the low number of indications of this particular answer, as after careful examination, we found that this method of reducing negative impacts is used by the cooperative.

When it comes to selecting cooperation partners, the cooperative takes price for products and services into account the most, 48.6% of employees think so. Only one of the employees considers references important when choosing suppliers. The last two groups of respondents mentioned quality, reliability and ability to pay as important factors, these groups account for 25.7% and 22.9% of the total number of respondents respectively. Thus, we can conclude that the cooperative does not consider corporate environmental responsibility at all when selecting partners.

The last question of the questionnaire survey asked whether the cooperative planned to expand its environmental CSR activities in the future. This question was open-ended, meaning that employees could write any observations they had regarding alternatives for expanding the cooperative's scope. The most frequently mentioned was that the cooperative plans to set up a collection yard together with a composting plant. The purpose of setting up collection yards is primarily to ensure free collection of waste from natural and legal persons. The collection yard is to be used for the collection (temporary storage) of separated municipal waste. Waste delivered to the collection yard area is then collected in sorted containers until it is taken away by an authorised organisation. The operation of the collection yard will create more favourable conditions for waste management. It has a positive impact on the environment, socio-economic

benefits, an increase in the quality of life of the population in the municipality and the development of the region.

In turn, the composting plant brings sustainable use of natural resources through the development of environmental infrastructure. Increasing the rate of waste recovery, with a focus on preparing waste for reuse and recycling and promoting waste prevention. The aim of setting up a composting plant is to reduce the amount of biodegradable municipal waste disposed of in landfill, to create the conditions for municipal waste to be disposed of in landfill with a reduced content of biodegradable waste.

#### 4. Conclusion

Customer and investor interest in CSR is increasing, the market position of companies is strengthening and its corporate value is increasing. For a company seeking to recruit skilled workers, the company's name plays an important role in determining the attractiveness of the company as an employer, and not only for potential candidates. Many businesses are beginning to focus on their CSR performance. The quality of their efforts is measured, evaluated and documented in CSR reports. As a concept, Corporate Social Responsibility (CSR) is often defined as an organisation's obligation to consider the interests of customers, employees, shareholders, communities and environmental considerations in all aspects of their operations.

Agriculture plays an important role in the development of a country's economy. Identifying factors linked to performance and social responsibility makes it possible to increase the value of products and services, which can thus also be reflected in the competitive advantage of agricultural enterprises. Raising the responsible awareness and behaviour of enterprises is also a driver of a country's competitiveness. Social responsibility influences corporate policy and strategy, interacting with all areas of management - from production to marketing, from human resource management to financial aspects and controlling. It can therefore be considered as an integrating element of value chain management to achieve competitive advantage and minimise risk.

Based on the results of the survey, it can be argued that CSR activities are being implemented at the cooperative to some extent, but not in a way that is desirable and beneficial to the enterprise in all respects. The respondents perceive social responsibility as related to the health and safety of employees at the workplace, environmental protection, corporate philanthropy and, last but not least, they imagine good relations, whether at the workplace or in their dealings with the external environment. In general, we can therefore argue that employee awareness of CSR is limited, which may result in the fact that even if a cooperative engages in certain CSR activities, employees do not consider these to be CSR-related activities because they are not sufficiently informed and are not familiar with more detailed facts about CSR and perceive these activities as, for example, the cooperative's goodwill. For this reason, we can say with unequivocal certainty that the awareness of their employees, but also of the company's surroundings, plays a very important role.

We also consider the ways in which the employees of cooperatives are motivated to be essential because, on the one hand, it is important that employees understand the concept of responsible business and, on the other hand, that they carry it out to the extent possible in accordance with the requirements of management, which is precisely what satisfactory motivation from management can ensure.

Employees are currently motivated mainly by training, courses, holiday allowances and in-company events. There are many ways of motivation, therefore, it would be advisable for cooperatives if the management were to include some of these in the future to contribute to a good working atmosphere and increase the initiative of its employees to participate in responsible business.

Equally important is the way in which cooperatives contribute to the elimination of negative environmental impacts. One of the questions of the survey was to find out how the cooperatives we selected reduce these impacts. In both of the cooperatives, water barrels and recycling were the most frequent answers. We consider this to be positive, but in our opinion insufficient. There are a number of ways in which we can contribute to reducing the adverse environmental impacts. Farms can protect the environment by preventing, managing or reducing waste production, pollutants in water and soil, emissions to air, and the amount of poisons used in production. There is also a need to rethink the concepts of increasing the production of animal products, storage, the application of excreta and the use of bio-gas. More emphasis should be placed by cooperatives on manure. It would also be advisable to avoid over-fertilisation and reduce nitrogen overdosing in protein feed. Composting technology is also mentioned as a process for stabilising fertiliser substances and the possibility of their adequate dosage.

Businesses today are no longer driven by shareholder value alone. Their decisions are increasingly influenced by their responsibilities to employees, customers, the environment and the society in which they operate. It is clear that making a profit is paramount for companies, as without profit companies lose their intrinsic motivation. And yet, for a growing number of companies, both large and small, ignoring these social responsibility factors undermines their competitive advantage. Corporate social responsibility cannot be imposed on individual companies. However, each company can decide for itself whether to implement corporate social responsibility in its strategy. It is important for a business to fulfil its commitment to behave ethically and contribute to economic development while improving the quality of life of the workforce and the surrounding community as a whole.

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## The drivers (predictors) of green management practices and green investment. Empirical evidence from Central and Eastern European firms

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### Abstract

*There is a continuous need to understand and develop the green practices and investments in order to emphasize the environment focus. This article's purpose is to analyze how firms from Central and Eastern Europe approach the topic of green management and to correlate their decisions with their eco-friendly actions. The methodology applied is in binary logistic regression and our data sample consists in 5.472 businesses from 12 countries. The results show us that firms that have imposed in their strategy, objectives regarding ecological and have set up a management position dedicated to those objectives, are more likely to monitor their energy consumption, to set targets on energy consumption and CO2 emissions and to invest in more eco-friendly machineries or heating and cooling devices. On the other hand, if they are experiencing losses due to pollution, there is no significant probability to implement the above stated actions. This paper offers interesting implications for stakeholders and managers to understand the predictability of their actions and to assess in depth the correlations between inside firm actions.*

**Keywords:** binary logistic regression, green investments, green management practices, predictability.

**JEL Classification:** Q50, C25, D22.

### Introduction

The accelerated effects of climate change have encouraged an increasing number of both public and private entities, as well as international organizations, to develop and implement green management practices. The aim of this study is to identify and evaluate the drivers of green management practices and green investment using 5.472 firms' data from 12 Central and Eastern European countries: Albania, Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, the Slovak Republic, Slovenia, Estonia, Lithuania, and Latvia. The data sample subject of our paper was accessed through the EBRD-EIB-WBG Enterprise Surveys conducted in 2018-2020 that covered almost 28,000 enterprises in 41 economies of EU, Eastern Europe, Central Asia and Middle East and North Africa.

The statistical model is conducted based on the objectives of this study, respectively, understanding the drivers of green management practices and green investment regarding two core aspects: monitorization and targets on energy and CO2 and resource allocation for upgrading eco related aspects. The dependent variables are focused on internal monitorization, external audits, implementing targets and investments that focus on environmental benefits. As drivers of the above, there were selected 7 variables that we tested through binary logistic regression: if the firms have a written business strategy, the business strategy includes aspects regarding environmental issues, there exists a management position devoted to environmental issues, the investments in R&D inside or outside the business, the losses caused by pollution or by extreme weather events.

The results show that the drivers (predictors) that have significant predictability likelihood on both management practices and green investment are the presence of a management position devoted to environmental issues and if strategic objectives mention environmental or climate change issues. With less predictability intensity are the R&D investments in business, the written business strategy and the losses from extreme weather events. Investments in R&D



outside the business have a lower predictability power on the majority of the selected dependent variables. On the other hand, the losses from pollution either are non-significant in our model or they reduce the likelihood to adopt green practices or investments.

This study highlights the main predictors of green management practices and green investment from Central and Eastern European firms, with significant implications for academics and practitioners. Companies are accountable for not just creating a profit, but also for improving the society and the economy in a way that is environmentally friendly and that is why it is essential to understand what internal aspects influence positively the “green” oriented actions and sustainability. Understanding which aspects in the firms can increase the predictability of green practices or investments can create a model in which actions are strongly related and emphasized with a focus on environmental aspects.

## Literature review

In a broad sense, sustainable investments describe responsible investments, socially conscious investments, and investments with an eye toward the environment (Utz et al., 2015). The term “green” is a very broad definition for numerous types of activities and assets, either by absolute ideas (a technology is green or not green) or by relative idea (firm X has lower CO<sub>2</sub> emissions than firm Y). Regarding some industries (such as renewable energy), products (such as renewable energy credits), services (such as waste management), and technologies, there appears to be a sizable common intersection of the different definitions that are in the existing literature.

The effects of climate change on institutional asset allocation are assessed by Mercer (2011). It indicates that the traditional strategic asset allocation (SAA) does not take climate change into account. Three dimensions make up an evaluation framework for climate change risk: low-carbon technology; the effects of climate change; and the price of emissions brought on by policy changes. The use of green investments to advance sustainable development and address environmental issues results in changes in consumer behavior as more and more consumers choose to purchase organic over conventional goods (Yen, 2018). In addition, companies whose management inform society of the advantages of the green investments they make are more likely to attract investors (Martin & Moser, 2016).

Using green technology that reduces specific taxes, meeting customer demands to consume green products and protect the environment, and a rise in stakeholder satisfaction, especially investor satisfaction, are just a few of the benefits of implementing green investments. These benefits will attract funds from government facilities, meet customer demands to consume green products and protect the environment, and increase stakeholder satisfaction. The reasons for making green investments vary as well. Understanding the various driving forces behind green investors is crucial because it will influence how they define and interpret the term “green investment.”

Earlier studies have examined the effects of green practices on organizational performance and identified both beneficial and significant correlations between them (Cankaya & Sezen, 2019). However, there are several internal and external aspects that encourage firms to go green and thereby enhance their performance in terms of sustainability. Even though there are numerous external and internal drivers that influence the investments and practices regarding environmental actions, it’s complicated to assess them, especially regarding the strength and feasibility (Table 1).



Table 1. Classification of the drivers of sustainable supply chain management

External Drivers	Internal Drivers
<ul style="list-style-type: none"> <li>• Market Pressure</li> <li>• Social Pressure</li> <li>• Regulatory Pressure</li> </ul>	<ul style="list-style-type: none"> <li>• Corporate Strategy</li> <li>• Organization's Culture</li> <li>• Organizations' Resources</li> <li>• Organizations' Characteristics</li> </ul>

source: Saeed & Kersten, 2019

Enterprises that rely on external inputs to change take advantage of possibilities by making more sustainable investments. According to a study that examined over 5300 investment decisions at the level of 462 companies in the field of energy efficiency showed that there is no impact in using simultaneously internal and external change agents, on the effect of external drivers (Hoppman et al., 2018). Government pressure, competitor pressure, consumer pressure, and supplier pressure are the primary external variables affecting green investment (Paul et al., 2017).

According to Du et al. (2019), the main factors influencing green investments are political, economic, and environmental. By building infrastructure and putting laws and norms into place to safeguard the environment, political issues have a significant impact on green investments. These include environmental taxes, giving discounts to customers who purchase organic items, giving subsidies to businesses making green investments, and fining businesses that violate pollution restrictions.

One of the most important topics in the literature on corporate sustainability is what motivates businesses to invest in activities linked to sustainability (Bansal & Roth, 2000; Ervin et al., 2013). Most studies assume that businesses are more motivated to invest in sustainable activities if there is a direct economic benefit like cost reduction of profit increase. For example, energy efficiency measures contribute both to helping the environment and to the business financials, but not all the companies choose to do this kind of investments even though there are only advantages (Lyneis & Sterman, 2016; Backlund et al., 2012).

According to Marcus and Geffen (1998), a company's internal capabilities (such as organizational learning and looking for outside people, technology, and ideas) can aid in the acquisition of external skills, which are then helpful in enhancing environmental performance. The process innovation and implementation are necessary for pollution avoidance technologies to provide the firm with a low-cost advantage (Christmann, 2000). According to Sharma et al. (2004) organizations that can integrate shareholders, organizational learning, cross-functional integration, continuous innovation, shared vision, and strategic proactivity are more likely to develop proactive green strategies.

The existing studies analyze from numerous perspectives the green actions that companies do in order to fight the climate changes. In addition, we can subtract the drivers that give the highest impulses to implement green practices and investments. On the other hand, up to my knowledge, there is no existing study based on which are the main drivers (predictors) that influence green investments and practices in the businesses in Central and Eastern European countries.

### Data & Methodology

The European Bank for Reconstruction and Development (EBRD), European Investment Bank (EIB), and the World Bank Group collaborated to create the EBRD-EIB-WB Enterprise

Surveys. Nearly 28,000 businesses were surveyed as part of the EBRD-EIB-WBG Enterprise Surveys between 2018 and 2020 in 41 countries across the EU, Eastern Europe, Central Asia, the Middle East, and North Africa. The Green Economy module of the EBRD-EIB-WBG Enterprise Surveys covered green investments and green management techniques.

After data cleaning procedures and selection of the firms from Central and Eastern European countries (Albania, Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, the Slovak Republic, Slovenia, Estonia, Lithuania, and Latvia), the data sample consists in information for 5.742 businesses.

The purpose of the survey is to gather opinions from businesses about how they view the environment in which they operate in EBRD operational countries (and beyond), as well as to contribute to the development of a panel of business data that will enable the monitoring of changes in the business environment over time.

The statistical model applied in this study is **binary logistic regression** which predicts the probability that an observation falls into one of two categories of a dichotomous dependent variable. In regression analysis, logistic regression (also known as logit regression) estimates a logistic model's parameters (the coefficients in the linear combination). In binary logistic regression, there is a single binary dependent variable with two values denoted by the letters "0" and "1," whereas the independent variables can each be either binary variables or continuous variables (any real value). The choice of this model is based on the format of the data, mainly questions with Yes/No answers.

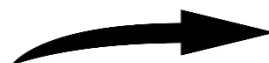
The article model is developed in accordance with our motivation: to understand which are the internal drivers of the businesses from CEE selected countries regarding green management practices and investments. We selected 7 independent variables (IV) as internal drivers that may influence the environmental oriented actions: if the firms have a written business strategy, the business strategy includes aspects regarding environmental issues, there exists a management position devoted to environmental issues, the investments in R&D inside or outside business, the losses caused by pollution or by extreme weather events.

The chosen dependent variables (DV) focus on 7 important aspects regarding green practices and investments: if businesses monitor the energy consumption, if there exist targets on energy consumption and on CO<sub>2</sub> emission and if they allocated resources on heating and cooling improvements, climate friendly energy, machinery upgrades or energy management.

## Motivation

The motivation of this article focuses on the need to understand if there are internal drivers that may influence green investments and practices for the businesses in Central and Eastern European countries. The objective of this study is to assess if particular actions inside the firm have the capacity to predict on specific environmental aspects and to provide an answer for the question: any of the selected independent variable predicts the probability of the actions from dependent variables?

In this study, I have identified two primary directions: green investments, focused on upgrades or changes and green practices that analyze and constantly evaluate the consumption and the pollution made during the firms' activity.



Independent Variables (Yes/No ?)	Dependent variables (Yes/No ?)
<ul style="list-style-type: none"> <li>• Does Firm have Formalized Written Business Strategy?</li> <li>• In Last FY, Strategic Objectives Mention Environmental or Climate Change Issues?</li> <li>• In Last FY, Have Manager Responsible For Environmental or Climate Issues?</li> <li>• During Last 3 Yrs, Establishment Spent On R&amp;D Within The Establishment?</li> <li>• During Last 3 Yrs, Establishment Spent On R&amp;D Contracted Outside Establishment?</li> <li>• Over Last 3 Years, Experienced Monetary Losses Due To Extreme Weather Events?</li> <li>• Over Last 3 Years, Experienced Monetary Losses From Pollution?</li> </ul>	<ul style="list-style-type: none"> <li>• Over Last 3 Years, Did This Establishment Monitor Its Energy Consumption?</li> <li>• Over Last 3 Years, Did This Establishment Have Targets On Energy Consumption?</li> <li>• Did This Establishment Have Targets For CO2 Emissions?</li> <li>• Over Last 3 Years, Adopt Heating And Cooling Improvements?</li> <li>• Over Last 3 Years, Adopt More Climate-Friendly Energy Generation On Site?</li> <li>• Over Last 3 Years, Adopt Machinery Upgrades?</li> <li>• Over Last 3 Years, Adopt Energy Management?</li> </ul>

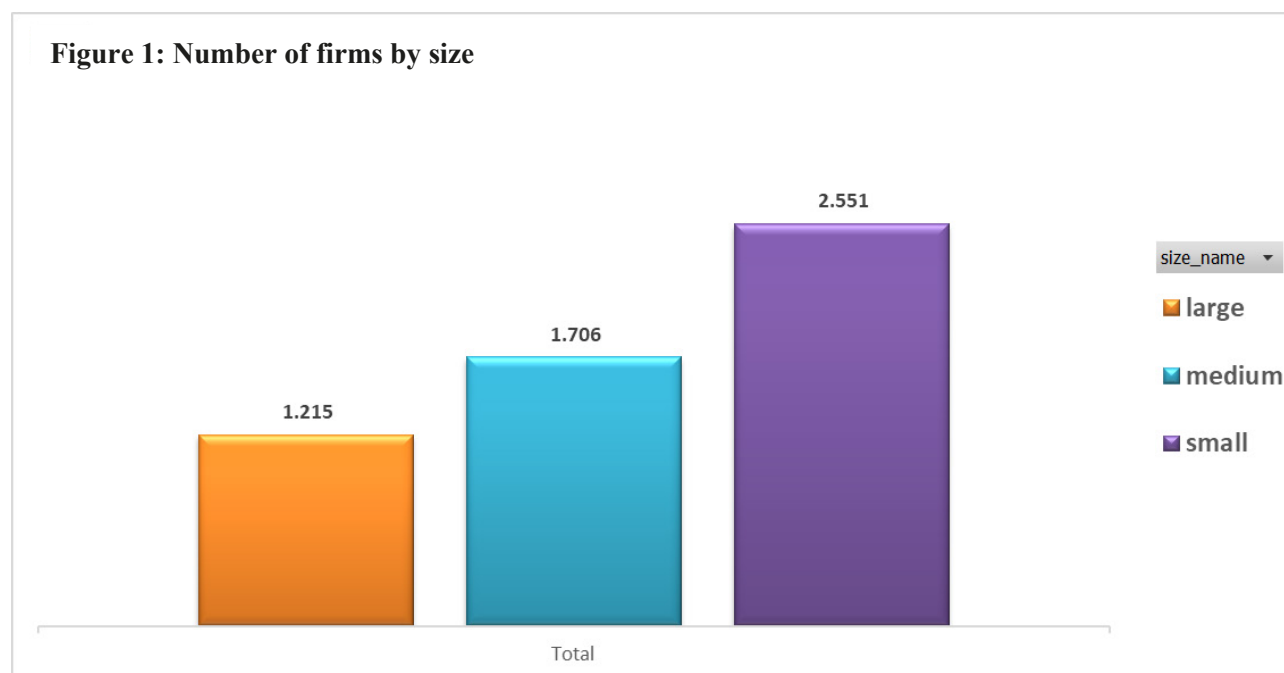


IV predict the actions from DV

## Results

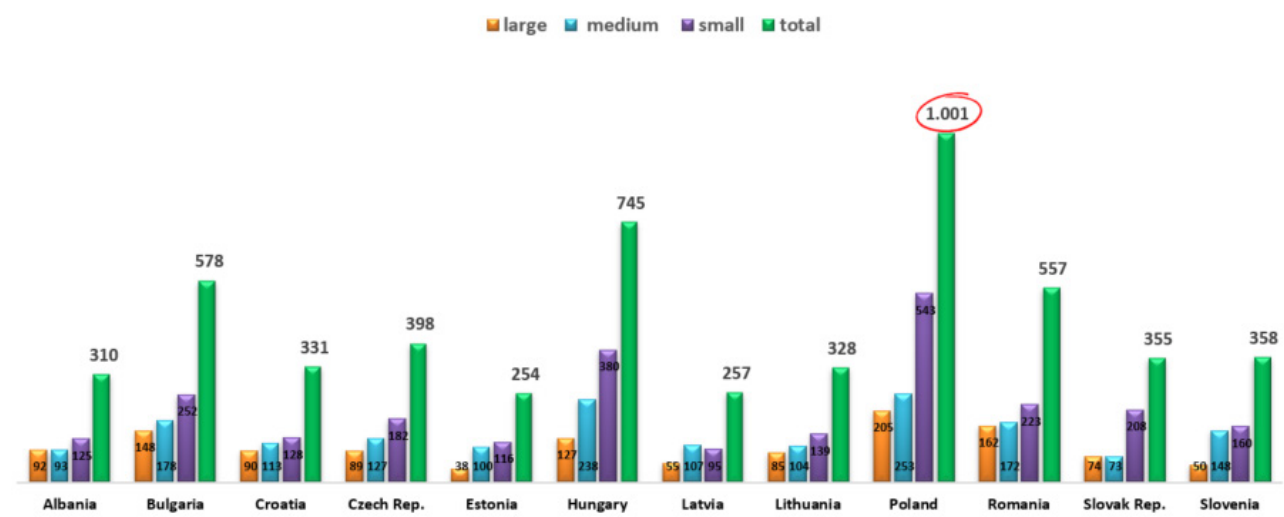
### Descriptive statistics

The first part of the analysis consists in understanding the data, the qualitative information, and the distribution across clusters, considering both the whole sample and the split by country. In the sample we have 1.215 large firms, 1.706 medium firms and 2.551 small firms (Figure 1), the distribution across countries being uneven (Figure 2.). The highest number of surveyed businesses is from Poland (1.001), the lowest number being from Estonia (254).



Source: own processing

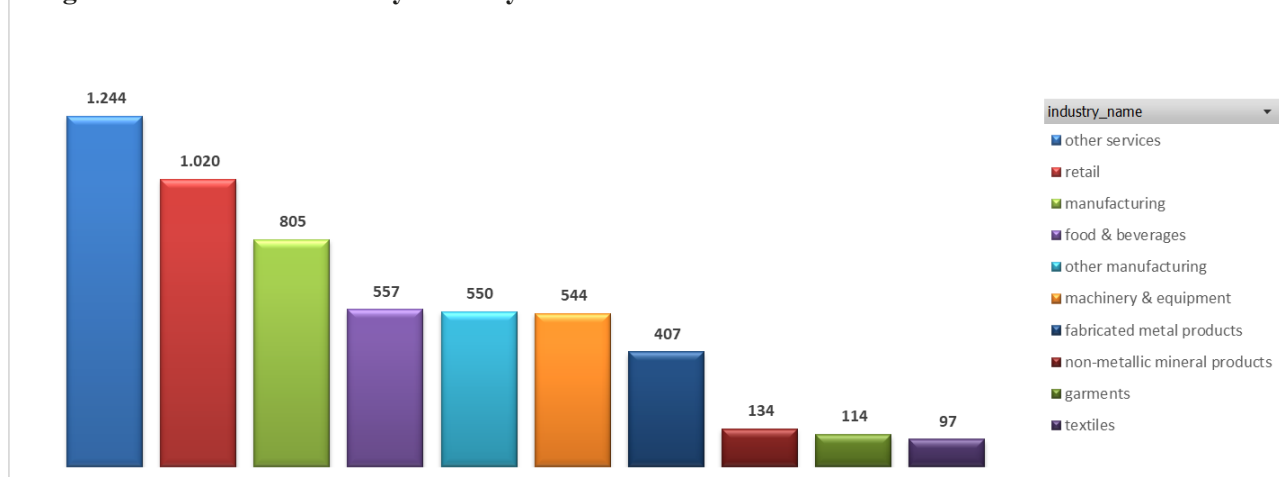
**Figure 2: Number of firms by size & by country**



Source: own processing

The highest number of firms, 1,244, are in the *other services*, followed by *retail, manufacturing, food & beverages*, with lowest number, 97, being in *textile* industry (Figure 3.).

**Figure 3: Number of firms by industry**



Source: own processing

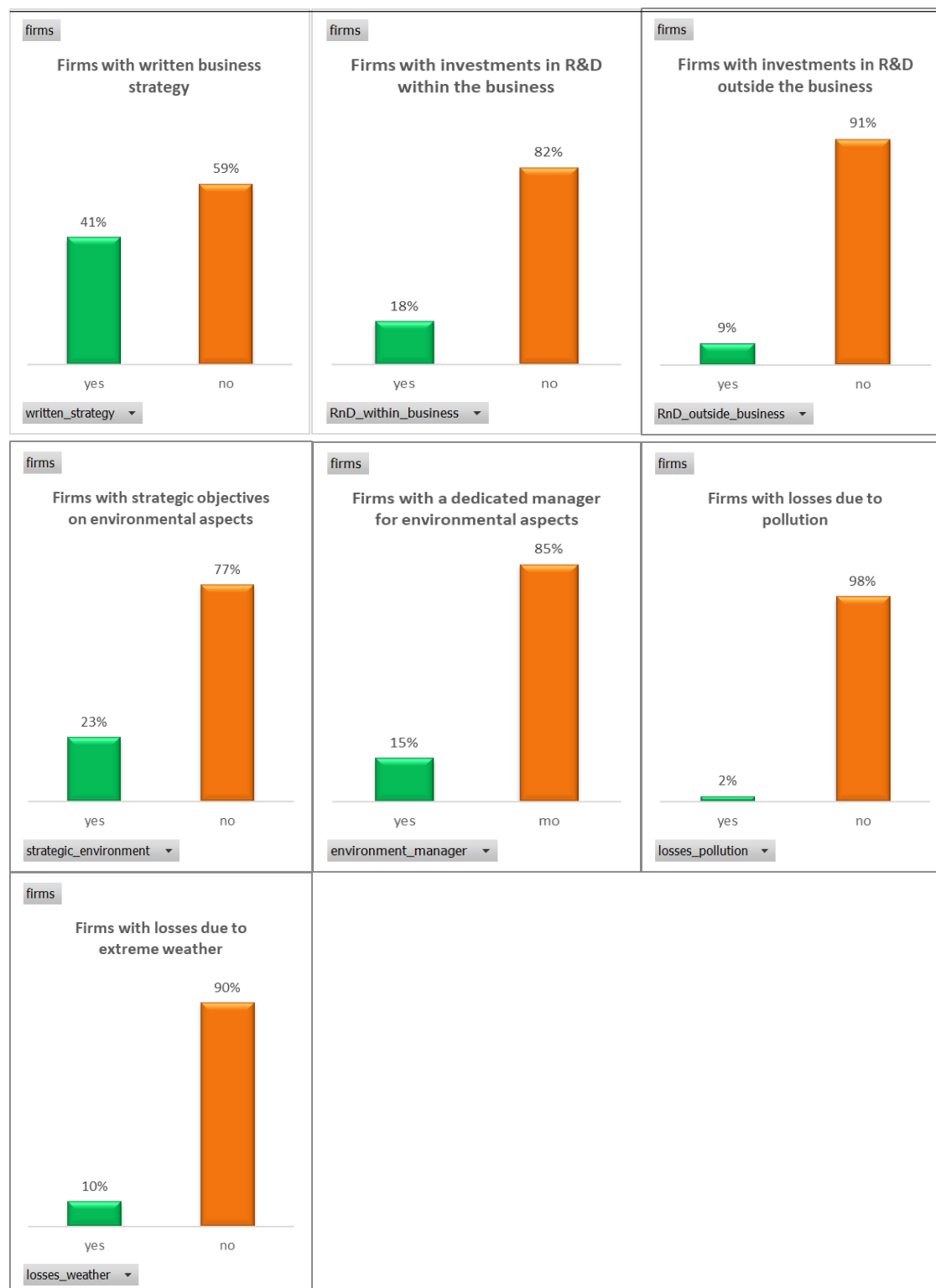
A key aspect in developing our analysis and our statistical model is understanding the distribution of the answers from the independent and dependent variables (Figure 4. And Figure 5.).

Around 40% of the surveyed businesses have a written strategy, but only 23% of them include in their objectives a focus on environmental aspects and only 15% of the firms have a dedicated manager for green aspects. 18% of them invest in R&D inside the business and 9% invest in R&D outside the business. The percentages of the interviewed companies that experienced losses due to extreme weather events or pollution are only 10%, respectively 2%.

By analyzing the green practices and investments, we can observe that 57% of the firms monitor their energy consumption, but only 30%, respectively 7%, have targets on energy consumption and on CO<sub>2</sub> emissions. 38% of businesses adopt heating and cooling improvements, 14% of them adopt more climate friendly energy generation on site and 30% adopt energy management. The highest percentages on green investments are observed in machinery upgrades with 51%.

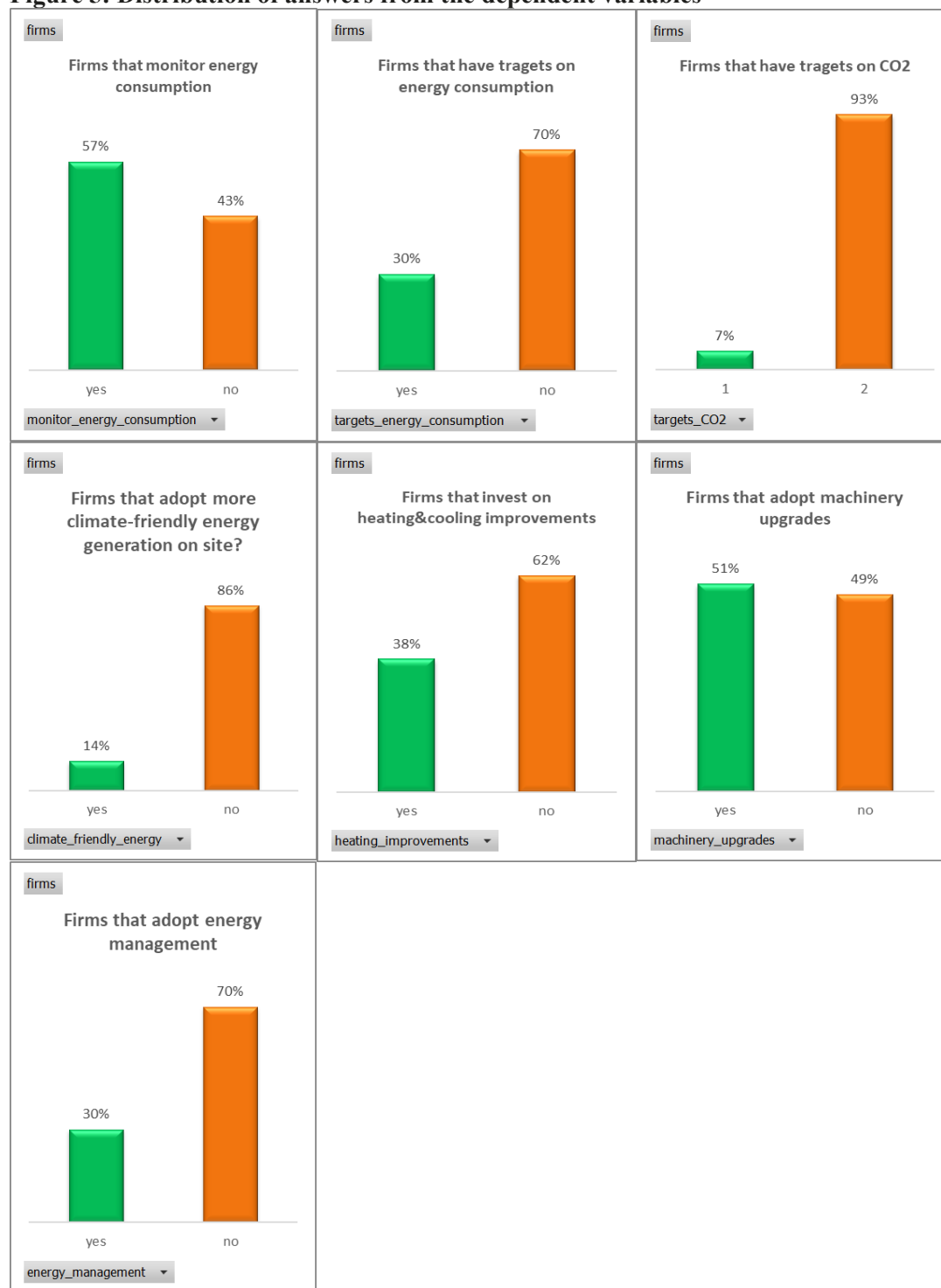


**Figure 4: Distribution of answers from the independent variables**



Source: own processing

**Figure 5: Distribution of answers from the dependent variables**



Source: own processing

### • Binary logistic regression

In this part of the study will be presented the results of the binary logistics regression applied for each of the selected dependent variables.

#### 1. Over last 3 years, did this establishment monitor its energy consumption?

Research question: Can we predict if the establishment did monitor its energy consumption based on if: it has a written business strategy, it invests in R&D inside or outside the business,

the business strategy includes aspects regarding environmental issues, there exists a management position devoted to environmental issues and it experienced losses due to extreme weather or pollution?

**Table 2. Variables in the Equation**

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.301	.027	121.361	1	.000	1.352

**Table 3. Omnibus Tests of Model Coefficients**

		Chi-square	df	Sig.
Step 1	Step	589.514	7	.000
	Block	589.514	7	.000
	Model	589.514	7	.000

We can observe a statistical significant result in Sig. value, lower than 5% (Table 2.). The overall model is statistically significant,  $\chi^2(7) = 589.514$ ,  $p < .05$  (Table 3.).

**Table 4. Model Summary**

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	6873.548 <sup>a</sup>	.102	.137

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Both Cox & Snell and Nagelkerke R Square values, which are used to calculate the explained variation, are listed in Table 4. Sometimes referred to as "pseudo R<sup>2</sup> values," these values are interpreted the same, the explained variation in the dependent variable based on our model ranges from 10,2% to 13,7%, depending on whether we reference the Cox & Snell R<sup>2</sup> or Nagelkerke R<sup>2</sup> methods, respectively.

**Table 5. Hosmer and Lemeshow Test**

Step	Chi-square	df	Sig.
1	4.994	5	.417

The Hosmer-Lemeshow test examines the null hypothesis that the model's predictions match the observed group memberships exactly. When comparing the observed frequencies to those predicted by the linear model, a chi-square statistic is calculated. A non-significant chi-square and Sig means that the data were well fitted to the model (Table 5).

**Table 6. Classification Table<sup>a</sup>**

Table 6: Confusion Matrix					
	Observed		Predicted		
			monitor_energy_consumption		Percentage Correct
			no	yes	
Step 1	monitor_energy_consumption	no	1310	1017	56.3
		yes	1014	2131	67.8
	Overall Percentage				62.9

a. The cut value is .500

With the independent variables added, the model now correctly classifies 62,9% of cases overall (see "Overall Percentage" row) à Percentage accuracy in classification. - 67,8 % of businesses that monitor the energy consumption were also predicted by the model to monitor the energy consumption (see the "Percentage Correct" column in the "Yes" row of the observed categories) à Sensitivity - 56,3 % of businesses who did not monitor the energy consumption were correctly predicted by the model not to monitor the energy consumption (see the "Percentage Correct" column in the "No" row of the observed categories) à Specificity

Table 7. Categorical Variables Codings			
		Frequency	Parameter coding
			(1)
written_strategy	no	3210	1.000
	yes	2262	.000

Table 7. shows us that written strategy was parameter coded as no (1) = 1 and yes (1) =0.

Table 8. Variables in the Equation									
		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1 <sup>a</sup>	written_strategy(1)	-.316	.062	25.945	1	.000	.729	.645	.823
	<b>RnD_within_business</b>	<b>.790</b>	<b>.097</b>	<b>66.685</b>	<b>1</b>	<b>.000</b>	<b>2.204</b>	1.823	2.665
	RnD_outside_business	.600	.146	16.939	1	.000	1.821	1.369	2.423
	strategic_environment	.428	.087	24.452	1	.000	1.534	1.295	1.818
	<b>environment_manager</b>	<b>.758</b>	<b>.109</b>	<b>48.594</b>	<b>1</b>	<b>.000</b>	<b>2.134</b>	1.724	2.641
	<b>losses_weather</b>	<b>.793</b>	<b>.116</b>	<b>47.023</b>	<b>1</b>	<b>.000</b>	<b>2.210</b>	1.762	2.773
	<b>losses_pollution</b>	-.025	.231	.012	1	.913	.975	.620	1.534
Constant		.084	.055	2.309	1	.129	1.088		

a. Variable(s) entered on step 1: written\_strategy, RnD\_within\_business, RnD\_outside\_business, strategic\_environment, environment\_manager, losses\_weather, losses\_pollution.

As Table 8. presents, The Wald test ("Wald" column) is used to determine statistical significance for each of the independent variables. The statistical significance of the test is found in the "Sig." column. From these results you can see that written strategy ( $p = .000$ ), R&D within the business ( $p = .000$ ), R&D outside the business ( $p = .000$ ), strategic\_environment ( $p = .000$ ), environment\_manager ( $p = .000$ ) and losses\_weather ( $p = .000$ ) added significantly to the model/prediction, but losses\_pollution ( $p = .913$ ) did not add significantly to the model.

A binary logistic regression was performed to ascertain the effects of written business strategy, investments in R&D inside or outside the business, the business strategy includes aspects regarding environmental issues, a management position devoted to environmental issues and of the experienced losses due to extreme weather or pollution on the likelihood that participants did monitor the energy consumption in the last 3 years. The logistic regression model was statistically significant,  $\chi^2(7) = 589.514$ ,  $p < .05$ . The model explained 13,7 % (Nagelkerke R<sup>2</sup>) of the variance in monitoring the energy consumption and correctly classified 62,9% of cases.

Firms without a written business strategy were associated with a reduction (0.729) in the likelihood of monitoring the energy consumption. On the other hand, firms that invest in R&D within and outside the business are 2.204, respectively 1.821 times more likely to monitor their energy consumption. The same increased likelihood can be observed for the firms that have

strategic objectives regarding the environment (1.534), a dedicated manager for environmental issues (2.134) and that have experienced losses due to extreme weather events (2.210). However, the losses due to pollution have no statistical significance on the model (Sig = .913).

## 2. Over last 3 years, did this establishment have targets on energy consumption?

Research question: Can we predict if the establishment has targets on energy consumption based on if: it has a written business strategy, it invests in R&D inside or outside the business, the business strategy includes aspects regarding environmental issues, there exists a management position devoted to environmental issues and it experienced losses due to extreme weather or pollution?

We will apply the same binary logistic regression interpretation as in the subchapter 1.

**Table 9. Variables in the Equation**

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.829	.029	795.055	1	.000	.437

**Table 10. Omnibus Tests of Model Coefficients**

		Chi-square	df	Sig.
Step 1	Step	914.898	7	.000
	Block	914.898	7	.000
	Model	914.898	7	.000

**Table 11. Model Summary**

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	5806.268 <sup>a</sup>	.154	.218

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

**Table 12. Hosmer and Lemeshow Test**

Step	Chi-square	df	Sig.
1	13.687	5	.018

**Table 13. Classification Table<sup>a</sup>**

	Observed		Predicted		Percentage Correct
			targets_energy_consumption		
			no	yes	
Step 1	targets_energy_consumption	no	3536	273	92.8
		yes	1109	554	33.3
	Overall Percentage				74.7



**Table 14. Variables in the Equation**

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1 <sup>a</sup>	<b>written_strategy</b>	<b>.624</b>	<b>.067</b>	<b>85.846</b>	<b>1</b>	<b>.000</b>	<b>1.866</b>	1.636	2.130
	RnD_within_business	.602	.091	44.281	1	.000	1.827	1.530	2.181
	RnD_outside_business	.247	.123	4.037	1	.045	1.280	1.006	1.627
	<b>strategic_environment</b>	<b>1.062</b>	<b>.082</b>	<b>166.939</b>	<b>1</b>	<b>.000</b>	<b>2.892</b>	2.461	3.397
	environment_manager	.597	.096	38.983	1	.000	1.817	1.507	2.192
	losses_weather	.611	.105	33.568	1	.000	1.842	1.498	2.265
	losses_pollution	-.366	.210	3.037	1	.081	.694	.460	1.047
	Constant	-1.706	.049	1199.733	1	.000	.182		

a. Variable(s) entered on step 1: written\_strategy, RnD\_within\_business, RnD\_outside\_business, strategic\_environment, environment\_manager, losses\_weather, losses\_pollution.

A binary logistic regression was performed to ascertain the effects of written business strategy, investments in R&D inside or outside the business, the business strategy includes aspects regarding environmental issues, a management position devoted to environmental issues and of the experienced losses due to extreme weather or pollution on the likelihood that participants have targets on the energy consumption in the last 3 years. The logistic regression model was statistically significant,  $\chi^2(7) = 914.898$ ,  $p < .05$ . The model explained 21,8% (Nagelkerke R<sup>2</sup>) of the variance in targets on energy consumption and correctly classified 74,7% of cases.

Firms with a written business strategy were associated with an increase (1.866) in the likelihood of having targets on the energy consumption. Firms that invest in R&D within and outside the business are 1.827, respectively 1.280 times more likely to target their energy consumption. The same increased likelihood can be observed for the firms that have strategic objectives regarding the environment (2.892), a dedicated manager for environmental issues (1.817) and that have experienced losses due to extreme weather events (1.842). On the other hand, the losses due to pollution have no statistical significance on the model (Sig = .081).

### 3. Did this establishment have targets for CO<sub>2</sub> emissions?

Research question: Can we predict if the establishment has targets for CO<sub>2</sub> based on if: it has a written business strategy, it invests in R&D inside or outside the business, the business strategy includes aspects regarding environmental issues, there exists a management position devoted to environmental issues and it experienced losses due to extreme weather or pollution?

We will apply the same binary logistic regression interpretation as in the subchapter 1.

**Table 15. Variables in the Equation**

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-2.618	.054	2376.513	1	.000	.073

**Table 16. Omnibus Tests of Model Coefficients**

		Chi-square	df	Sig.
Step 1	Step	535.099	7	.000
	Block	535.099	7	.000
	Model	535.099	7	.000

**Table 17. Model Summary**

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	2183.266 <sup>a</sup>	.093	.238

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

**Table 18. Hosmer and Lemeshow Test**

Step	Chi-square	df	Sig.
1	9.465	5	.092

**Table 19. Classification Table<sup>a</sup>**

	Observed		Predicted		
			targets_CO2		Percentage Correct
			no	yes	
Step 1	targets_CO2	no	5094	6	99.9
		yes	367	5	1.3
	Overall Percentage				93.2

a. The cut value is .500

**Table 20. Variables in the Equation**

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1 <sup>a</sup>	written_strategy	.524	.133	15.621	1	.000	1.689	1.302	2.189
	RnD_within_business	.415	.144	8.259	1	.004	1.514	1.141	2.010
	RnD_outside_business	.262	.170	2.371	1	.124	1.299	.931	1.814
	strategic_environment	1.419	.144	97.535	1	.000	4.134	3.119	5.479

<b>environment_manager</b>	<b>.926</b>	<b>.136</b>	<b>46.377</b>	<b>1</b>	<b>.000</b>	<b>2.524</b>	1.933	3.294
losses_weather	.441	.157	7.905	1	.005	1.555	1.143	2.115
<b>losses_pollution</b>	.441	.248	3.173	1	<b>.075</b>	1.555	.957	2.527
Constant	- 4.033	.118	1174.101	1	.000	.018		

a. Variable(s) entered on step 1: written\_strategy, RnD\_within\_business, RnD\_outside\_business, strategic\_environment, environment\_manager, losses\_weather, losses\_pollution.

A binary logistic regression was performed to ascertain the effects of written business strategy, investments in R&D inside or outside the firm, the business strategy includes aspects regarding environmental issues, a management position devoted to environmental issues and of the experienced losses due to extreme weather or pollution on the likelihood that participants have targets on the CO<sub>2</sub> emissions. The logistic regression model was statistically significant,  $\chi^2(7) = 535.099$ ,  $p < .05$ . The model explained 23,8% (Nagelkerke R<sup>2</sup>) of the variance in targets on CO<sub>2</sub> emissions and correctly classified 93,2% of cases.

Firms with a written business strategy were associated with an increase (1.689) in the likelihood of having targets on the CO<sub>2</sub> emissions. Firms that invest in R&D within the business are 1.514 times more likely to target their CO<sub>2</sub> emissions. The same increased likelihood can be observed for the firms that have strategic objectives regarding the environment (4.134), a dedicated manager for environmental issues (2.524) and that have experienced losses due to extreme weather events (1.555). On the other hand, the investments in R&D outside the business and losses due to pollution have no statistical significance on the model (Sig = .913, respectively Sig = .075).

#### 4. Over last 3 years, adopt heating and cooling improvements?

Research question: Can we predict if the establishment adopted heating and cooling improvements based on if: it has a written business strategy, it invests in R&D inside or outside the business, the business strategy includes aspects regarding environmental issues, there exists a management position devoted to environmental issues and it experienced losses due to extreme weather or pollution?

We will apply the same binary logistic regression interpretation as in the subchapter 1.

<b>Table 21. Variables in the Equation</b>							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.487	.028	305.621	1	<b>.000</b>	.615

**Table 22. Omnibus Tests of Model Coefficients**

		Chi-square	df	Sig.
Step 1	Step	532.689	7	.000
	Block	532.689	7	.000
	Model	532.689	7	.000

**Table 23. Model Summary**

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	6738.382 <sup>a</sup>	.093	.126

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

**Table 24. Hosmer and Lemeshow Test**

Step	Chi-square	df	Sig.
1	12.682	5	.027

**Table 25. Classification Table<sup>a</sup>**

	Observed		Predicted		
			heating_improvements		Percentage Correct
			no	yes	
Step 1	heating_improvements	no	2997	392	88.4
		yes	1385	698	33.5
	Overall Percentage				67.5

a. The cut value is .500

**Table 26. Variables in the Equation**

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1 <sup>a</sup>	written_strategy	.330	.062	28.061	1	.000	1.392	1.231	1.573
	<b>RnD_within_business</b>	<b>.610</b>	<b>.086</b>	<b>50.547</b>	<b>1</b>	<b>.000</b>	<b>1.841</b>	1.556	2.178
	RnD_outside_business	.511	.119	18.426	1	.000	1.667	1.320	2.105
	<b>strategic_environment</b>	<b>.639</b>	<b>.080</b>	<b>63.152</b>	<b>1</b>	<b>.000</b>	<b>1.895</b>	1.618	2.218
	environment_manager	.436	.094	21.702	1	.000	1.546	1.287	1.857
	losses_weather	.385	.101	14.592	1	.000	1.470	1.206	1.791
	<b>losses_pollution</b>	<b>-.257</b>	<b>.199</b>	<b>1.662</b>	<b>1</b>	<b>.197</b>	.774	.523	1.143
	Constant	-1.043	.042	624.108	1	.000	.353		

a. Variable(s) entered on step 1: written\_strategy, RnD\_within\_business, RnD\_outside\_business, strategic\_environment, environment\_manager, losses\_weather, losses\_pollution.

A binary logistic regression was performed to ascertain the effects of written business strategy, investments in R&D inside or outside the business, the business strategy includes aspects regarding environmental issues, a management position devoted to environmental issues and of the experienced losses due to extreme weather or pollution on the likelihood that firms have adopted heating and cooling improvements. The logistic regression model was statistically significant,  $\chi^2(7) = 532.689$ ,  $p < .05$ . The model explained 12,6% (Nagelkerke R<sup>2</sup>) of the variance of firms that have adopted heating and cooling improvements and correctly classified 67,5% of cases.

Firms with a written business strategy were associated with an increase (1.392) in the likelihood that firms have adopted heating and cooling improvements. Firms that invest in R&D within and outside the business are 1.841, respectively 1.667 times more likely to adopt heating and cooling improvements. The same increased likelihood can be observed for the firms that have strategic objectives regarding the environment(1.895), a dedicated manager for environmental issues(1.546) and that have experienced losses due to extreme weather events(1.470). On the other hand, losses due to pollution have no statistically significance on the model (Sig = .197).

### 5. Over last 3 years, adopt more climate-friendly energy generation on site?

Research question: Can we predict if the establishment adopted more climate-friendly energy generation on site based on if: it has a written business strategy, it invests in R&D inside or outside the business, the business strategy includes aspects regarding environmental issues, there exists a management position devoted to environmental issues and it experienced losses due to extreme weather or pollution?

We will apply the same binary logistic regression interpretation as in the subchapter 1.

**Table 27. Variables in the Equation**

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-1.832	.039	2184.829	1	.000	.160

**Table 28. Omnibus Tests of Model Coefficients**

		Chi-square	df	Sig.
Step 1	Step	501.238	7	.000
	Block	501.238	7	.000
	Model	501.238	7	.000

**Table 29. Model Summary**

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	3890.269 <sup>a</sup>	.088	.159

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

**Table 30. Hosmer and Lemeshow Test**

Step	Chi-square	df	Sig.
1	6.640	4	.156



**Table 31. Classification Table<sup>a</sup>**

	Observed		Predicted		
			climate_friendly_energy		Percentage Correct
			no	yes	
Step 1	climate_friendly_energy	no	4697	20	99.6
		yes	740	15	2.0
	Overall Percentage				86.1

a. The cut value is .500

**Table 32. Variables in the Equation**

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1 <sup>a</sup>	written_strategy	.438	.090	23.551	1	.000	1.549	1.298	1.848
	RnD_within_business	.396	.110	13.070	1	.000	1.486	1.199	1.843
	RnD_outside_business	.125	.139	.812	1	.367	1.133	.863	1.488
	strategic_environment	1.242	.100	153.778	1	.000	3.463	2.846	4.215
	environment_manager	.366	.109	11.337	1	.001	1.441	1.165	1.783
	losses_weather	.200	.127	2.504	1	.114	1.222	.953	1.566
	losses_pollution	.301	.217	1.919	1	.166	1.351	.883	2.069
	Constant	-2.696	.070	1496.708	1	.000	.067		

a. Variable(s) entered on step 1: written\_strategy, RnD\_within\_business, RnD\_outside\_business, strategic\_environment, environment\_manager, losses\_weather, losses\_pollution.

A binary logistic regression was performed to ascertain the effects of written business strategy, investments in R&D inside or outside the business, the business strategy includes aspects regarding environmental issues, a management position devoted to environmental issues and of the experienced losses due to extreme weather or pollution on the likelihood that firms have more climate-friendly energy generation on site. The logistic regression model was statistically significant,  $\chi^2(7) = 501.238$ ,  $p < .05$ . The model explained 15,6% (Nagelkerke R<sup>2</sup>) of the variance of firms that have adopted more climate-friendly energy generation on site and correctly classified 86,1% of cases.

Firms with a written business strategy were associated with an increase (1.549) in the likelihood that firms have adopted more climate-friendly energy generation on site. Firms that invest in R&D within the business are 1.496 times more likely to adopt more climate-friendly energy generation on site. The same increased likelihood can be observed for the firms that have strategic objectives regarding the environment(3.463) and have a dedicated manager for environmental issues(1.441). On the other hand, investments in R&D outside the business, losses due to extreme weather events and pollution have no statistically significance on the model (Sig = .367; Sig= .114; Sig= .166).

## 6. Over last 3 years, adopt machinery upgrades?

Research question: Can we predict if the establishment adopted machinery upgrades based on if: it has a written business strategy, it invests in R&D inside or outside the business, the

business strategy includes aspects regarding environmental issues, there exists a management position devoted to environmental issues and it experienced losses due to extreme weather or pollution?

We will apply the same binary logistic regression interpretation as in the subchapter 1.

**Table 33. Variables in the Equation**

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.053	.027	3.789	1	.052	1.054

**Table 34. Omnibus Tests of Model Coefficients**

		Chi-square	df	Sig.
Step 1	Step	631.482	7	.000
	Block	631.482	7	.000
	Model	631.482	7	.000

**Table 35. Model Summary**

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	6950.531 <sup>a</sup>	.109	.145

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

**Table 36. Hosmer and Lemeshow Test**

Step	Chi-square	df	Sig.
1	27.987	5	.000

**Table 37. Classification Table<sup>a</sup>**

	Observed		Predicted		
			machinery_upgrades		Percentage Correct
			no	yes	
Step 1	machinery_upgrades	no	2031	633	76.2
		yes	1289	1519	54.1
	Overall Percentage				64.9

**Table 38. Variables in the Equation**

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1 <sup>a</sup>	written_strategy	.277	.061	20.391	1	.000	1.319	1.170	1.488
	<b>RnD_within_business</b>	<b>.928</b>	<b>.093</b>	<b>99.066</b>	<b>1</b>	<b>.000</b>	<b>2.530</b>	2.108	3.038
	RnD_outside_business	.415	.134	9.545	1	.002	1.514	1.164	1.969
	strategic_environment	.553	.084	43.363	1	.000	1.739	1.475	2.050
	<b>environment_manager</b>	<b>.733</b>	<b>.103</b>	<b>50.868</b>	<b>1</b>	<b>.000</b>	<b>2.081</b>	1.701	2.545
	losses_weather	.567	.107	28.065	1	.000	1.762	1.429	2.174
	losses_pollution	-	.207	12.583	1	.000	<b>.480</b>	.320	.720
	Constant	.734							
		-	.039	159.070	1	.000	.613		
		.490							

a. Variable(s) entered on step 1: written\_strategy, RnD\_within\_business, RnD\_outside\_business, strategic\_environment, environment\_manager, losses\_weather, losses\_pollution.

A binary logistic regression was performed to ascertain the effects of written business strategy, investments in R&D inside or outside the business, the business strategy includes aspects regarding environmental issues, a management position devoted to environmental issues and of the experienced losses due to extreme weather or pollution on the likelihood that firms adopt machinery upgrades. The logistic regression model was statistically significant,  $\chi^2(7) = 631.482$ ,  $p < .10$ . The model explained 14,5% (Nagelkerke R<sup>2</sup>) of the variance of firms that have adopted machinery upgrades and correctly classified 64,9% of cases.

Firms with a written business strategy were associated with an increase (1.319) in the likelihood that firms have adopted more climate-friendly energy generation on site. Firms that invest in R&D within and outside the business are 2.539, respectively 1.514 times more likely to adopt machinery upgrades. The same increased likelihood can be observed for the firms that have strategic objectives regarding the environment (1.739), have a dedicated manager for environmental issues (2.081), and for the firms that experienced losses due to extreme weather events (1.762). On the other hand, losses due to pollution reduce the likelihood to adopt machinery upgrades by 0.480 times.

## 7. Over last 3 years, adopt energy management?

Research question: Can we predict if the establishment adopted energy management based on if: it has a written business strategy, it invests in R&D inside or outside the business, the business strategy includes aspects regarding environmental issues, there exists a management position devoted to environmental issues and it experienced losses due to extreme weather or pollution?

We will apply the same binary logistic regression interpretation as in the subchapter 1.

**Table 39. Variables in the Equation**

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.840	.029	813.178	1	.000	.432

**Table 40. Omnibus Tests of Model Coefficients**

		Chi-square	df	Sig.
Step 1	Step	720.638	7	.000
	Block	720.638	7	.000
	Model	720.638	7	.000

**Table 41. Model Summary**

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	5978.835 <sup>a</sup>	.123	.175

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

**Table 42. Hosmer and Lemeshow Test**

Step	Chi-square	df	Sig.
1	14.703	6	.023

**Table 43. Classification Table<sup>a</sup>**

	Observed		Predicted		
			energy_management		Percentage Correct
			no	yes	
Step 1	energy_management	no	3516	306	92.0
		yes	1107	543	32.9
	Overall Percentage				74.2

**Table 44. Variables in the Equation**

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1 <sup>a</sup>	written_strategy	.389	.067	33.707	1	.000	1.476	1.294	1.683
	RnD_within_business	.607	.089	46.492	1	.000	1.835	1.541	2.184
	RnD_outside_business	.310	.120	6.655	1	.010	1.364	1.077	1.726
	strategic_environment	.861	.082	110.694	1	.000	2.367	2.016	2.779
	environment_manager	.748	.094	63.312	1	.000	2.112	1.757	2.539
	losses_weather	.329	.105	9.791	1	.002	1.389	1.131	1.707
	losses_pollution	-.416	.207	4.050	1	.044	.660	.440	.989
	Constant	-1.550	.047	1082.366	1	.000	.212		

a. Variable(s) entered on step 1: written\_strategy, RnD\_within\_business, RnD\_outside\_business, strategic\_environment, environment\_manager, losses\_weather, losses\_pollution.

A binary logistic regression was performed to ascertain the effects of written business strategy, investments in R&D inside or outside the business, the business strategy includes aspects regarding environmental issues, a management position devoted to environmental issues and of the experienced losses due to extreme weather or pollution on the likelihood that firms adopt energy management. The logistic regression model was statistically significant,  $\chi^2(7) = 720.638$ ,  $p < .05$ . The model explained 17,5% (Nagelkerke R<sup>2</sup>) of the variance of firms that have adopted energy management and correctly classified 74,2% of cases.

Firms with a written business strategy were associated with an increase (1.476) in the likelihood that firms have adopted more climate-friendly energy generation on site. Firms that invest in R&D within and outside the business are 1.835, respectively 1.364 times more likely to adopt machinery upgrades. The same increased likelihood can be observed for the firms that have strategic objectives regarding the environment (2.367), have a dedicated manager for environmental issues (2.112), and for the firms that experienced losses due to extreme weather events (1.389). On the other hand, losses due to pollution reduce the likelihood to adopt machinery upgrades by 0.660 times.

### Conclusions

People expect managers to use resources wisely and responsibly, protect the environment, minimize the amount of air, water, energy, minerals, and other materials found in the final goods people consume, recycle, and reuse these goods to the greatest extent possible rather than relying on nature to replenish them. Green management is important for many reasons. However, at its core, it is important because people expect managers to use resources wisely and responsibly by applying various green practices. The requirement for environmentally friendly management is unavoidable from a moral or normative standpoint, and whether becoming green "pays" is only partially relevant (Marcus & Fremeth, 2009).

The need to determine whether there are internal forces that might have an impact on green investments and business practices in countries in Central and Eastern Europe is the motivation behind this article. This study aims to determine whether specific business activities may anticipate certain environmental factors and to answer the question: Which of the chosen independent variables can predict the likelihood of actions from dependent variables?

The findings demonstrate that the presence of a management position dedicated to environmental issues and the presence of environmental or climate change issues in strategic objectives are the drivers (predictors) with significant predictability likelihood on both management practices and green investment. The firm's R&D expenditures, documented business strategies, and losses from extreme weather incidents, all have lower predictability indices. The bulk of the chosen dependent variables are less predictable when R&D investments are made outside of the firm. On the other hand, the costs associated with pollution either don't matter in our model or make adopting green investments or activities less likely.

There are several limitations of this study, mainly due to the chosen variables that may not consist in all essential green practices and investments. For example, the article can be extended by choosing more predictors or other examples of variables, like other environmental targets, or diversity of employees, financial practices etc. In addition, there can be extended the sample to other countries in Europe or other continents.

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## Tourism destination of Turkish people in the island of Chios

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### Abstract

*The work concerns the tourist activities of the Turkish visitors to Chios. A bibliographic review is mentioned with some definitions, in order to make the work easier to understand. Furthermore, there is information and commentary on the number of Turkish visitors in the periods of 2019-2020 and 2022. Then, the methodology and quantitative research implemented in July 2022 are reported as well as brief comment of the Turkish visitors and tourists and also for the ways of development for the attractiveness of the island.*

**Keywords:** *Island of Chios, Tourism, Sustainable Development, Turkish People*

**JEL Classification:** *M14*

### 1. Introduction

The subject of this assignment is the research of the tourism activity of the Turkish visitors in Chios. For many years, the island of Chios has been a tourist destination. Many people from all over the world visit the island of Chios, in order to learn about its history and to enjoy the resources and the cultural elements that it has to offer. The science of tourism directly affects the science of economics, and because of that the island's economy strongly depends on tourism; let alone the constant movement of the neighbouring people, Turkey. The analysis of the subject, initially, will be done with the brief explanation of some economic definitions for the complete understanding of the information of the work. Then, using the questionnaire method, the quantitative survey of Turkish visitors will be analysed. With the conclusions that will arise, comments and reflections will be developed, where they will be used as incentives for ways to improve the attractiveness of Chios.

#### 1.1 Definitions

*Tourism:*

Tourism is a complex, multifaceted and rapidly growing activity that is related to many branches of the economy. Equally complex and multifaceted are the concepts and references where they are used to formulate the definition of tourism. The Swiss professors Walter Hunziker and Kurt Krapf, referred to by Burkart and Medlik (1981), defined tourism as follows: "Tourism is the set of phenomena and relationships resulting from the travel and stay of non-residents in a destination, as long as they do not lead to permanent residence in the destination and are not linked to any profit-making activity". Due to tourism or otherwise the tourism industry, where it means that there is a variety of demand for products and services, production

is doubled, jobs are being created, competitive strategies are being formed in the market, and in general there is always an evolution in businesses and in the way of thinking of people. (Leonard J. Lickorish – Carson L. Jenkins October 2004)

### *Economy:*

Economy is a vast system of coordination of the productive activities of society. Economics examines the production, distribution and consumption of goods and services, where they take place in the various forms of the market. It examines economic activities, where they bring the flow of money, from businessmen, employees, producers, traders, consumers and generally from everyone who carries out a monetary transaction. There is macroeconomics, which is the branch of economics that deals with all the ups and downs of the economy, and there is microeconomics, which is the branch of economics that studies how people make decisions and how those decisions interact between them. The research of the work is annotated with the second discipline, microeconomics. (Paul Krugman, Robin Wells, December 2019)

### *Sustainable development:*

Sustainable development is the evolution of various means, where they aim to improve people's standard of living. It consists of the combination of three elements: social justice, environmental protection and economic efficiency. In order for there to be a substantial and qualitative improvement, it is first necessary to make a proper planning design, with a long-term character. This is because, a correct and reliable prediction of citizens' abilities is needed, a prediction for the various future problems that will arise but also to find solutions for the continuous duration of people's daily quality of life. (Kokkosis Chartas, 2001)

### *Sustainable tourism development:*

The tourism industry contributes significantly to the sustainable development of every society. It is the main link that connects the development of the economy, together with the change in the behaviour of the market and as a consequence of the citizens and forms an environmental consciousness in the inhabitants of the society. It is equally important to have proper strategic planning, as we defined above in sustainable development, for the best quality life. Tourism is the economic activity that if not developed, and even more so if not developed properly, is very likely to bring about adverse effects on the natural, social and economic environment. Problems are created in sustainable development of tourism. (Christina Tsouprakakou, 2006)

The tourism sector and sustainable development are two intertwined topic with a common goal, the growth of the economy. Chios does show potential in its economy, assuming the tourism sector and economy are utilized correctly. While improving the economy and also the tourism sector, there will be growth in the local industry but also a better work ethic among the workers. Considering all that has been said, it will lead to tourist longing to visit Chios.

## 2. Data and Methods

### 2.1 Information and Comments

Many Turkish tourists have visited the island of Chios for many years. There are also many local people who travel to Cesme, a coastal city in Turkey, at a distance of nine nautical miles. The shared history, the close distance and the desire to explore the cultural elements of the neighbouring country, are some of the reasons for the continuous visits of the island.

2019		2020	
Months	Visitors	Months	Visitors
January	842	January	2.072
February	1.079	February	2.252
March	2.630	March	591
April	2.868		
May	3.111	2022	
June	7.396	Months	Visitors
July	10.585		
August	15.106	March	594
September	6.991	April	2.281
October	3.956	May	3.736
November	4.242	June	4.446
December	2.784		

In direct contact with the Hellenic Tourism Organization and compared with the tourism support office in Chios, the following information was gathered about the number of tickets of Turkish passengers, who visited Chios, from January 2019 to March 2020 and from March 2022 to June 2022. From March 2020 till February 2022 the operation of the coastal ferry lines had stopped, due to the pandemic Covid19.

From the previous data we can observe the large number of visitors who came to the island. At the beginning of 2020, there was an increase in the number compared to the year 2019. Also, if we compare the corresponding months of 2020 and 2022 we will notice that the numbers are relatively close, except for the increased number in the month of June.

How can Chios increase its attractiveness? It is a question that will be answered later in the paper, after the quantitative research is analysed.

### 2.2 Methodology and quantitative research

The focus of this assignment is to observe the tourist activity of Turkish visitors in Chios, during June 2022, by using the questionnaire methodology. One hundred questionnaires were distributed and fifty-nine were answered by Turkish tourists. Some are frequent visitors, while others were visiting the island for the first time.

Thirty one of fifty-nine questionnaires were answered by women and the rest of them (twenty eight) were answered by men.

The sample, both men and women, will be analysed separately depending on whether it is their first time visiting Chios or not. Therefore, the sample consists of four subgroups.

The indicative age table is listed below.

**Table 1: Age distribution**

Age	Women		Men	
(subgroups)	First time	1+times	First time	1+times
<18	0	0	0	0
18-30	9	6	4	1
31-50	6	7	6	11
50+	0	3	2	4

Source: own processing

We can notice that most tourists, who visit the island for the first time are between the ages of 31-50. We also notice that there are more men between the ages of 31 and 50, who have visited the island before.

Listed below you can find the indicative table, that states how many times per year, Turkish tourists who have visited the island multiple times, visit Chios.

**Table 2: Times per year people visit Chios**

Times per year	Women	Men
1	7	2
1-4	5	13
5-10	2	1
10+	1	0

Source: own processing

From the previous table, we notice that most women visit the island once a year, as opposed to men who travel 1 to 4 times a year.

The indicative table listed below indicates the number of days, which they choose for their stay.

**Table 3: Days of stay**

Days	Women		Men	
(Subgroups)	1 <sup>st</sup> time	Multiple times	1 <sup>st</sup> time	Multiple times
1 day trip	11	4	9	2
1-4	9	5	3	13
5-10	2	0	6	0
10+	0	0	0	0
No answer	0	0	1	0

Source: own processing



Based on the table above, we notice that tourists who visit the island for the first time prefer a one-day trip. This means that they take a full day tour around the island and then take the ferry back. We also notice that men who have visited Chios again prefer to stay 1 to 3 days, unlike women.

In addition, it is observed that some first time visitors, mainly men, prefer to stay 5 to 10 days. This may mean that they want to have an extra comfort while exploring Chios.

Below is the indicative table for visitor preferences.

**Table 4: Visitor preferences**

(subgroups)	First time	Multiple times	First time	Multiple times
Preferences	Women		Men	
Pleasure trip+ stroll	1	6	4	11
Pleasure trip+ Guided tour	8	5	0	3
Guided tour	6	4	8	0
Other	0	0	0	2

Source: own processing

Based on the table above, we notice that Turkish tourists who have travelled to Chios before, prefer to take a leisure trip (swimming, relaxation) and walk around the town. Also, it is observed that visitors, who travel for the first time, prefer to take a guided tour of the surrounding areas of Chios. In addition, it is observed that they want to do a combination of a leisure trip with a guided tour. Perhaps this means that they stay longer than one day and thus, are more relaxed during their visit.

Below is the indicative table of a typical amount of money they spend on average per day.

**Table 5: Amount of money spent on average per day**

Amount of money	Women		Men	
(subgroups)	First time	Multiple times	First time	Multiple times
€1 - €30	1	0	0	0
€31 - €100	6	3	3	2
€101- €200	5	4	7	2
€201+	4	8	2	12

Source: own processing

Based on the above table, we notice that visitors who travel the first time choose to spend as a typical amount of money between €101 and €200. In addition, it is observed that people who have travelled before prefer to spend €201 and above. These are the tourists who usually stay for more than one day.

The following indicative table states what made Turkish tourists to visit the island.

**Table 6: What made Turkish tourists to visit the island?**

Attractions (subgroups)	Women		Men	
	First time	Multiple times	First time	Multiple times
Social media	1	1	1	0
Friends & Acquaintances	3	2	3	1
Travel Agencies	6	5	4	1
Other	4	7	4	14

Source: Own processing

Based on the table above, it can be observed that the tourists who have visited Chios before, they must be attracted to something else to visit the island. Maybe it's for business or education or even visiting their families. It is also observed that first-time visitors were informed and attracted by tourist agencies.

It is noted that men who came for the first time and were attracted by social media, were the only ones who answered <No> to the question "would you recommend the island of Chios to friends and acquaintances". In the rest of the questionnaires, the answers were <Yes>.

The following indicative table states the responses to the last open question, on whether they would propose changes in Chios.

**Table 7: Would you change anything of Chios?**

Answers (subgroups) times	Women		Men	
	First time	Multiple times	First time	Multiple
'No change required'	10	12	3	7
Speak the Turkish language	1	0	3	0
Turkish Menus	0	1	3	0
Better transport by sea	0	0	2	0
Street signs in English	1	0	0	0
No answer	4	2	3	7

Source: own processing

Based on the table above, it is observed that most Turkish tourists do not recommend changes to the island of Chios. However, some comments have been noted. Tourists would like the people in the shops to speak Turkish, that the menus are in the Turkish language, that the ferryboat that does the Chios - Cesme route is comfortable and that there are signs in English on the streets of Chios.

Also, the response of a man over fifty who came to Chios for the first time commented on the following: "There should be improvement in the passport control process, for example there should be more inspectors". He also noted that there should be a ban on the movement of vehicles at certain times in the city. This very likely means that the noises caused by the vehicles in the narrow streets of the island disturb the visitors during the common quiet hours or even that the road at the port is closed due to the increased traffic of people in the evening hours.

### 3. Conclusions

Based on the collected data, we can conclude that there is a continuous touristic traffic from Turkish visitors towards the island of Chios. The combination of the services offered in order to carry out the trip (e.g. transportation, accommodation, etc.) and the satisfaction offered by the chosen destination (leisure, relaxation etc.), but also a desire to recognize cultural elements of the place (lifestyle, history and culture), are key factors for choosing the destination of Chios. Thus, with the tourism as well as the economic activity of the Turks, who come for the first time or are frequent visitors, they are a key source of income for the island's economy. (Leonard J. Lichorish, Carson L. Jenkins)

### 4. Methods of attraction

Over the years, many unforeseen external natural problems can occur (e.g. pandemic, natural disasters, etc.) that directly and indirectly affect the economic and social situation of an area.

However, there are ways, with long term planning, that can improve the attractiveness of the island.

Firstly, there needs to be better planning on how to implement the means that will improve people's daily lives. In other words, sustainable development should be implemented in such a way that the quality of life is better. It is important that the citizens are happy and deal with some situations with organization and ease. For example, better infrastructure (buildings and roads), modernization of operation through the use for transactions, communication, etc. Thus, if the standard of living of the citizens improves, the next thing is that they will have a greater appetite and efficiency for the creation of productive economic resources. In addition, in the matter of sustainable development is the utilization of the cultural elements of the place. The museums, the recognition of mastic, the various historical places and names that are famous worldwide are some elements that have a cultural character. By using these elements and with the correct organization, the visitors recognize the value of the place.

Furthermore, the number of rooms and beds on the island must be increased. The number of Turkish visitors and generally tourists from all over the world, who visit Chios, is very large. For example, as mentioned at the beginning of the paper, the Turkish tourists who came to the island in 2019 were a total of 61,590 and Chios today has about 5,000 beds. It goes without saying that a key factor for a traveller to be able to stay in Chios, they would also need a sleeping place. It is important, in my opinion, to create hotels, apartments, studios so that the island has more beds.

Also, based on the above data from the quantitative research, one way of attraction is for the people who provide the services and products to the tourists to speak Turkish. To provide Turkish directories, information in applications and other media in the Turkish language as well as to have a tour guide who speaks the Turkish language. It is important that there is satisfaction for the tourist to have a good experience. In addition, an upgrade to the means of transport may be needed in the future in terms of comfort, speed, service and passport control for a better experience as well.

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## Features of the implementation of the green economy concept in Russia.

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### Abstract

*The subject of the research in the article is the peculiarities of the implementation of the green economy in Russia. In the course of the article, the international rating of countries of environmental efficiency is considered, the indicators of the implementation of the green economy in Russia and separately by region are analyzed, a comparative analysis of plans and the current situation regarding the green economy in Russia is presented, and measures to correct the current situation are also proposed. As a result of the article, it was possible to systematize the acquired knowledge and theories, to identify the features of the implementation of the green economy in Russia.*

**Keywords:** Green economy in Russia, green projects, regional development, sustainable development.

**JEL Classification:** Q32, Q40, Q53, Q57.

### 1. How did it all start?

According to history, for the first time the ideas about the limitations of natural resources and the need to prevent uncontrolled growth of consumption were expressed by ancient Greek philosophers. Then Thomas Robert Malthus at the beginning of the XVIII century provided the hypothesis that the population is growing exponentially, and the resources and products of providing life in arithmetic. Over time, famine, revolutions, and war become the result of such a growth difference.

In 1972, the international company «Club of Rome» presented the study «Limits of growth», containing the results of mathematical modeling of the depletion of natural resources due to population growth. The model contained 12 scenarios: 5 scenarios led to a reduction in the population due to excessive consumption growth, and 7 scenarios described an increase in environmental, demographic and social awareness of humanity. On December 15, 1972, the United Nations Environment Programme (UNEP) was established, which contributed to the beginning of discussion of environmental problems at the global level.

In 1992, the Russian Federation took part in the conference in Rio de Janeiro, signed declarations, thus officially joining the movement towards sustainable development. The concept of the transition of the Russian Federation to sustainable development was approved by Presidential Decree No. 440 of April 1, 1996.[1]

The concept of sustainable development approved by the Brundtland Commission means the following - development that meets the needs of the present without compromising the ability of future generations to meet their own needs.[2] The sustainable development model includes a balance of three aspects: economic development, social progress, responsibility for the environment. The resolution «Transforming our World: The 2030 Agenda for Sustainable Development» was adopted on September 25, 2015 and outlined 17 goals on the way to sustainable development.[3]

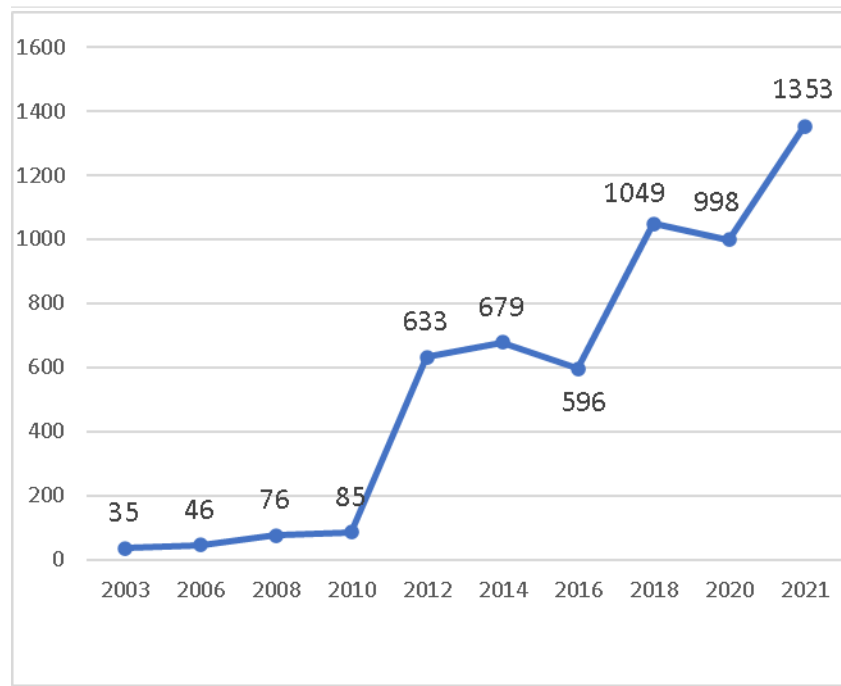
The green economy is a tool for achieving sustainable development. It is aimed at improving human well-being, reducing pollution, preventing the reduction of biodiversity, increasing the



employment of citizens, preserving terrestrial and marine ecosystems. The concept of green growth emphasizes the need to implement environmental and economic policies that will identify new ways of economic growth without harming the environment.

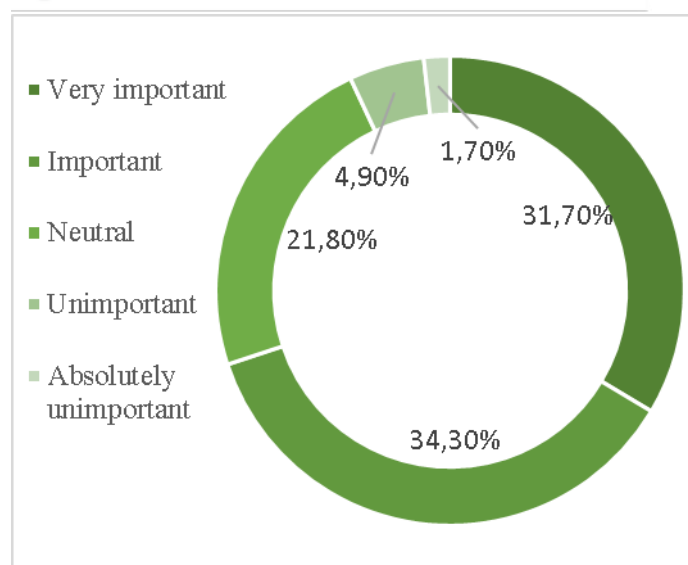
## 2. Features of the development of the green economy in Russia.

**Figure 1: The number of publications devoted to the green economy in Russia according to eLibrary**



### 2.1 Public interest in "green" growth.

**Figure 2: Voting results according to HSE**



Russian scientists have recently become interested in the environmental situation in the country (more precisely in 2003). The number of publications devoted to this problem in Russia increases annually by 30 or more articles. At the moment, about 46 thousand scientific publications have been published on various Internet resources. [4]

In 2020, the HSE<sup>1</sup> conducted a study in which 10 thousand people from 14 to 24 years old participated. Each of the respondents answered several blocks with questions about environmental protection.

In general, 66% of respondents noted that they are concerned about the problem of ecology. 31.7% of respondents consider nature protection very important, 34.3% — important, 21.8% — neutral, 4.9% — unimportant, 1.7% — absolutely unimportant. Almost half of the respondents (43.5%), when choosing products, focus not only on price and quality, but also on the impact on the environment. 40.3% of respondents participate in community cleaning day or cleaning of the territory, 40.4% have been saving water over the past year, 38.4% use energy-saving household appliances, 36% save electricity. Slightly less than 30% hand over waste paper or environmentally harmful waste, sort garbage or take care of paper.[5]

This means that the problem of environmental pollution is increasingly worrying the population and in the future we will only see an increase in interest in this problem. At the same time, the percentage of awareness of the population is growing.

### *2.2 Analysis of indicators of the development of the green economy in Russia.*

The Environmental Performance Index (EPI from the English Environmental Performance Index) is a method of quantitative assessment and comparative analysis of environmental policy indicators of the world's states. EPI ranks countries by 22 performance indicators in several categories, which are grouped into two groups: ecosystem viability and environmental health.[6]

The following is a ranking of countries according to the EPI assessment:

**Table 1: Rating of countries by EPI**

Country	Rank	EPI score
<b>Denmark</b>	1	77.90
<b>Great Britain</b>	2	77.70
<b>Finland</b>	3	76.50
<b>Malta</b>	4	75.20
<b>Sweden</b>	5	72.70
<b>Luxembourg</b>	6	72.30
<b>Slovenia</b>	7	67.30
<b>Austria</b>	8	66.50
<b>Switzerland</b>	9	65.90
<b>Iceland</b>	10	62.80
<b>Russia</b>	112	37.50

According to rating table1. Russia ranks 112th according to the interim results of 2022. The country has its own fuel and energy base: gas - 55%, oil – 21%, coal – 17%, hydropower – 2%,

nuclear energy – 4.5%, that is, Russia as a raw country faces a long period of transformation on the way to a green economy.

«The Green Course of Russia» is a vision of the country's development until 2050 regarding the environmental sectors of the economy and reducing the burden on the environment. Ensuring zero greenhouse gas emissions by 2050 is the long-term goal of the course. The medium-term goal is to limit greenhouse gas emissions to no more than 40% of the 1990 level (reducing emissions by 60% compared to 1990 and by 7.7% compared to the 2018 level). The main volumes fall on the burning of fossil fuels - coal, oil and gas, therefore, it is necessary to achieve climate neutrality primarily by abandoning the burning of fossil fuels. In addition to reducing greenhouse gas emissions, the Green Course also provides for their absorption. Not all emissions can be reduced to zero, but their non-reduced part must be compensated. The absorption of greenhouse gases can be carried out at the expense of ecosystem services of forests, swamps and other natural ecosystems or the LULUCF sector, the absorption capacity of which in 2018 was equivalent to 26.6% of all anthropogenic greenhouse gas emissions in Russia.

It is planned to implement a set of measures in three areas:

### 1. Net energy

**Table 2: Comparison of tasks and the current situation in the net energy sector**

Tasks:	What we have at the moment: (August 2022)
To ensure the production of 20% of all electricity in the country at the expense of RES by 2030.	Natural gas is the basis of Russian energy. Solar and wind energy are at the initial stage of development, they account for only 0.28% of energy production.
Provision of energy for the heating sector through RES by 2030.	According to the estimates of the Russian branch of Greenpeace, the share of renewable energy in the Russian thermal power industry is approximately 2%.
Electrification of transport by 2030. It will be carried out in two stages: from 2021 to 2024 and from 2025 to 2030.	A quarter of the first stage has been completed, 2,650 electric vehicles have been sold at the moment on the territory of the Russian Federation. This is 10.6% of the planned result. There is a possibility that the results will not be achieved by the end of the first stage.
Complete one hundred percent transition to renewable energy in all energy sectors by 2050.	A complete transition to renewable energy is not yet possible due to weak and expensive technologies of mass energy production.

To perform the listed tasks, the following measures must be taken:

- Development and implementation of a phase-out of subsidizing fossil fuels and nuclear energy, as well as the development of international cooperation in the field of non-subsidizing fossil fuels;
- Introduction of a ban on the development of new coal, oil and gas deposits;
- Development of strategies for a fair energy transition for regions with coal-based mono-specialization (Kemerovo Region, Kuzbass);

- Development of a roadmap for the development of bioenergy based on waste from agriculture, forestry and utilities;
- Development of a roadmap for the development of green hydrogen energy;
- Strengthening of control measures over the use of fuel oil and diesel fuel.[7]

2) Cyclical economy - is a combination of three sectors: industry, agriculture, waste management.

**Table 3: Comparison of tasks and the current situation in the cyclical sector**

Tasks:	What we have at the moment: (August 2022)
To make the transition to carbon-neutral production of metals, cement and concrete by 2050.	30% of Russian metallurgical companies have long-term climate agendas. Construction of the «Ecolant» enterprise, which will produce green steel and billets from iron ore raw materials and natural gas. The carbon footprint will be up to 3 times lower compared to steel from traditional industries.
To ensure the reduction of greenhouse gas emissions from food consumption.	There is still a need for a «zero waste» system principle at the federal level.
By 2030, it is necessary to reduce the formation of solid municipal waste per inhabitant.	There is still a need to develop a separate garbage collection system. Only 5-7% of garbage is recycled, the rest is buried.

Measures to support the cyclical economy:

- Introduction of a carbon price (carbon tax);
- Integration of the principles of the cyclical economy into all key strategic documents of the country, including all strategies, roadmaps, industry development programs, etc.;
- Development and inclusion of clear quantitative requirements for greenhouse gas emissions and compliance with the principles of the cyclical economy in the requirements for public procurement;
- Development and adoption of a framework document for the implementation of a closed-cycle economy on the territory of the Russian Federation on the principles of "zero waste",
- Introduction of positive economic incentives in order to prevent waste generation, maximize the use of raw materials and materials, reuse, prolong the life of goods, legislative restrictions and negative economic incentives for the turnover of disposable goods;
- Development of a public education system, including federal channels and mass media, on the principles of «zero waste» and popularization of a green lifestyle among the population;
- Assistance in the implementation of initiatives for the reuse of goods and the dissemination of cooperation in this area;
- Implementation of the obligation of manufacturers of goods and equipment to cover 100% of the costs of recycling and reuse of materials. [7]

### 3)Forestry

**Table 4: Comparison of tasks and the current situation in the forestry sector**

Tasks:	What we have at the moment: (August 2022)
Move from the development of the remaining wild forests to intensive forestry on previously developed lands.	The forest complex is still considered as a branch of the extractive industry.
Transform the forest complex from the extractive industry to the crop production industry.	Progressive depletion of economically valuable and economically available forest resources.
To ensure effective extinguishing of forest fires.	The catastrophic situation with the staffing of forestry.

Forestry support measures:

- Development of the professional training system, including support and development of educational organizations of higher and secondary specialized education (including regional subordination), extension of support measures for young professionals working in rural areas to forestry specialists.
- Intensive reforestation in areas with suitable natural conditions, as well as in densely populated areas.
- Ensuring effective protection of forests, people, settlements and infrastructure from fires, reducing the use of fire in the practice of land use and forest management; maintaining forests in the most fire-safe condition, creating a powerful fire education system. [7]

It becomes clear that dependence on fossil fuels poses a huge threat to human health and well-being, leads to significant economic damage, and only the transition to renewable energy sources, the transition to a cyclical economy and sustainable forest management will be able to correct the situation.

### 2.3 Rating of openness of regions to the green course of Russia.



In 2021, Greenpeace summed up the readiness of Russian regions to switch to the green course. It is important to note that the rating is not an assessment of how effectively the region implements green measures in practice, it assesses the willingness to provide information, potential cooperation,



the presence of steps towards low-carbon development. The objectives of the study are to determine the level of involvement of regional authorities in the climate agenda, to open a discussion on the implementation of low-carbon measures at the regional level, to determine the readiness of individual regions for further dialogue in order to implement low-carbon initiatives.

**Figure 3: Map of Russian regions that responded to the Greenpeace request**

Regions that have made breakthrough decisions:

- Tomsk Region: plans to become a leading region of Russia in terms of implementing the federal Sustainable Development Goals, a leading participant in the global climate program.
- Sakhalin Oblast: already uses a number of "Green Course" measures to transition to sustainable development and plans to achieve carbon neutrality by 2025.
- Republic of Tatarstan: created a working group on climate policy and decarbonization of the region, consisting of representatives of government, business and science.
- Ulyanovsk Region: used the recommendations of Greenpeace in developing a Strategy for sustainable development and development of renewable energy in the region for the period up to 2030.
- Khabarovsk Krai: noted that the recommendations for the transition to the "Green Course" reflect the best practices for achieving state objectives in the field of low-carbon development and will be used in the work of the government of the region.
- Republic of Karelia: supported the measures of the "Green Course" and pointed out the importance of studying the experience of other subjects of the Russian Federation for climate stabilization.
- Udmurt Republic: plans to use the recommendations of Greenpeace and emphasizes the need to identify false decisions in the "green" development of the region.
- Leningrad Region: interested in the participation of Greenpeace experts in drawing up a program to decarbonize the region's economy. [9]

It should be noted that the transition to a green economy in Russia may be a long process due to the difference in the development of the regions. Despite the initial, low level of expertise of regional authorities on the climate agenda and the formal approach of some subjects of the Russian Federation to the implementation of measures to achieve carbon neutrality, there is a growing interest of regions in the topic of green development and reduction of greenhouse gas emissions. And the main thing now is that the first steps towards low-carbon development do not remain only on paper. Only decisive actions on the part of the regions will be able to make a tangible contribution to the fight against climate change, solving accumulated environmental problems and improving the quality of life of people.

### 3. Conclusion

Thus, do not underestimate the incomplete transition to green technologies, in any case, inaction will aggravate the situation. The introduction of a green economy in states will contribute to a qualitative change in almost all aspects of the life of individuals, as well as interstate relations, since one of the goals of sustainable development is the cooperation of countries. At the moment, the green sector of the Russian economy is small, but the presence of properly structured strategic plans is an important step towards green technologies. The green economy is not just a plan for the future, but a new model of consciousness that will gradually penetrate into all spheres of activity.

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## The importance of renewables for energy transition and sustainable development - lessons from the German experience and best practices in international business

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### Abstract

*The topic of renewable energy has become increasingly relevant in recent times. Through the means of its production - the renewable energy sources (or renewables in short), it is connected to the measures of addressing the climate change, but also in relation to the current issues concerning energy shortage and the high prices of the generated electricity for customers. The matter also concerns the sustainable development and its dimensions, taking into account that the seventh goal of the United Nations' Sustainable Development Goals is precisely related to energy from renewables. In this article the experience and best practices of German companies (developers of renewable energy projects) are reviewed and summarized. The paper also examines the history and legal framework of the energy transition in Germany, thus highlighting political aspects of this process. As a consequence, the renewable energy sources are viewed in the context of the energy transition in Europe and as a supporting tool to the policies for sustainable development in private companies. The aim is achieved by analyzing the content of various publications on economic, environmental and climate change related topics. In addition, a survey and case studies of the work of German renewable energy project developers were conducted in order to obtain and synthesize empirical information. Germany is among the world leaders in the successful implementation of the green energy and its practical application. Therefore, the study could serve as an example of successful integration of renewable energy sources in international business and at the same time through the conclusions from the best German practices to support the transition to a low-carbon economy in Eastern European countries.*

**Keywords:** international business, renewable energy sources, sustainable development

**JEL Classification:** Q42, F23, Q01, Q48, Q56

### 1. Introduction

Nowadays it is considered that the energy, which is produced by renewable energy sources (renewables in short), is called “green energy”. The reason is due to the minimal impact on the environment and the very low levels of pollution. Furthermore, it is not only clean, but also widely available depending on natural conditions and the weather. The goal of its usage is to reduce the harmful emissions of carbon dioxide (CO<sub>2</sub>) into the atmosphere, while also minimizing the impact of the Global Warming and the Greenhouse Effect. This is also the reason why so many governments around the world have taken numerous measures and strategies to increase the share of renewable energy sources in the total energy consumption of their countries.

#### 1.1 International business, renewable energy sources and sustainability

The concept of sustainability (we will use sustainable development as its synonym) is a modern phenomenon that is influencing many areas, including the international business. Through the development of sustainability policies, modern companies are gradually adapting to the changing business environment and meeting new demands from customers and partners. The international renewable energy business is no exception and it is also implementing sustainability norms according to its three dimensions - environmental, economic and social. Furthermore, it is important to clarify that the renewable energy is an integral part of the concept

of sustainability and is even included as a separate goal in the United Nations (UN) strategy for sustainable development. To be more precise, it is included as goal number seven - "Ensure access to affordable, reliable, sustainable and modern energy for all" (United Nations, 2015).

The interconnection between international business with renewable energy sources and sustainability is therefore manifested through the policies of governments and transnational organizations in order to comply with the UN principles. This is mainly represented through the following two directions:

- Measures against the climate change;
- Synchronization of policies about environmental protection, economic growth and social interests.

### *1.2 German experience in the development of renewable energy sources*

At the moment, the most developed countries are investing enormous resources in order to achieve the green energy targets they have set for 2050. And most of the developing economies are also investing in order to reduce their carbon footprint. Germany is among the leaders in terms of energy transformation and carbon reduction. It has a long history in the development and gradual rise in the use of renewables. Moreover, there are examples of the adoption of technological innovations and creative measures such as agrivoltaics and others. That is why the country is a good example to explore the experience of local companies developing renewable energy projects. Consequently, their experience can serve the Bulgarian entrepreneurs in the future work on similar projects. Therefore, the work of local project developers can serve as an example of the best practices in Europe.

Why project developers? – As their name suggests they actually develop the renewable energy projects and they are the drivers, who lead the whole process of completion of a new power plant, which operates with green energies. The project developers are a key component of the whole energy transformation alongside with the government, investors and the consumers. More precisely, these companies can give us the practical insight of what are the changes in the energy sector in terms of renewables. Most of the German project developers are operating on an international level and therefore involved in the international business.

## **2. Data and Methods**

This article is the result of years of research work on two separate university projects in two different universities - one in Bulgaria and the other in Germany. The first one mainly relates to the sustainability policies of companies with Bulgarian and international presence, and the second one relates to the impact factors of renewable energies in international business based on the example of German companies that are project developers. In this case, some of the findings on these two topics are briefly presented, and the completed results will be published in greater detail in the near future.

The methods include: analysis and synthesis of empirical information and databases from German companies, content analysis of various publications on economic, political, environmental and ecological topics. The utilization of real business examples and case studies, relying on the best practices in the area of research are used. The previous experience and knowledge from German project developers (from Saarland) are essential. The solar and onshore wind plants are the most suitable because they have the greatest potential for further development in Bulgaria as being affordable and cost-efficient. Furthermore, interviews with

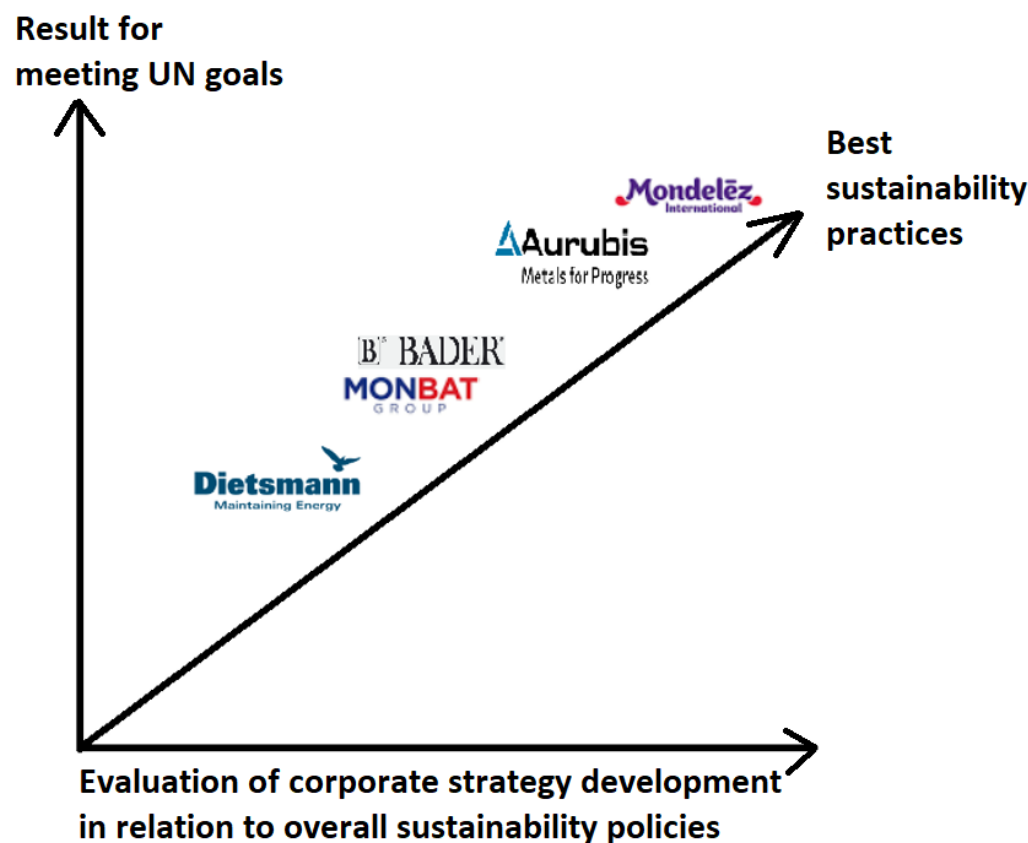
scientists and policy makers about renewables are conducted, but also the data from project developers and the results from a questionnaire are used.

The author aims to explore the success factors of renewables as well as their impacts on a business level. The timeframe of the analysis is from 2000 to 2021, but also taking into account what the goals and expectations are for the development of the energy sector up to 2030. Additionally, a custom methodology has been developed in order to analyze the sustainability practices of selected international corporations.

### 3. Results and Discussion

We will start with some interesting findings from the first research about sustainability (Dimitrov et al., 2021). They are presented in the following figure, which uses data from a specially developed rating system, created by the author in order to evaluate the sustainability policies of the companies under review:

**Figure 1. Ranking of the companies according to their sustainability policy implementation level**



Source: Own work, based on the selected companies' sustainability reports and author's evaluation model 4

The main criteria by which the companies are included in the rating is that they are large enterprises with a proven track record of good sustainability practices and that have operations in many countries. They are among the ones that have a well-developed sustainability policy and should be an example to others. Furthermore, each of the five companies has an impact on the energy market and is directly or indirectly linked to renewable energy or its rivals (fossil or nuclear energy).

We can summarize the information by pointing out that Monbat JSC and Bader GmbH & Co. KG are relatively on the same level in relation to the sustainability policy applied by their

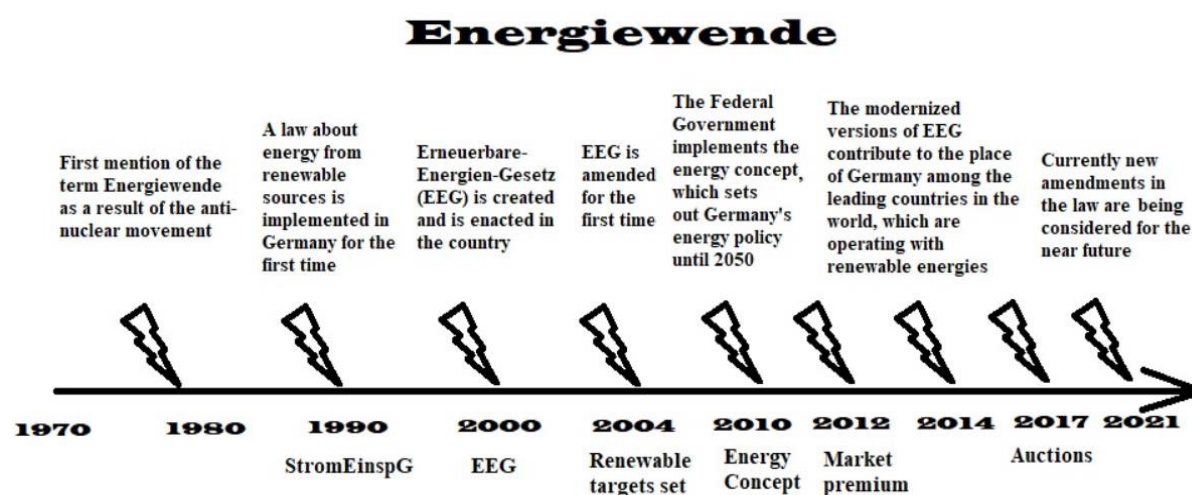


managers with an average score of 4.58. Dietsmann are last in the ranking of the top five companies because of the nature of their work and because of the low score in relation to their use of green energy. This is normal as the company is mainly involved in the maintenance of power plants operating with fossil or nuclear energy. It is likely that this will change in the future, when Dietsmann's management will have to focus on renewable energy projects. Aurubis AG, on the other hand, is an example of a successful company using innovative sustainable business models and production practices, despite being involved in heavy industry and the processing of metals and raw materials. And the top performer in this peculiar ranking is Mondelez International, which with its pursuit of ever higher sustainability and a plan for future development receives a score of 4.92 out of 5 possible. This shows that there is always room for improvement in corporate policy in matter of sustainable development.

The newer data is from a project (Dimitrov, 2022) that includes a detailed analysis of the German energy transition and the best practices of German project developers (mainly working with solar and wind onshore projects in the Saarland region, but with influence in neighboring markets). It was divided into a theoretical and a practical part.

The German energy transition (Energiewende) is an ongoing process and is still directed by the political will for changes. In fact, the term Energiewende was introduced back in the 70s as part of the anti-nuclear movement, according to a study (Evans, 2016), but it has become really popular only since 2000 and the concerns from the Global Warming. The legislation in Germany about the energy sector started to change in 1990. The Electricity Feed Act of December 7, 1990 (StromEinspG) was introduced and started to take effect in the country from the beginning of 1991. Almost a decade later, the Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz or EEG, 2000) represented a new step in the promotion of renewable energies in Germany. The whole process of the German energy transition could be represented as follows:

**Figure 2. Simplified timeline with the whole process of energy transition in Germany**



Source: Evans (2016) and Bundesministerium für Wirtschaft und Klimaschutz (BMWK)

It was very important to understand the legal and theoretical background of the energy transition in Germany, including the history and the changes in EEG during the previous decades. However, as the project is mainly practice-oriented, more attention is devoted to the second part of the research with empirical analysis.

As a next step, a special questionnaire was created for gathering practical information. It was sent to several companies, which are the most significant project developers in Saarland. They specialize in carrying out projects with a focus on solar and onshore wind installations. The majority of them operate not only locally but also internationally. Therefore, they are especially suitable for the current research purposes.

The questionnaire included twenty questions and is completely anonymous. The aim of the survey was to identify the best practices in the work and development of renewable energy projects in Germany and to support the future implementation of such practices in Eastern Europe. Another goal was to find out the expert opinions on what new strategies and incentives should be promoted by policy makers to further encourage the successful implementation of renewable energy projects. The third key moment was to increase the awareness of the general public about the actual working activities of the project developer companies in order to promote the rise in the usage of energy from renewable sources.

Based on the received answers from the questionnaire, we were able to construct a profile of the average manager in a renewable energy project development company in Germany. The typical manager in such company could be described as:

- Usually, a man who is over 50 years of age (60% are over 50 years and 80% are older than 35 years);
- He has more than ten years of experience in the energy sector;
- He runs a company that has several local and international competitors (usually less than ten);
- Some of the results are not so conclusive for analysis, but it is noteworthy that nearly 40% of managers run large companies with more than a hundred employees. The rest of the companies (60%) has less than twenty workers.

For the project developers in Saarland, the most common problems are related to the too long time needed for obtaining the necessary permits for launching a project, as well as restrictions regarding the local environment. All of the respondents gave these two issues as a top priority for resolution.

At the end of the questionnaire, the German managers of renewable energy project development companies have given their advice to their Bulgarian counterparts. It includes aiming for more transparency in administrative and operational aspects, as well as paying attention to the remuneration of their employees, which is the key to a successful business. The topic of workers' skills and corresponding remuneration is increasingly discussed in Eastern Europe, especially since the energy prices and the inflation are rising. In Bulgaria, many workers will also need to be prequalified to work with renewables, as currently a significant part of the population still works with conventional fuels.

Subsequently, some of these companies also sent case studies for analysis. The case studies helped to identify the exact types of problems managers face during the work with an onshore solar or wind renewable energy project. Furthermore, how these problems affect and which one of the formulated factor groups. The German project developers present practical guidelines for solving problems in their operations that may be useful for their Bulgarian colleagues in the future. There were four case studies, which were sent by the companies and the summary is represented here:

**Table 1. Findings from the case studies**

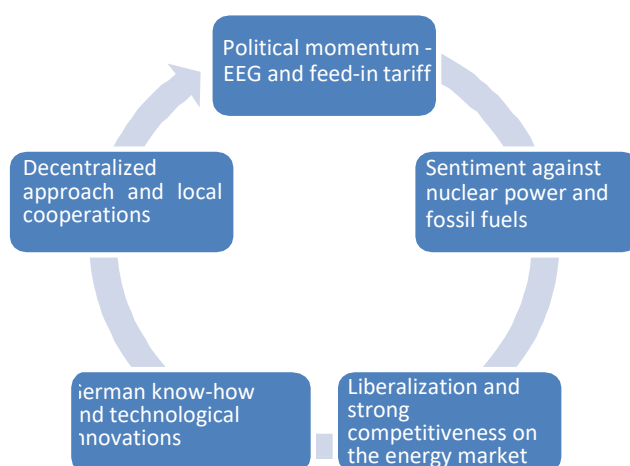
Case study	Type of energy for the project	Type of problem	Impact factor	Type of Solution
1	Solar	Legal issues and need for extended credit line	Law and Politics	Intervention by the state authorities
2	Wind	Problem with the delivery of the planned wind turbine	Economy and Management	Intervention by the state authorities
3	Solar	Problem with the beginning of the construction work due to ancient remains in the area	Law and Environment	Adjustment in the construction plan and decision from the Management
4	Solar	Problem for the safety of workers and locals	Others (force majeure)	Increase in spending and changes in the time planning

Source: Information from the received cases studies and project developers in Saarland

As it can be seen from the collected information, all case studies show the expertise of the project developers in Saarland from their daily business. This confirms that the companies in Germany have the know-how in dealing with problems of various kinds – from the dealing with the local regulations and restrictions to defusing bombs and clearing sites for new projects. From 2000 year onwards the project developers in Germany had the time to adapt to market and regulatory changes. The project developers in Bulgaria have a relatively less experience in working with renewable energy sources than their colleagues in Germany. Therefore, it is important to understand and learn from the past lessons.

The role of government and scientific institutes in the energy transition in Germany was evaluated through four interviews with scientists and policy makers, who are specialized in working, researching and have direct involvement with policies about renewable energy. The information could be summarized as follows:

**Figure 3. Key drivers for German Energiewende (summary from the interviews with the experts)**



Source: Interviews with different experts and policy makers

Those conversations were very helpful in order to understand the current sentiment and the upcoming trends in Germany regarding the development of renewable energy sources. Furthermore, it gave us the opportunity to highlight measures, which support the smooth energy

transition towards renewables and to summarize the key drivers for German energy transition (Energiewende). From the interviews and the various opinions of the experts the key drivers (five factors from the previous figure) for the energy transformation process in Germany were revealed.

We can state that regular updates in the legal framework, decentralization and liberalization seem to contribute to the rise of renewables more than pure financial incentives. Technological innovations, which were also mentioned in the paper, have a contribution as well. Same goes for the awareness of the people and the political will to implement the necessary changes in order to secure cleaner and energy efficient future for the next generations.

#### 4. Conclusion

The obtained information provides a basis for predicting future trends in sustainability policies and renewable energy development. They can be summarized as follows:

- The business with renewable energy sources is part of a global system and is susceptible to various changes in the economic or political environment. The increase in their use is mostly due to government policies and incentives, including in times of crisis and rising inflation;
- Private investors are looking to profit from renewables and governments see them as a measure to reduce the effects of the Global Warming phenomenon and to provide energy security, so their implementation is important for all;
- Investing in renewables in the short term can help companies reduce the uncertainty of price changes in volatile market conditions, but also ensure a cleaner and safer future for the next generations;
- Renewable energy will have a significant impact on the international economy in the near future, especially after the events from the previous and this year. The long-term forecast is that they will become the world's leading source of energy in the mid of the 21st century.

Currently, there are also conditions for increasing prices of energy around the world. Among the leading reasons are the rising inflation, supply chain problems, rising tensions around the Globe, lack of reserves of different commodities and others. In parallel, the energy needs of the population have also increased, which is a further prerequisite for the incoming energy crisis. Therefore, the construction of a greater number of renewable energy generation facilities is obligatory, as it is cheaper and has a very low environmental footprint.

The following suggestions can facilitate the energy transition and help in solving the energy issues:

- Having less bureaucracy will be a powerful incentive for investors and more entrepreneurs to enter the energy business;
- More renewable energy professionals are needed as the number of installations is expected to increase and create new jobs worldwide;
- More funds are needed for research by scientists, who are specialized in the study of renewable energy applications of all kinds. This could help improve the current level of technology and increase the efficiency of installations;
- The introduction of independent courses in schools and universities will support the awareness and general knowledge of the population on the benefits of renewables.

Following this analysis, we can reasonably predict that the use of renewables will continue to grow in the coming years. This will not only change the economic balance, but will also give international business the impetus to deal with the consequences of the current market change.

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## Sustainable Leadership Values in the Shipping Industry

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### ABSTRACT

*Sustainable Leadership is about envisioning and shaping the future. Therefore, sustainable leaders should be driven by certain fundamental beliefs, known as core values. Regarding the Shipping Industry, the world's leading carrier for raw materials and end-using commercial products, it is beyond doubt that Leadership urgently needs to raise its sensitivity and implement appropriate policies to find solutions based on knowledge, values, and attitudes that will lead to a zero carbon footprint. Therefore, our research aims to study the core "sustainable" values of leaders in the shipping industry and how they are related to the level at which zero carbon footprint investments are planned in the shipping sector during the coming years. For this purpose, an empirical-mix method strategy (survey questionnaire and interviews with executives from the shipping sector in Greece).*

**Keywords:** Greek Shipping Industry, Leadership, Shipping Industry Greek Shipping Industry, Sustainable Leadership, Sustainable Shipping

### 1.Introduction

Humankind is at the center of sustainable development. Everyone has the right to enjoy a healthy and efficient life by nature, so there is an urgent need to raise public sensitivity and get further involved in finding possible solutions—"life Values" as a perpetually evolving perception for societies. Values are changing over the years because they are strongly associated with the individuals' emotions, actions, and planning of policies.

(Sharma M. 2015)

#### 1.1Life values and Sustainable Leadership: The PPP

Core values are the fundamental beliefs driving the behaviors of individuals -either organizational leaders or public service workers- and may shape well-performing and operating organizations or otherwise a nightmare of day-to-day problems and issues.

On the other hand, Leadership is not only about managing priorities and people. It's also about envisioning and shaping the future, or as they use to say, "Future Is A Better Place to Start." Therefore, sustainable Leadership is when leaders (often CEOs) manage their companies with the environment, society and long-term sustainable development goals in mind. It is mainly described as PPP: People, Planet, Profit. There is growing social pressure on companies to consider PPP and respond to the concerns of multiple stakeholders, both inside and outside businesses. Organizations, therefore, are in desperate need of sustainable leaders who can balance short-term and long-term priorities and create value for a variety of stakeholders.( Fisk P., 2010)There is an urgent need in business today for a new type of Leadership. One that makes the long-term sustainability of our world a top priority. Business leaders have an important role in making the right strategic choices to create this sustainable future.

(GlobeScan-SustainAbility Survey, 2022)

## 1.2 Literature Review

Joseph McHenry states that with certain action and strategic moves till 2050, the impact of carbon fiber on the environment can be reduced, focusing on evolving the engines for re-generational power. (McHenry J., 2020) Jinzhen Ren and Marie Lutzen specify that there are sustainable alternatives in fuels. Although there is little to non-experience, nuclear power is the next best option, following behind natural gas power (LNG).

(Jinzhen R. and Lutzen M., 2017). Henry Schwartz, Magnus Gustafsson and Jonas Spohr believe there is a lack of coordination in the shipping industry. More specifically by improving the charting routes of cargos would bring profit and less emissions. (Schwartz H., Gustafsson M. and Spohr J., 2020.). Tomi Solakivi, Magnus Gustafsson and Henry Schwartz research shows that with the whole worldwide movement to sustainability the transformation cost to achieve low carbon and natural fuel would be very low. (Solakivi T., Gustafsson M. and Schwartz H. 2022.). Jan Emblemvag mentions that although some countries have heavily invested in wind energy the reduction of emissions is only 20%-40% usually. Therefore, when wind energy is combined with fossil fuel, wind energy is not that sustainable. (Emblemvag J., 2022)

## 1.3 The profile of a Sustainability Minded Leader

A sustainability-minded CSO can set strategies and deliver results that meet the triple bottom line of social, environmental, and financial performance .

In the bottom line, future winners will be companies that proactively embrace sustainability as a business opportunity instead of seeing it as a matter of compliance or a way to defend themselves against critical stakeholders.

Leading strategic thinkers are moving beyond a focus on traditional product and service categories to pioneer innovations in business processes, distribution, value chains, business models and even the function management.

(Barsh J., Capozzi M. M., and Davidson J, 2008)

## 1.4 ESG (Environmental Social and Governance risks) in The Rapid growth of Environmental Crisis

Many groups have been accused of being at blame for this ongoing climate change and lack of action: from fossil fuel companies and wealthy countries, to politicians, rich people, and sometimes all of us. (Timperley J., 2020). According to recent statistics:

70% of the world's greenhouse gas emissions over the previous two decades are attributable to just 100 fossil fuel producers, Across 86 countries, the richest 10% of people consume around 20 times more energy than the poorest 10%. As the COVID-19 pandemic struck the planet, images of clear waters along urban waterways and clean air in metropolitan cities emerged during the extended lockdowns. This is excellent proof of the human impact on the environment, underscoring the need for rush action for sustainability and Environmental, Social, and Governance (ESG) risks. And as societies are currently stepping through the Post COVID-19 era, it seems more straightforward that the correlation between corporate sustainability initiatives and long-term value creation is a top priority. Investors should pay greater attention on how businesses manage ESG. From a valuation perspective, it is believed that ESG practices would increase a company's value, and it is in the hands of a successful

leader to capitalize on opportunities given and generate new revenue streams. (Syriopoulos T., Karamperidis S., Tsatsaronis M. and Mpoura G., 2021)

## 1.5 Sustainable Leadership in the Shipping Industry:

### A Global Call for Action

Shipping plays a critical role in the global economy, and future challenges demand significant change. The world as we know it has become an increasingly uncertain place. Against this background, organizations should immediately act in the right ways to cope with both micro and macro environments and protect their clients, employees, investors, and suppliers while seeking to maximize their profits. Shipping is a vital cell of the Global Economy, engaged on a journey of transformation towards this sustainable future. Sustainable Leadership as an adopted mindset provides the opportunity for leaders and managers to work together, to grow and develop both their organizations and all the people involved healthily and AZ vigorously to synchronize in a constantly changing world. After all, "it is not the strongest or the most intelligent of the species that survives. It is the one that is most adaptable to change. (Mattheou D., 2020). Fast facts: International Shipping transports more than 80% of global trade to people and communities worldwide. It is the most efficient and cost-effective method of international transportation for most goods; it provides a dependable, low-cost means of transporting goods globally, facilitating commerce and helping to create prosperity among nations and peoples. (IMO)

## 1.6 United Nations 17 Sustainable Development Goals

The private sector is expected to play a crucial role in realizing the United Nation's Sustainable Development Goals. In 2015, 193 countries adopted the 2030 Agenda of Sustainable Development and its 17 Sustainable Development Goals (SDGs), as a key to transforming the world for the better. The Sustainable Development Goals are a universal call for Action to end poverty, protect the planet, and improve the lives and prospects of everyone, anywhere. (Sustainable Development Goals, 2015)

## 1.7 GOALS SET BY MAJOR COMOPANIES

### 1.7.1. The International Maritime Organization

As an official member of the United Nations, the International Maritime Organization is action-oriented in the 2030 Agenda for Sustainable Development. IMO is the global standard-setting authority for the safety, security, and environmental performance of international Shipping, with the primary role to create a regulatory framework for the shipping industry that is fair and effective, universally adopted and implemented. In other words, its function is to create a level playing field so that ship operators cannot address their financial issues by simply cutting corners and compromising safety, security, and environmental performance. It also encourages innovation and efficiency.

Member States of the IMO have adopted a sustainable mindset and work towards the awareness of the UN Sustainable Development Goals to make 2020-2030 a decade of action by providing, among others: A blueprint for the transition to a healthier planet for future generations, aiming to end poverty and hunger, expand maritime education, establish better working conditions, provide access to health, promote inclusive and sustained economic growth.(IMO)

### 1.7.2. The Sustainable Shipping Initiative (SSI): The Roadmap to a Sustainable Shipping

The Sustainable Shipping Initiative is a multi-stakeholder initiative that brings together like-minded and leading organizations with shared goals and equal determination in improving the sustainability of the shipping industry in terms of social, environmental, and economic impacts. SSI was founded in September 2010 by the Forum of the Future in collaboration with WWF and industry leaders ABN Amro, BP Shipping, Gearbulk, Lloyd's Register, and Maersk Line. Today, it comprises 16 members spanning the entire shipping value chain, from charterers, shipowners, and operators, to shipyards, banks, classification societies, and technology companies. The SSI's vision for 2040 as it was released in 2011 and updated in 2014, focuses on the following: Changing the diverse mix of energy sources by using resources more efficiently and responsibly and dramatically reducing greenhouse gas intensity, providing safe, healthy, and secure work environments so that people want to work in Shipping, where they can enjoy rewarding careers and achieve their full potential, earning the reputation of being a trusted and responsible partner in the communities we live, work and operate, transparency and accountability drive performance improvements and enable better, sustainable business decision-making, proactively contributing to the accountable governance of the oceans. (Sustainable Shipping Initiatives)

### 1.7.3 The International Chamber of Shipping

The International Chamber of Shipping was established in 1921 to ensure the development, promotion, and application of best practices in the shipping industry. Throughout the years, ICS is representing the world's national shipowner associations and over 80% of the world merchant fleet from around 40 countries. As a collective voice of the international shipping industry, ICS articulates and advocates shipowner positions to international regulators with a core mission to positively influence regulatory changes while maintaining high quality, safety, sustainable development and environmental protection standards (The International Chamber of Shipping, 2020).

## 2. RESULTS AND DISCUSSION

### 2.1 Sustainable Leadership In The Greek Shipping Industry

Greece remains the world's largest ship owning nation, with a fleet of 4.901 vessels. Shipowners control 19.42% of global deadweight tonnage (dwt). In 2020, the Greek-owned fleet grew by over 4% to approximately 364 million dwt. Fast facts: According to The Union of Greek Shipowners *regarding* the backbone of EU shipping Greece continues to increase its share of the European Union (EU)-controlled fleet. (Union of Greek Shipowners, 2019) The Greek-owned fleet represents 58% of the EU-controlled fleet. More than a third of the Greek-owned fleet, or 1.706 vessels, fly in the EU Member State flag. The Greek shipping industry is a cornerstone of global seaborne trade: Greek shipowners control 30,25% of the world's tanker fleet, 14,64% of the world's chemical and product tankers, 15,58% of the worldwide LNG/LPG carriers, 20,04% of the world's bulk carriers, 9,53% of the world's containerships. Also: 18% worldwide tonnage capacity owned by Greek Shipowners (2019), 4.536 Number of vessels owned by Greeks worldwide (2019), 670 Number of ships that fly the Greek flag (2019), \$14 billion Amount Greek shipping interests raised between 2004 and 2018 in new equity money. (Greece Investor Guide, 2019).



## 2.2. The Hellenic Chamber of Shipping Is Supporting Decarbonization

The goals and proposal of the Hellenic Chamber of Shipping for 2040. An Integrated Study was prepared by the Hellenic Chamber of Shipping with the aim of modernizing Greek shipping by 2040. Great focus is given to the renewal of the coastal shipping fleet with the aim of building ships with almost zero emit pollutants. More specific the study states that "the age of the ships that carry out inland maritime transport, the environmental requirements for the elimination of air pollutants, the instability of the passenger and freight sector are challenges that must be faced in order to preserve the cohesion of the Greek and of the community space" and add: Associations is a key policy choice of the EU. However, in the Connecting Europe Facility (CEF) program, which aims to develop infrastructure and networks, no support is provided for the replacement of ships, while the shipping companies are unable to undertake this challenge, which requires resources exceeding 11 billion euros over time. While the deadlines for achieving the reduction of gaseous pollutants have been set, the technologically sustainable solutions for their replacement by renewable sources, such as electricity, biofuels, ammonia, hydrogen, methanol, etc., have not yet been achieved. (Athanasios S., 2021).

## 2.3 The Sustainable Development Solutions Network Greece

The Greek SDSN is included in the SDSN network since 2012 and was co-hosted by ICRE8: International Center for Research on the Environment and the Economy and the Political Economy of Sustainable Development Lab, aiming to contribute achieving the goals of the SDSN network. The executive council is responsible for formulating the Greek Leadership Council, which consists of politicians, entrepreneurs, academics, and civil society representatives. In addition, the Greek network "SDSN Greece" works closely with other United Nations agencies, multilateral financing institutions, the private sector, and civil society to implement the Sustainable Development Goals and the Paris Climate Agreement in Greece. In 2019, SDSN Greece launched the 4-seas initiatives and the global roundtable of sustainable shipping and ports initiatives which will be discussed and analyzed below. Further, in 2000, the SDSN Greece launched a new initiative: A Senior Working Group for the Energy Transition (Pathways to Achieve the European Green Deal) (Sustainable Development Solutions Network, 2019).

### 2.3.1 The 4-Seas Initiative

The 4-Seas Initiative (Theodossiou N., Koundouri P., Papandreou A., Papadaki L., 2019) refers to a Euro-Asian coalition including the following 4-seas: The Mediterranean, The Black Sea, The Caspian Sea, and The Aral Sea. Aiming to accelerate science-driven blue growth and the implementation of the Agenda 2030, this Initiative focuses mainly on Goal 14, "Life below water," Goal 6, "Clean water and sanitation," Goal 13, "Climate action," and Goal 15 "Life on Land Action plans." to invest in research and demonstration projects, following a "source-to-sea" approach, starting from river basins and continuing to coast/marine ecosystems and depending on the societies. The process is to establish a Euro-Asian Transformation Pathway towards Sustainable Blue Growth, supported by technically and socially innovative solutions so that all relevant stakeholders will be engaged to co-design a systems innovation channel for the transition to socially, culturally, environmentally and geopolitically sustainable development in this Region. Furthermore, the United Nations Sustainable Development Solutions Network UN SDSN, with Professor Jeffrey Sachs as Global Director, will lead the collaboration with local SDSN networks to operate on the broader idea. Referring to the Mediterranean and the Black Sea region, they will be part of the national SDSN networks in



Greece, Italy, France, Turkey, and Russia, with Professor Mrs Phoebe Koundouri (KOUNDOURI P.) and Professor Yannis Ioannidis to co-lead the Initiative. The objectives of the 4-Seas Initiative include: Research: A development project for Sustainable Blue Growth Transformation Pathways in urban and rural areas that depend on the 4-seas, as well as creating networks of protected marine and coastal ecosystems of cultural and natural interest. Education: Creation of educational programs with an extended emphasis on understanding and implementing the SDGs to attach them to the local cultures. "Data Management: An action to develop and support open access to data, models, results, and policy recommendations. Innovation: Technological and social innovation for the sustainability transition in the Region of the 4-Seas, combined with related activities to protect the natural and cultural local environments. Policy: Targeted recommendations to support sustainable blue growth in the Region mentioned above. "

### 2.3.2 The Global RoundTable Of Sustainable Shipping And Ports

According to the latest Intergovernmental Panel on Climate Change-the United Nations body for assessing the science related to climate change, "the exceeding 1.5°C of global warming above pre-industrial levels is leading to unpredictable consequences into the people's lives and economic growth". (IPCC). Furthermore, it has been shown that around 940 million tons of CO<sub>2</sub> annually are responsible for about 2,5% of global greenhouse gas GHG emissions, with an estimated increase between 50% and 250% by 2050, caused by the shipping industry, in a business-as-usual scenario, undermining the achievement of Paris Agreement objectives. Given the need to immediately reverse this scenario, the Danish Minister of Foreign Affairs, CEOs from Maersk Container Industries, the Antwerp Port, and the Organization Sustainable Energy for All launched the Getting to Zero Coalition on the occasion of the UN Climate Action Summit 2019. (*Global Maritime Forum*).

This Action is bringing together 74 major shipping companies and members of civil society with a significant objective, among others, to have commercially viable zero-emission vessels operating along deep-sea trade routes until 2030. The shipping industry is actively turning to a green, ethical perspective breaking ties with fossil fuels. However, this is coming after the European Commission's continuous effort to transform the European economy into a more sustainable model by launching the Circular Economy Action Plan in December 2015 (*European commission*) as a plan to facilitate and promoting the transition to the circular economy through a series of proposals and actions in the fields of production and waste management, also considering Port areas as crucial elements and ideal hotspots of focus for the implementation of the Circular Economy Action Plan. Based on these considerations, the Global Roundtable for Sustainable Shipping and Ports was launched in Madrid, Spain, in December 2019, as an initiative that aims at bringing together researchers and technology developers, shipbuilders, shipowners, policymakers, and politicians from around the world, to work on technological and policy innovations seeking net-zero emissions in the maritime sector by 2050. The SDSN Greece as a major participant of the Global Roundtable for Sustainable Shipping and Ports, followed the Systems Innovation approach, co-working on monthly participatory workshops, seeking to co-design a sustainable future vision and identify technological solutions and financing roots towards the future vision. Another important event, based on the occasion of the Global Roundtable for Sustainable Shipping and Ports was the 3<sup>rd</sup> Sustainability Summit, October 2019 held in Athens, Greece, which gave vital stakeholders the initiate preliminary discussions on this issue, based on synergies between the maritime, the

energy and the financial sector, ports, Governments and Universities, and NGOs. (*Third Sustainability Summit for south-east Europe and the Mediterranean, October 2019 and Roundtable for Sustainable Shipping and Ports 2019*).

## 2.4 The Rise of Green Shipping

It is obvious that there is an urgent need for alternative sources of fuel in the shipping industry and new legally binding air quality regulations in order to achieve a 50% decarbonization target by 2050. More precisely, total methane emissions must be reduced to 0.8-1.6% to ensure climate benefit is realized across all timescales compared to current liquid fuels. With methane emission reduced to 0.5% of throughput, energy efficiency must increase 35% to meet a 50% decarbonization target (For example, LNG (Liquefied natural gas) is a widely used alternative to liquid fossil fuels, and as stated by distinguished scientists Balcom, P., Lain Staffell, I., Kerdan, J-G, Speirs, N., Brandon, A. and Hawkes, D. in an environmental economic analysis on “How can LNG-fuelled ships meet decarbonization targets, LNG gives improved air quality impacts, reduced fuel costs and moderate climate benefits, compared to liquid fossil fuels, but with large variation across different LNG types ( Balcombe P., et al.).

However, unlike other renewable energy sources, biomass can be converted directly into liquid fuels, called “biofuels”, to help meet transportation fuel needs. The two most common types of biofuels in use today are ethanol and biodiesel, both of which represent the first generation of biofuel technology. Ethanol (CH<sub>3</sub>CH<sub>2</sub>OH) can be made from various plant materials and the common method for converting biomass into ethanol is called fermentation (microorganisms like bacteria and yeast metabolize plant sugars and produce ethanol). Biodiesel is a liquid fuel produced from renewable sources, such as new and used vegetable oils and animal fats and cooking grease, and is a cleaner-burning replacement for petroleum-based fuel. (Office of Energy Efficiency and Renewable Energy, 2022).

## 2.5. LNG Fueled Vessels: Reflections on Current status and Future Prospects

Demand for maritime transport is expected to continue to grow, and LNG has recently been introduced as an alternative to heavy oil as a marine fuel, because it removes sulfur in the pre-liquefaction process, so it emits almost no sulfur oxides (SO<sub>x</sub>) or Particulate Matter (PM) when burned and emits less NO<sub>x</sub> (nitrogen oxides) and CO<sub>2</sub> than other fossil fuels. Most of the vessels in service are operated in Europe and it is expected that the shift from heavy oil to LNG or other alternative fuels will be further accelerated as result of the strengthening of SO<sub>x</sub> regulations in January 2020. Although LNG fuel has a low environmental impact, there are three major disadvantages in using it as a ship's fuel: Installation of new type of engines that can use LNG fuel. Enormous capital investment is required in equipment other than engines, such as fuel tanks 2-3 times larger than conventional ones and re-liquefaction equipment. Cost at the time of new construction is 15-30% higher compared to conventional fueled vessels.

However, as environmental regulations become increasingly stringent, LNG-fueled vessels are expected to continue to grow in market share because of their advantages, such as “zero sulfur content, about 25% reduction in CO<sub>2</sub> emissions, and overwhelmingly low nitrogen compound emissions” and “LNG is more “LNG” is more competitively priced than expensive low-sulfur heavy oil. Europe is standing as a leader in the field of LNG-fueled vessels and this is due to the fact that companies appear to have complied to the regulations for sustainable development, especially in the areas of the North Sea and the Baltic Sea. And as the first European LNG fueled vessel was completed in 2019, there is an extensive plan for several bunkering stations around Europe, such as the Port of Rotterdam and Amsterdam in The Netherlands, the Port of

Zeebrugge in Belgium and the Port of Barcelona in Spain. As of February 2020, 12 LNG-bunkering vessels are in operation and 27 vessels have been ordered, and most of them will operate within the European region. Regarding the Asian territory, the Port of Singapore which is the world's largest bunkering terminal, LNG-Bunkering vessels have begun to operate in the fourth quarter of 2020, while several Japanese shipping companies are also working to improve their LNG bunkering infrastructure overseas (MOL Mitsui O.S.K. Lines, 2021).

### 3. CONCLUSION

The aim of this study was to investigate the concerns of the people for the ongoing climate change and to find those who can hold the ties towards a sustainable model of development in the global economic and political growth. Given my personal fascination for sailing and the coastal life in general, I chose to concentrate the body of this project in the Shipping Industry, in search of its leaders' behaviours and core values in the process of sustainable development. The reflection was "How sustainable is the Current World" and the answers turned out that the existing development model is not encouraging, if people waste recklessly the natural sources, especially fossil fuels.

Due to the fact that the climate change is caused by human activities, it remains unclear to tell who is responsible, since people may seem to be concerned in the recent years, but only a few are proactively engaged in attempting to be part of the solution. The future seems to be in the hands of sustainability minded leaders' actions and behaviours in both the internal and external business environment, because they have the power to inspire with their beliefs in influencing people's conscience and action. Following a rather empirical-mix methodology (survey, questionnaire and interviews with executives from the shipping sector in Greece) it was pointed that younger leaders are well combining environmental oriented education with inner values and fresh ideas which are positively associated with the latest trend beliefs and concerns.

As a bottom line, we have found that although the Greek shipping industry is a cornerstone of global seaborne trade, (representing 58% of the EU-controlled fleet and more than a third of the Greek-owned fleet, or 1.706 vessels, fly in the EU Member State flag), the transition to Green Shipping is still running at a slow pace. Most of the Greek or international companies are introducing biofuel and other innovative sources of energy in an experimental mode, while many of them believe that science and technology are due to bring even more advanced solutions, in the near future.

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## Green Human Resources Management – the way to sustainable development

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### Abstract

*Environmental sustainability is becoming an emerging global issue, leading organizations to focus on it to remain competitive and survive in a rapidly changing business (Alzgool, 2019; Dakhan, 2020; Lee, 2020). Many organizations still take climate-related actions frequently, primarily focused on reducing CO<sub>2</sub> emissions in buildings, green IT, mobility, procurement, events, dining, services, and products. More and more companies and administrations are recognizing not only that their world of work is becoming more digital, but also that changes in the world of work can best be achieved in the long term by increasing employee engagement and support. A new form of sustainable leadership and cooperation (managers as role models), basic green competencies, values, and attitudes as well as proper change management are required to support change administrations and shape this change in a sustainable way. Respectful to the environment. They also have to position themselves as an attractive employer, and this is where the idea of the green employer seal for management comes in. A relatively new field of activity, including research, is the development of ecological human resource management (GHRM). This is part of sustainable human resource management, which is often already integrated into strategies (EIPA, 2022).*

**Keywords:** Green Human Resources Management; Electronic Human Resource Management; Sustainability

**JEL Classification:** F23; J24; M12; Q56

## 1. Literature Review

### 1.1 Green Human Resources Management

Labella-Fernández and Martínez-del-Río (2020) define green management as the green management of human resources, which is a set of procedures focused on people, namely the development and maintenance of abilities, motivation, and opportunities to contribute to the economic and environmental sustainability of the organization. Therefore, it can be understood as a set of best human resource management practices aimed at increasing the overall orientation to the ecological sustainability of all functions and dimensions of the organization. These practices include green recruitment and selection, green education and training, reward systems, performance appraisal and management, environmental empowerment, green communication, and green teamwork.

Pinzone et al. (2019) conducted research that confirmed the results of previous studies by Saeed et al. in 2018 and Pharma et al. in 2019 and emphasized, even more, the importance of green employee training (green education). Green employee training has the most significant impact on employees and their behavior, and after this training, already retrained employees behave pro-environmentally without even realizing it.

According to Poonam and Verma (2017), the introduction of GHRM brings several advantages both for the company and for the employee himself. An overview of these benefits is presented in table no. 1.



**Table 1: Benefits of GHRM**

Benefits for the employer	Benefits for the employee
A group of satisfied employees	It increases morale and the desire to work
Increases productivity and sustainability	Increases job satisfaction
It increases the quality of production	The feeling of having a sense of complicity
It increases the motivation of employees in the organization	Increases the level of reliability
Improvement of product quality	Building abilities and skills to handle various problems while fulfilling the given task
It strengthens goodwill	Willingness to work in better positions
A harmonious relationship between employer and employee	Increases team spirit in the workplace
Stronger public image through word-of-mouth advertising	Reduces the "I" attitude
Increased customer retention rate	It creates a healthy working environment
It improves the financial situation of the market	It increases creativity
Increased employee loyalty	

Source: own processing according to Poonam and Verma, 2017

Nalini and Durai (2019) state six main motives why companies implement GHRM in their practice: reducing operating costs, retaining talented employees, gaining a competitive advantage, corporate social responsibility, increasing employee morale, building an "image brand" and others.

According to Ahmad (2015), the GHRM concept includes activities and activities associated with attracting quality personnel, which is currently a key challenge in human resource management. In the so-called "battle for talent", companies are aware of the need to attract quality workers through corporate culture. By implementing greener initiatives and gaining a green business reputation as an employer, companies are able to be more competitive in the talent recruitment process. The so-called "green recruitment" of applicants represents the implementation of recruitment activities with the use of lower costs, time, and energy when accepting new applicants, which ensures a reduction of the impact on the environment.

*"Green HRM is an emerging topic in the current corporate scenario. Human resources in organizations can be influential in facilitating a comprehensive approach to creating a culture of sustainability. The strategy involves implementing changes in various HR functions such as recruitment, induction, training and development, performance appraisal, and also determining employee rewards. Green initiatives in the field of human resources constitute a broader form of corporate social responsibility"* (Mehta, 2017, p. 2).

Green HRM practices and human resource management systems make the organization's employees green for the benefit of the individual, society, the natural environment, and business, and ensure environmental safety. Green HRM practices help organizations create green workforces that are able to appreciate and understand green initiatives (Saeed, 2018, p. 425).

Green HRM activities include (Ramasamy, 2017, p. 120-126):

- feasibility studies regarding the implementation of corporate green policy
- preparation of corporate green policy guidelines

- human resources planning to fulfill the company's green policy
- training and development for the existing workforce in the area of the company's green policy
- new guidelines for recruiting employees that comply with the company's environmental policy
- performance evaluation based on the company's environmental policy
- management of employee discipline for the company's ecological policy
- agreements with the workforce/community on corporate green policy
- sustainability strategy/improvements for the company's environmental policy

Studies on green HRM have shown its significant impact on organizational performance (ie environmental and financial performance) (Crotty & Rodgers, 2011) and employee outcomes (ie well-being, engagement, satisfaction). Most of the work climate and meeting the labor and environmental awareness demands of the 21st century improve for both organizations and employees (Obeidat et al., 2018).

Research shows that organizational culture, structure, leadership, and strategy are among the important predictors of green HRM (Dubois & Dubois, 2012). These identified Green HRM precursors are seen as close contextual cues that point to the need, value, and urgency of Green HRM practices in an organization (Shafaei et al., 2020). Additionally, organizational conditions are important motivators for organizations to engage in environmentally friendly activities, such as Green HRM (Ren et al., 2018).

## ***1.2 Electronic Human Resource Management***

According to Bondarouk and Brewster (2016), Electronic Human Resource Management (e-HRM) represents the application of various types of technologies that allow managers and employees direct access to human resource data and various administrative applications. They further state that e-HRM focuses on all integration mechanisms and the entire content of human resource management transmitted through IT, which aims to achieve more consistent, efficient, high-quality HRM processes that should create long-term opportunities for the organization's stakeholders.

Marler and Parry (2016) state that E-HRM consists of the configuration of computer hardware, software, and electronic networks that enable HRM activities to be carried out. The degree of the physical presence of hardware and software and the extent to which they are used to coordinate individual and group transactions in the field of human resource management, regardless of geographical limitations and organizational horizontal and vertical differentiation of users, determines the level of development of e-HRM in organizations.

According to Micu et al., (2017), practice really confirms that the introduction of e-HRM allows increasing the efficiency of the HRM function by reducing personnel in the human resources service, increasing the speed of process implementation, reducing costs, and relieving personnel from administrative tasks.

According to the research of Berber et al. (2018), the role and importance of the HR function have changed over time in a way that has changed the attitude towards human capital, but also in the way that technological changes have occurred, as they always provide a framework for structuring business processes and activities. Recently, this function has gained a very strong

ally in the form of IT and electronic systems for its development. Especially thanks to IT and electronic systems, transactional, daily HR activities, such as tracking and recording attendance, absences, sick leave, vacation, salary payments, benefits, incentives, training, tracking the achievement of goals, length of employment, and termination of employment, employee employment contracts, planning necessary workers in relation to the dynamics of the organization's work, etc. are performed faster, more accurately and more simply than before.

The key advantages of such a system are faster, more accurate, and easier processing of information about employees, cost savings, relieving HR managers of administrative tasks, increased access to HR data, standardization of HR processes within the company, more consistent and up-to-date data on employees and their performance, and the like. In short, using the concept of e-HRM, this function is able to achieve a significant positive impact on the entire operation of the organization, because its application increases the effectiveness and efficiency of its work. the disadvantages are mainly attributed to the inflexibility of the system, the accuracy of the data entered, the confidentiality of the information, and legal problems, such as the abuse of the system and Internet networks during working hours. It is necessary to pay attention to all these potential dangers, as e-HRM should primarily facilitate and speed up the HR process, not slow down and worsen it.

Recently, Khashman and Al-Ryalat (2015) investigated the impact of e-HRM functions on organizational performance in the telecommunications sector in Jordan using a sample of managers. The findings revealed a positive significant effect of e-HRM components (e-selection, e-recruitment, e-training, e-appraisal, and e-compensation) on several measures of operational performance, including time savings, cost, flexibility, and service quality.

According to Monks et al. (2013), top management is responsible for the philosophy or formulation of HRM strategy in terms of how resources are managed to support business objectives. As a result, HRM philosophy, policy, and practices may differ significantly between the intended HRM system and what management managers actually perform. There are strong links between different types of HRM systems and employee attitudes and behavior.

## 2. Data and Methods

For the needs of our research, we approached 10 representatives of large companies through an electronic questionnaire survey to evaluate the implementation of the principles of green human resource management in the basic functions of human resource management. The determining criteria for the selection of respondents were the size of the company (>249 employees) and registration in the Business Register of the Slovak Republic, regardless of industry structure, subject of the activity, or organizational legal form. We ended the data collection with a basic set of 8 respondents. Using a deliberate method, we isolated 5 from the basic set of 8 respondents to individually focus on selected subjects.

Considering the intention of individual research of a sample of 5 respondents, we used methods suitable for use even with small samples. From the sorted data and expressed contingency tables, we graphically interpreted the obtained data using the Likert scale, semantic differential, arithmetic mean, and mode.

### 3. Results and Discussion

#### 3.1 Characteristics of the Examined Companies

Company A is a global network of independent companies operating in 155 countries around the world. This structure allows individual entities to act as a local and global companies at the same time. Company A has a similar approach to social responsibility, which can be managed by individual entities on a global and local level. Company A is a leading advisor on sustainability, climate change, and green growth. Employees are involved in tracking direct and indirect emissions, environmental projects, reducing energy consumption, waste management, and waste recycling in the workplace.

Company B is a leading global technology company focused on industry, infrastructure, transportation, and healthcare. It focuses on making factories and businesses more efficient through more efficient use of resources, the construction of smart buildings, distribution networks, and the creation of cleaner transport systems. Sustainability is an integral part of Company B's business, with management setting strategic ambitions for the benefit of stakeholders on key environmental, social responsibility, and governance topics.

Company C is a contributory organization with nationwide scope and direct connection to the network of the European Environmental Agency. It is the only entity in the country that ensures the fulfillment of professional tasks in the environmental care sector defined by its scope of activity. Company C emphasizes the environmental and ethical behavior of employees. As part of their education and development, Company C places high demands on management, and practical and educational measures, necessary for applying environmental behavior and monitoring the ecological footprint.

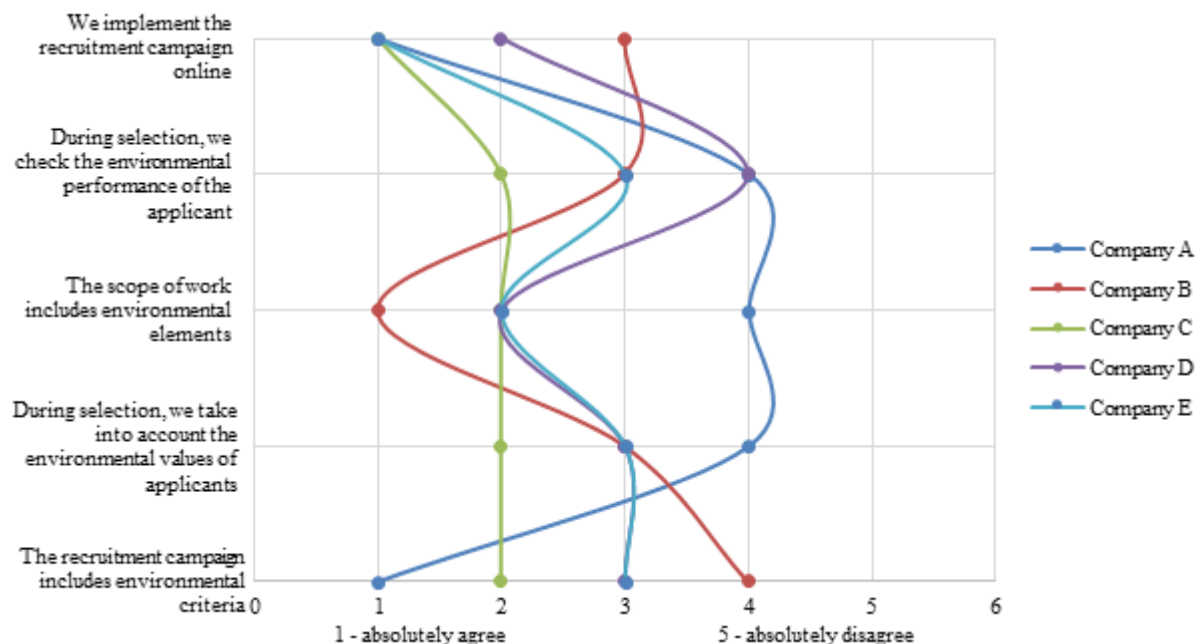
Company D is a key energy company in Slovakia. It is the leader in the domestic market of motor and aviation fuels, primary plastics, and chemicals. Company D is also the most important Slovak exporter. From the point of view of human resources, Company D advocates remuneration and building social relations, development and training of employees, diversity policy, and support of ethical principles. The management of the company is aware of the value of the environmental contribution of employees and actively supports their environmental education and development.

Company E is the largest supplier of energy in Slovakia, directly following the 165-year history of the Slovak gas industry. In Slovakia, it ensures reliable and competitive supplies of natural gas, electricity, and related services in all market segments and regions. Company E takes care of the effective use of potential human resources. It supports relations with employees, environmental education, and development and, by activities in the field of socially responsible business, it has also established an ombudsman institute for employees.

### 3.2 Results of Electronic Questionnaire Research

#### 3.2.1 Environmental Aspects of Searching, Recruitment, and selection of Employees

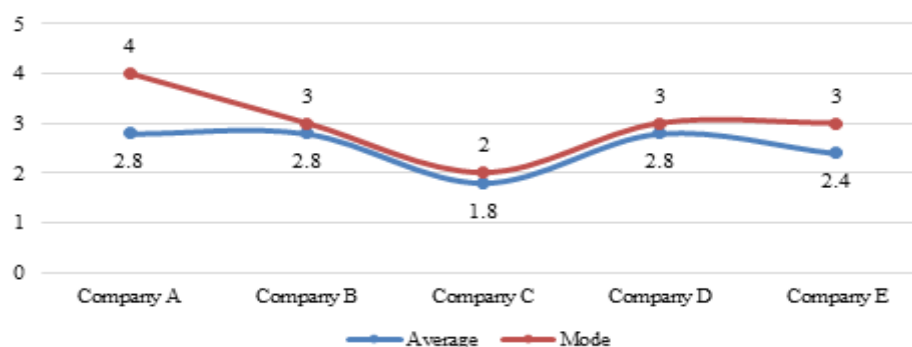
**Graph 1: Environmental Aspects of Searching, Recruitment, and Selection of Employees**



Source: own processing, 2022

From the obtained data shown in Graph 1, in terms of the environmental aspects of searching, recruiting, and selecting employees, Company C has the best average rating at the level of 1.8. On the contrary, the worst average rating is achieved by Companies A, B, and D with identical values of 2.8. We proved the most significant deviations in the assessment of the environmental aspects of the searching, recruitment, and selection of employees by companies in the statements "The recruitment campaign includes environmental criteria" and "The scope of work includes environmental elements".

**Graph 2: A Summary Assessment of the Environmental Aspects of Searching, Recruitment, and Selection of Employees**



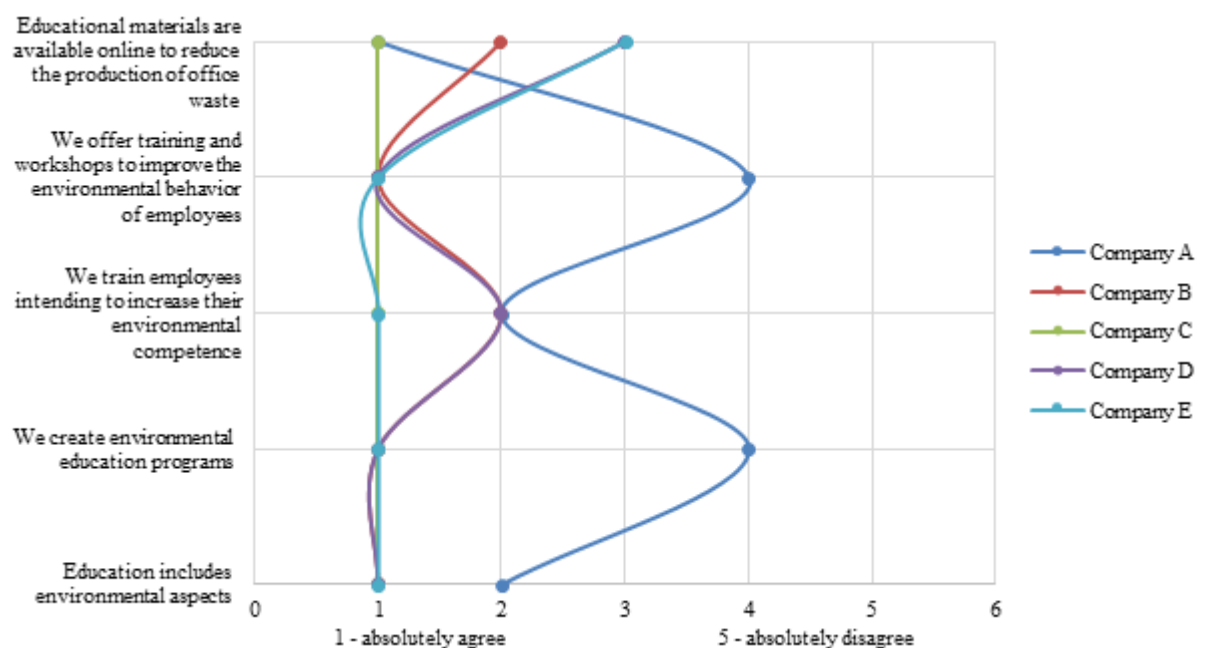
Source: own processing, 2022



From the partial data in Graph 1, we quantified the overall average evaluation of selected statements by companies at the level of 2.52, which we consider insufficient. Several studies have confirmed that with the growing number of environmentally aware employees, the competitiveness of the company also grows. Therefore, it is necessary to pay attention to the environmental values of the applicants already in the process of searching for and acquiring employees. The mode showed that the most frequently occurring answer is 3, i.e. "I can't express myself", while the least frequently occurring answer is 5, i.e. "Absolutely disagree".

### 3.2.2 Environmental education and employee development

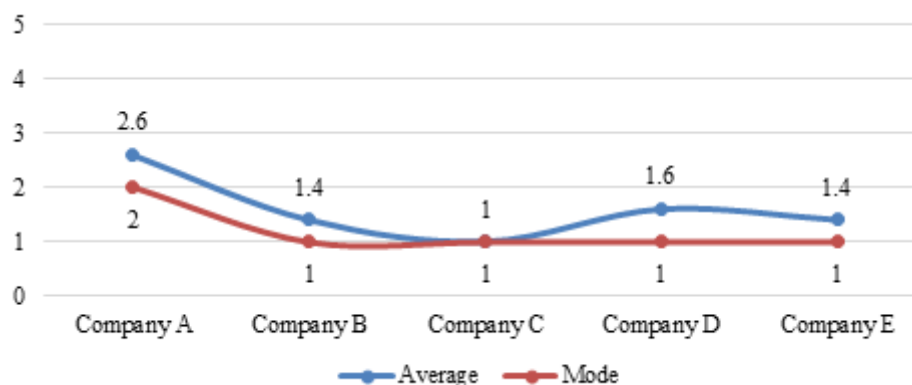
**Graph 3: Environmental Education and Employee Development**



Source: own processing, 2022

From the data shown in Graph 3, in terms of environmental education and employee development, Company C has the best average rating at the level of 1.0. On the contrary, the worst average rating can be seen in Company A with a value of 2.6. We identified significant deviations in the statements "We create environmental education programs" and "We offer training and workshops to improve the environmental behavior of employees." While Companies B, C, D, and E expressed absolute agreement with the stated statements, Company A responded with disagreement to both statements.

**Graph 4: A Summary Assessment of the Environmental Education and Employee Development**

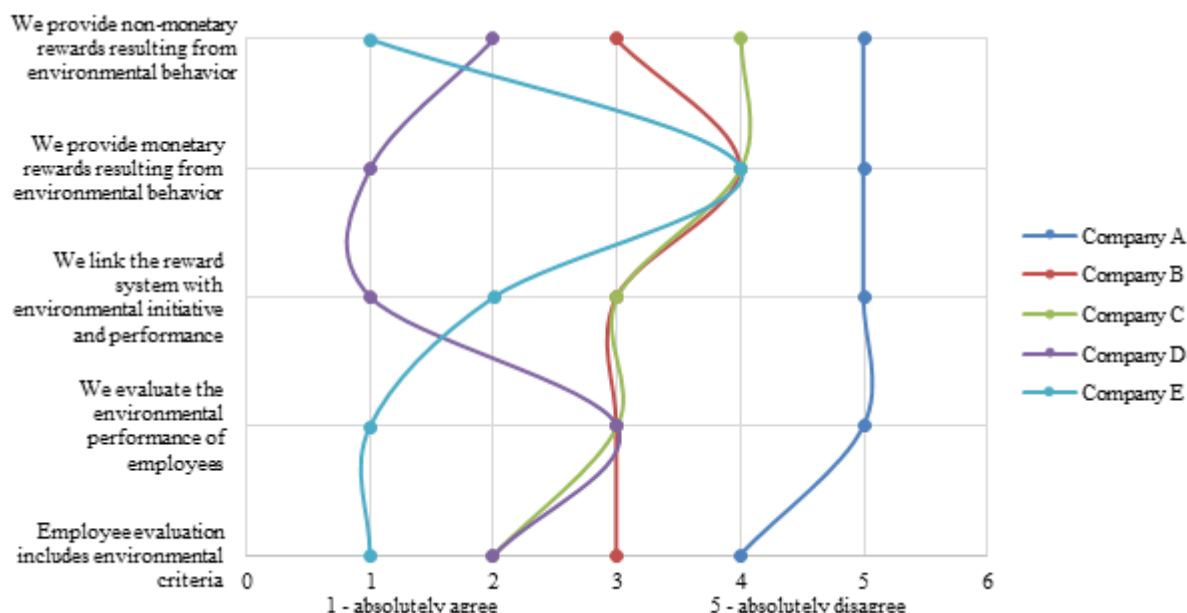


Source: own processing, 2022

From the partial results in Graph 3, we quantified the overall average rating of selected statements by companies, which reaches a value of 1.6, which we consider positive. Education is one of the most effective human resource development strategies ever. It supports a proactive approach to environmental activities and strives to minimize the impact on the environment. The values expressed by the mode showed that the most frequently occurring answer is 1, i.e. "Absolutely agree", while the least frequently occurring answer is 5, i.e. "Absolutely disagree".

### 3.2.3 Environmental Aspects of Employee Evaluation and Remuneration

**Graph 5: Environmental Aspects of Employee Evaluation and Remuneration**



Source: own processing, 2022

From the obtained data shown in Graph 5, it follows that the environmental aspects of employee evaluation and remuneration achieve the best average rating in Company D and E with identical values of 1.8. On the contrary, Company A has the worst average rating at the level of 4.8. The

evaluation of Company A also caused significant deviations in all statements, as it expressed disagreement, or absolutely disagree with all statements.

**Graph 6: A Summary Assessment Environmental Aspects of Employee Evaluation and Remuneration**



Source: own processing, 2022

A comprehensive evaluation of the partial results presented in Chart 5 showed that the overall average rating of the selected statements reaches a value of 2.96. We consider the established state to be unacceptable since the successful implementation of the principles of environmental management of human resources requires a direct connection with the system of employee evaluation and remuneration. The values expressed by the mode confirmed that the most frequently occurring answer is 3, i.e. "I can't express myself", while the least frequently occurring answer is 5, i.e. "Absolutely disagree".

### 3.3 Proposals and Recommendations for Improving Business Practice

Considering the goal of individual research of a sample of 5 large companies registered in the Business Register of the Slovak Republic, we have defined proposals and recommendations for improving business practices separately for each of the examined companies.

We suggest to Company A that it prepares for the fulfillment of environmental elements before hiring employees. Since environmental education and employee development have a direct impact on increasing the company's environmental performance, we recommend that the company create environmental education programs, training, or workshops to improve environmental behaviour. We also recommend that the company consider the environmental values of job applicants and include environmental elements in the scope of work. We identified the most significant deficiencies in Company A in the environmental aspects of employee evaluation and remuneration. Considering the positive correlation between the successful implementation of the principles of GHRM and the environmental aspects of employee compensation, it is important for the company to link these aspects.

We recommend Company B to include environmental criteria in the recruitment campaign. In the company, we also demonstrated insufficient use of teamwork aimed at creating awareness of environmental issues. Given the fact that teamwork represents one of the most effective methods aimed at improving environmental behavior and environmental performance, we suggest that the company consider its implementation. We also strongly recommend the

company to link the evaluation and reward system with environmental performance and employee initiative.

Company C shows identical deficiencies in the environmental aspects of employee evaluation and remuneration as Companies A and B. Therefore, we recommend that the company link the evaluation and reward system with environmental performance and employee initiative.

We recommend Company D check the environmental performance of job applicants during selection. We also suggest that the company place greater emphasis on teamwork aimed at creating awareness about environmental problems.

In Company E, we noted below-average environmental aspects of the search, acquisition, and selection of employees. We recommend that the company consider the environmental values of job applicants and include environmental elements and obligations in the job description.

#### 4. Conclusion

Indeed, large companies have become more sustainable in recent years and thus contribute significantly to sustainable development. All enterprises demonstrate an effort to increase environmental performance and improve environmental behavior through the implementation of green human resource management principles. In addition, the investigated companies proved that they could make the management of human resources more efficient by combining selected aspects of environmental management and human resources management while simultaneously respecting the principles of sustainable development. The selected companies demonstrate extensive efforts, especially in environmental education and employee development.

Selected companies show significant deficiencies in the implementation of the principles of green human resource management, especially in the environmental aspects of searching, recruiting, and selecting employees, as well as in the environmental aspects of evaluating and rewarding employees. Companies must screen the environmental performance of job applicants when selecting employees and place greater emphasis on teamwork aimed at creating awareness of environmental issues. They will thus increase the overall environmental performance of the company and stimulate the development of an environmental corporate culture. However, due to the positive correlation between the successful implementation of green human resource management principles and the environmental aspects of employee compensation, companies need to link the evaluation and compensation system with environmental performance and employee initiative.

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## Specific features of growth of an international company on market and its sustainable development by the case of «TESLA INC.»

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### Abstract

*The long-lasting global development of the economy is aimed mainly at maximizing profits and minimizing costs. has led to serious issues to the ecological and social environments and right now these kinds of issues question the future existence of mankind, the problem of providing conditions for its stable development is particularly relevant right now. The current understanding of sustainable development was approved more than 30 years ago, in the report «Our common future» by the United Nations Commission on Environment and Development, which often was called the Brundtland Commission after its leader, its key idea was the balance of between generations, Sustainable development is a set of measures aimed at meeting current human needs while preserving the environment and resources, that is, without compromising the ability of future generations to meet their own needs. And international companies have an important role in the implementation of Sustainable development concept goals.*

*Tesla Inc. is one of the international companies which has been effective in contributing toward scalable clean energy. Tesla Inc. has an organizational structure that supports continuous business growth. Tesla's organizational structure takes a traditional form, Tesla sells its product directly and with vertical business integration. The company aims to move towards the zero-emissions policy while providing best-in-class electric vehicles that offer high performance, energy efficiency, and long-distance travel on a single charge with convenient operation logistics and innovative design. Tesla Inc.'s impact on the world and its growth in the market is a valuable case to examine for a sustainable future.*

**Keywords:** Electric vehicle, Tesla Inc., sustainable development, carbon emissions, environment, investments, automotive industry, recycling

**JEL classification:** L62, M21, M31

### 1. Introduction

Since the beginning of the industrial revolution, humanity has paid little attention to the path it is taking, and only at the end of the 20th century did it really begin to reflect on how much harm human activities are doing to the environment. The Industrial Revolution helped establish the economic development model we use to this day. Despite the effectiveness of this model, one cannot ignore the costs that it leads to. At the moment, a gradual transition is being made towards a new resource-efficient economic model, which should be characterized by the well-being of society, including employment, which is combined with a decrease in the impact of human civilization on the environment decades of intensive and unsustainable extraction and use of natural resources, along with poor management, have led to a gradually approaching environmental disaster.

Currently, companies need new approaches to the development strategy of industrial enterprises, the formation of which should be based on the principle of environmental and economic balance. For an industrial enterprise, this principle means the formation of a unified

social-ecological and economic system that ensures efficient, environmentally friendly management and the development of the material production of an enterprise within the framework of natural cycles.

Currently, there is a need for large-scale scientific research in the environmental field, as well as the development of national and international institutions for the environmental assessment of companies. The joint work of international organizations and national independent environmental departments will make it possible to achieve an increase in the environmental efficiency of an international company on a global scale. Large international companies not only create a significant burden on the environment but also have investment, scientific, technical, and human resources, which are so lacking for states and international organizations to solve pressing environmental problems. The uncontrolled destruction of the planet's natural resources has led the planet to a deplorable state of many ecosystems, and as such problems arise, humanity began to pay attention to them and make attempts to solve them. And states and large international corporations play an important role, the Glasgow climate pact has become an important step towards sustainable development, almost 200 countries have taken responsibility for reducing the use of coal, increasing funding for poor countries, and a number of other problems. (UNCTAD, 2020)

Competition in electric transport creates new technologies, businesses, business models – and ultimately new markets. In the coming years, a window of opportunity will open to achieve a leadership position in the emerging market for electric vehicles. In fact, the stage of formation of the global market is now being completed, and the total volume of investments in the production of electric transport and the creation of infrastructure for it is rapidly growing around the world. The sequence of decisions that will be made during this period will form the basis of the future architecture of the global market - from educational and production standards, and the organization of urban infrastructure to new business models and market regulation conditions. The winners will be companies that manage to establish production in the near future, start sales and gain a foothold in the market, because after passing the tipping point. (Casey Murphy, 2022)

Compared to other major automotive brands that produce vehicles using internal combustion engines, Tesla Inc. the electric car manufacturer has become a good example of a company that follows the idea of sustainability, which spurred the largest automobile concerns to invest in the production of electric vehicles, the main factor that provides "Tesla Inc." sustainability compared to other car manufactures is the fact that electric vehicle using the lest ecological power source provides fewer emissions during its use than the regular vehicle that uses combustion engine. The company's goal is to create the most compelling car company of the 21st century while accelerating the world's transition to electric vehicles. (Tesla Inc., 2022)

The current transformation will affect not only the transport industry, companies for sustainable growth will need to get involved in related segments of related industries. The adoption of carbon neutrality standards, as well as the integration of fundamentally new infrastructure and new modes of transport into everyday life, will require the development of related technologies, the deep modernization of existing and the creation of new industries at all stages of the life cycle: the extraction of raw materials for batteries, the development, and production of electric

vehicles and components, charging stations and energy infrastructure, information infrastructure, recycling. The development of electric transport is now considered by many countries of the world as a way to solve existing environmental problems, the possibility of creating new markets innovative products and therefore is actively supported by the state and in these conditions "Tesla Inc." being one of the largest electric vehicle manufacturers, it has every chance to continue its expansion. (UNCTAD, 2020)

### *1.1 Subsection*

The world cannot reduce carbon emissions without solving the problems of energy production and consumption. And the world cannot change its energy habits without directly cutting emissions from the transport and energy sectors. This problem is an important factor in Tesla's success and existence. Tesla is focused on building a complete energy and transportation ecosystem from solar generation and energy storage to all-electric vehicles.

Tesla Inc. (formerly Tesla Motors, Inc.) has an organizational structure that supports continuous business growth. The corporate structure of a company is the structure and system that defines the models of interaction between the components of the company. Tesla's organizational structure takes a traditional form, Tesla sells its product directly and with vertical business integration

The organizational structure of Tesla Inc. creates opportunities that provide strict and effective managerial control over the business, despite its relatively rapid scaling in the world. Every time Tesla introduces a new model, the company always emphasizes its commitment to protecting the environment and making its car as affordable as possible.

Unlike other car manufacturers that sell products through dealers, Tesla sells directly to consumers. She created a network of exhibition halls and galleries owned by the company. Owning a sales channel is supposed to gain an advantage in the speed of developing your product. More importantly, it is a unique product buying experience. Unlike car dealerships, there are no potential conflicts of interest between intermediaries at Tesla dealerships. Customers only deal with Tesla sales and service personnel.

The company is committed to providing best-in-class electric vehicles that offer high performance, energy efficiency, and long-distance travel with convenient operation logistics and progressive design while producing them with the smallest carbon footprint. Tesla cars are being produced in Gigafactory Nevada, Gigafactory New York, Gigafactory Texas, Gigafactory Shanghai, Gigafactory Berlin, and the first factory Fremont Factory, Tesla is engaged in battery recycling and assisting in the conservation of battery materials, and vertically integrated factories for efficiency, Tesla uses a waterless method of washing its cars to save water. First, a special cleaning agent is applied, and then the body is wiped. The Fremont plant uses a closed-loop type of water circulation, that is, treated effluents are returned to production.[5]

Tesla reported that it achieved 92% battery cell material recovery in its new recycling process, and it recycled 1,300 tons of nickel, 400 tons of copper, and 80 tons of cobalt in 2020, Tesla Megapack was launched in 2019, which is a large-scale stationary battery with rechargeable lithium-ion battery designed for use in battery power plants manufactured by a subsidiary of

Tesla, Inc. Tesla reported that it achieved 92% battery cell material recovery in its new recycling process, and it recycled 1,300 tons of nickel, 400 tons of copper, and 80 tons of cobalt in 2020. (Tesla Inc., 2022)

To create a fully sustainable energy ecosystem, Tesla is also producing a suite of energy products that enable homeowners, households, and utilities to generate, store, and consume renewable energy. It is possible to install solar panels or a solar roof to power your home with 100% renewable energy and store that energy in a Powerwall battery that makes electricity available during peak periods and provides power during power outages.

Tesla Inc. Will continue to introduce more solar panels on factory roofs, reduce reliance on dirtier energy sources through continued use of long-lasting and recyclable batteries, simplify factory design, more sustainable sources of raw materials for batteries. And also increase the number of recycled batteries, as they will play a critical role in the supply of materials for the production of batteries, in order to avoid a stronger dependence on the production of mined materials, due to the growth in demand for electric vehicles. In order for electric vehicles to be able to gain a foothold as an alternative to cars with an internal combustion engine, it is necessary to provide the appropriate infrastructure, companies with the assistance of the state create charging stations, and Tesla owns and operates the largest global network of fast charging in the world. Located on main routes close to amenities. The Tesla Supercharger Network is a system of 480-volt DC charging stations designed to quickly recharge the batteries of electric vehicles manufactured by Tesla Inc. All models of machines can be quickly restored the life of their traction batteries, thanks to these fast charging stations.

The network began to be built in 2012, and there are already 35,000 chargers worldwide. The very idea of the widespread introduction of Tesla Supercharger charging stations was born in the company after the idea of replacing batteries turned out to be difficult to implement. (Casey Murphy, 2022)

The car as such has value in the first place when it is used and moved. Automakers of cars using an internal combustion engine did not need to think about the need to create filling networks for their cars, other companies have been doing this, creating ready-made infrastructure over the years, they are easily accessible and located almost everywhere, and this allowed companies to engage in a strategy that depends primarily on marketing variables such as price, promotion, creating a car with good characteristics, with the right price and advertising and this product will be bought

We can see that big car companies have invested heavily in electric vehicles lately. The Volkswagen Group plans to offer 25 new EV models to customers by 2030, the Volkswagen Group's goal of halving electric cars by the start of the next decade, and they're not the only manufacturer with such plans. (Chris Randall, 2022)

However, despite investments that amount to many billions of dollars, none of the major incumbent automakers, Tesla also maintains its status as one of the largest electric vehicle manufacturers. Tesla is able to drive long distances, Tesla product owners can be sure that they will find convenient places to recharge their car in the regions where the company is present, Tesla by creating its own largest fast-charging network becomes more attractive than other car manufacturers' products, such as Porsche Taycan, Nissan Leaf, Kia EV6. While incumbent



automakers remain focused on improving their electric vehicles, Tesla has been thinking about the entire automotive system with the goal of meeting consumers' basic driving needs. (V. V. Semikasheva, A. Yu. Kolpakova, A. A. Yakovlevb, J.K. Rostovskia, 2022)

Infrastructure in the form of charging stations is still in its infancy even in the most developed countries, although the sale of electric vehicles requires the creation of a charging network, investment in building a network will be profitable if the company already has a user base, so Tesla first began selling the Tesla Roadster which gave early sales, and already in 2012, together with the Tesla Model S, the company deployed its own network from one US coast to another coast, this became a powerful argument in buying an electric car for buyers who were still hesitant at that time. This has become an important factor in ensuring the sustainable growth of Tesla Inc.

## 2. Data and Methods

Gradually, the concept of sustainable development, being associated with the idea of preserving the planet's ecosystem, combined the environmental, economic, social, and political components in solving closely related interpenetrating global problems. Forming a vision of the specifics of the sustainable development of an international company, using the example of Tesla Inc. Based on grouping methods and theoretical material, using qualitative analysis, The information-empirical base has become: «Tesla Impact report 2021», «Commodities at a Glance: Special issue on strategic battery raw materials. UNCTAD » and «Tesla Fourth Quarter & Full Year 2021 Update. »

## 3. Results and discussion

Awareness of the consequences of the increasing environmental load on the environment at the end of the 20th century led to a revision in society and in world science of the strategy for the development of earthly civilization. To replace the limitless concept of scientific and technological progress, the concept of sustainable development has been put forward today. The works of authors studying the issue of the specifics of sustainable development of companies describe the concept as the concept of the optimal use of limited resources and the use of environmentally friendly technologies that save energy and natural resources, which include the extraction and processing of raw materials, creation of optimally ecological products, minimization, recycling and destruction of waste. The ideas of sustainable business development increase the social, economic, and environmental responsibility of companies, influencing investments in the medical and social spheres. (World Nuclear Association, 2021)

In 2006, before Tesla released its first car, there was no all-electric car on the market that could be a viable alternative to gasoline-powered cars. In 2021, more than 16.5 million electric vehicles move around the world, and more and more every day. The automotive industry, with the support of governments and international organizations, is investing in electric vehicles. (Tesla Inc., 2022)

Tesla's approach to manufacturing is in many ways reminiscent of early automotive models, where Ford manufactured its products using its own necessary components, its own rubber plantations, and steel mills. The generally accepted approach to car production in recent decades is very different from the Tesla approach, in companies, manufacturers focused only on design and final assembly, and suppliers from all over the world took care of all other processes. This approach to production has helped to reduce the cost of the amount of funding required to build a plant, but this thin distribution of production has left companies vulnerable and dependent on external conditions, unable to cope with some shocks in the supply chain.

Electric vehicles do not produce exhaust gases during their use. However, the environmental friendliness of an electric vehicle depends on the production of electricity used for charging. The amount of carbon footprint varies widely depending on how the energy charged into the car is generated, using coal or natural gas, which emit carbon pollution, compared to renewable energy sources. Research shows that even with these electricity emissions, electric vehicles typically emit lower levels of greenhouse gases than the average new gasoline car. Tesla estimates that through the use of electric cars, batteries that store electricity, and solar panels, they have managed to avoid 8.4 million metric tons of CO<sub>2</sub>-equivalent emissions, of which 6.8 are accounted for by the use of Tesla electric vehicles, as well as 1.6 million metric tons avoid thanks to the clean energy produced by solar panels, which are stored in Tesla batteries for future required consumption. And over time, with an increasing number of Tesla electric vehicles, these numbers will increase. (Jack Ewing, 2022)

In 2015, a subsidiary of Tesla Energy was founded, which is engaged in clean energy, using solar panels and energy storage systems, in an environment where electricity consumption is constantly growing and more electric vehicles are being produced, the energy business has the potential to democratize utilities through the production and storage of electricity in conditions when electricity prices are rising and it is not possible to create a reliable energy supply system everywhere is logical. The Tesla CEO sees the potential in Tesla Energy to become an important element of sustainability, although growth is limited due to the failure of the microchip supply chain. (Tesla Inc., 2022)

The biggest barriers to the continued production and sale of electric vehicles are the soaring prices of some of the critical minerals needed to make batteries, as well as frequent disruptions in the supply chain. The high demand for batteries has led to a significant increase in demand for the base metals used in their production. From the beginning of 2021 to May 2022, lithium prices increased more than sevenfold and cobalt prices more than doubled. Nickel prices nearly doubled over the same period, reaching levels not seen in nearly a decade. The unprecedented rise in battery metal prices was driven by a combination of growing demand for batteries, growing pressure on supply chains, and concerns about supply shrinkage. Also, their mining leaves a large carbon footprint, and the production of electric vehicles is currently dirtier than the production of cars with a gasoline engine, this fact makes battery recycling necessary for sustainable development, Tesla, using the principles of the circular economy, has created an internal well-established ecosystem in order to remanufacture batteries that go to service centers, the company reports that it has managed to recycle 1500 tons of nickel, 300 copper and 200 cobalt. This volume will increase over time, as Tesla products are built to last, it will take some time to increase the number of recyclable batteries. (Jessika Luth Richter, 2022)

Tesla is working with recycling companies to be able to ensure that batteries are not thrown away to move closer to the implementation of the principles of a closed cycle and already in 2020 began to recycle batteries for the first time at the Gigafactory Nevada, Tesla plans to introduce a recycling phase in all factories of the company, battery recycling will play a decisive role in the supply of battery materials, saving valuable materials. It is also economically beneficial both in the short and long term, it will allow the company to develop sustainably, saving on the purchase of additional raw materials for production. For 2021, Tesla reported a net profit of \$5.52 billion, of which \$314 million was regulatory loans to automakers, and annual revenue was \$53.8 billion, up 71% from last year. Tesla's strategy also includes creating projects that attract as much attention as possible, such as Cybertruck and Roadster and existing mass-produced electric vehicles are the main revenue generators helping the company to change the engineering industry as a whole. (Tesla Inc., 2022)

#### 4. Conclusion

It can be argued that today the electric car is considered by many countries and companies of the world as part of the solution to existing environmental problems. Tesla is a company that is constantly evolving, producing products in a very complex industry with ever-increasing competition. Tesla has developed a comprehensive sustainability strategy, which includes creating a unique ecosystem and solutions at all levels, the initial production of products that occupy the upper part of the market, where customers are willing to pay more, since the cost of producing products with new technologies that have a high unit cost, To help accelerate the world's transition from an economy based on mining and subsequent carbon burning, Tesla plans to produce a wide range of models as quickly as possible, including low-cost family cars that will have a lower price. Tesla, the current crisis in the supply chain has become one of the factors, but the company continues its sustainable growth.

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## Smartly connected brands. A sustainable perspective (Analysis as a bibliometric study)

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### Abstract

*The understanding of the term “smart consumer” has changed over time. A few years ago, it used to mean that someone is getting the best deal while shopping. Nowadays, technology plays an important part. This article uses a qualitative method in which utilizes bibliometric analysis. With this technique, we want to analyse the existing literature. We took 5 terms: smart objects, smart brands, smart consumers, sustainable consumers and smart sustainable consumers and we computed the timeline of articles over a period of time, the trend in keywords and the most cited articles using VOSviewer. For the term smart sustainable consumers, we made a table in which more information regarding number of authors, study attribute, study type, analysis unit, sample size and data collection method can be found.*

**Keywords:** smart brands, smart consumer, smart objects, sustainable consumer, VOSviewer, bibliometric analysis.

**JEL Classification:** M30, M31, N30.

### 1. Introduction

In the times that we are living, we use a lot the term “smart”. We came to have a smart home, to use smart objects. We have smart brands, and we call ourselves smart consumers. But the understanding of the term “smart consumer” has changed over time. A few years ago, it used to mean that someone is getting the best deal while shopping. Nowadays, technology plays an important part. So, the meaning of smart consumer has broadened its meaning. It’s more than someone that find the best deal, it’s someone that knows exactly how much is willing to spend<sup>2</sup>, they start comparing prices and tech specs, they are reading reviews and deciding how to buy the product (online or goes to the physical store) (Reformat, 2013). But the research proposed is not going to analyse what a smart consumer is, but mostly is going to explore the existing literature by using bibliometric analysis.

Bibliometric indicators are especially significant for researchers, as these measurements are often used in funding decisions, appointments, and promotions of researchers. As more scientific discoveries occur and published research results are read and then quoted by other researchers, bibliometric indicators are becoming increasingly essential (Sen, 1999). In our research the main bibliometric indicators used are quality indicators and structural indicators. As a basic bibliometric indicator, this paper used citations and mapping.

This paper got inspired by the bibliometric analysis made by Çelik, Z. He did his research on flow theory. We aim to do the same, but for smart sustainable consumer. The design of table 1

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<sup>2</sup> Accessed on June 30<sup>th</sup>, <https://www.fcnb.ca/en/guides/being-a-smart-consumer>



is from Çelik's article (ÇELİK, 2021), his work is very exciting and from his table design we inspired the one found here.

## 2. Data and Methods

This research purposes to conduct a bibliometric analysis for the following terms: smart consumer and smart sustainable consumer. Beside them, there are 3 more terms: smart brands, smart objects and sustainable consumer for which we want to see the trends in keywords, number of articles written over a period of time and the most cited authors in that period of time. The sample size of articles, keywords varies because not all of them have the same number of articles or keywords.

The main objectives of this research are:

O1. To identify the timeline for the following terms: smart brands, smart consumer, smart object, sustainable consumers and smart sustainable consumer.

O2. To identify the rank of smart brands, smart consumer, smart object, sustainable consumers and smart sustainable consumer articles by the number of citations.

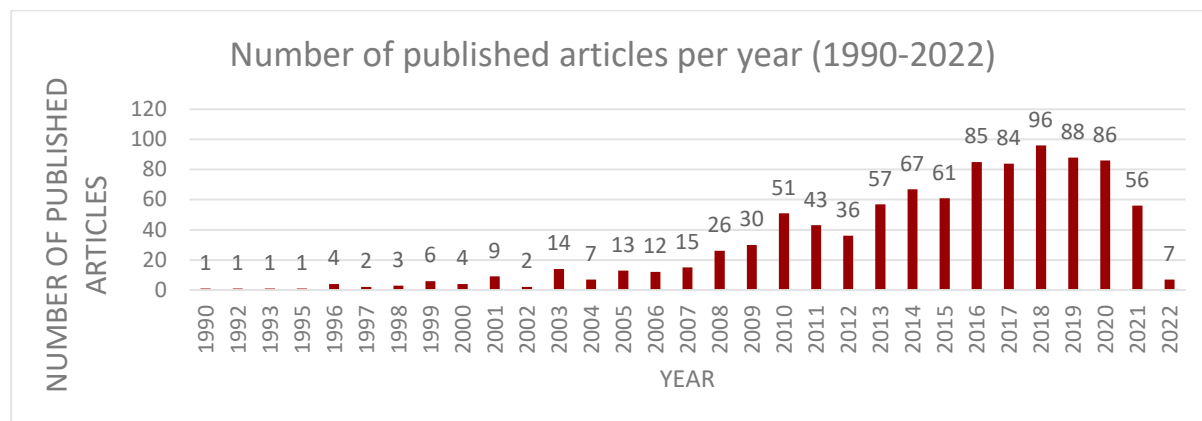
O3. To identify the keywords used in articles regarding smart brands, smart consumer, smart object, sustainable consumers and smart sustainable consumer.

## 3. Results and Discussion

### 3.1 Smart objects

In order to identify the timeline of the neuromarketing articles, we wanted to see which years have the most published articles on this topic. However, VOSviewer does not provide such an analysis, so we computed the number of articles in Excel. The initial sample size was 1000, but some of the articles didn't have the year so the final sample size was 968 articles from years starting from 1990 to 2022.

**Figure 1. Number of published articles over the years 1990 – 2022 for “smart objects”.**



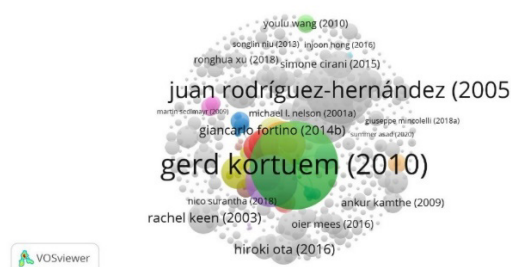
Source: own processing in Excel

The number of articles published on the topic “smart objects” have rose significantly starting with the year 2016. At the early 2000's only a few articles were published, but from 2010 until 2020 the interest in this topic has grown significantly. Overall, the trend is rising and decreasing, for example rising for two years in a row (2013 and 2014) after which a drop will come in 2015.

Our next objective for smart objects was to aim to identify which is the most cited document and the main keywords that showed up. We uploaded in VOSviewer a database with 1000 records.

When looking into citations, from 1000 records only 627 have at least one citation. So, from those, we may observe from figure 2, that Gerd Kortuem has the highest number of citations with 1201 citations, on the second place there is Juan Rodríguez-Hernández with 703 citations followed by Dariu M. Gavrilă with 604 citations on the third place and Luigi Atzori on the fourth place with 422 citations.

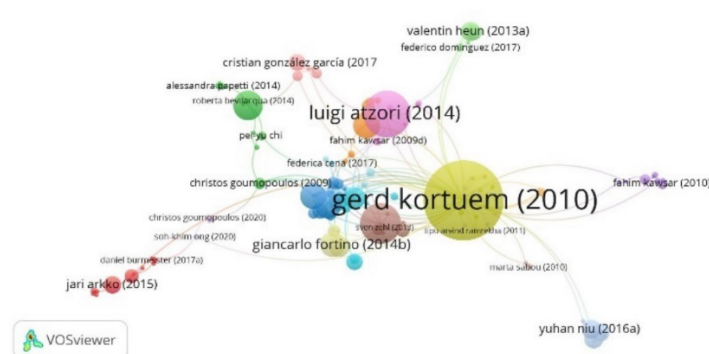
**Figure 2. Smart objects article citation with outliers.**



Source: own processing in VOSviewer

In figure 3 we may observe only linked articles, which are not that many. From 627 documents only 119 items are connected.

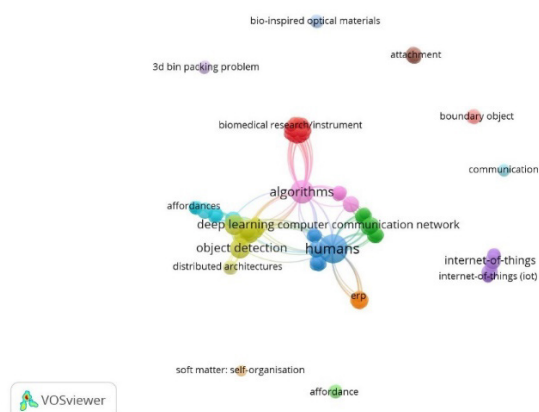
**Figure 3. Smart objects article citation without outliers.**



Source: own processing in VOSviewer

The third type of analysis made was on keywords, from 1000 records only 134 keywords were found, from these 134 only 90 are connected. In figure 4 we may observe that there are several outliers like attachment, boundary object, communication, 3d bin packing problem, affordance, soft matter: self-organisation and the most important one, internet of things. The main cluster contains keywords like humans, algorithms, erp, deep learning. This is happening because mainly smart objects are referring to appliances which can be connected via phone, by using Bluetooth.

**Figure 4. Smart objects article clusters for keywords.**

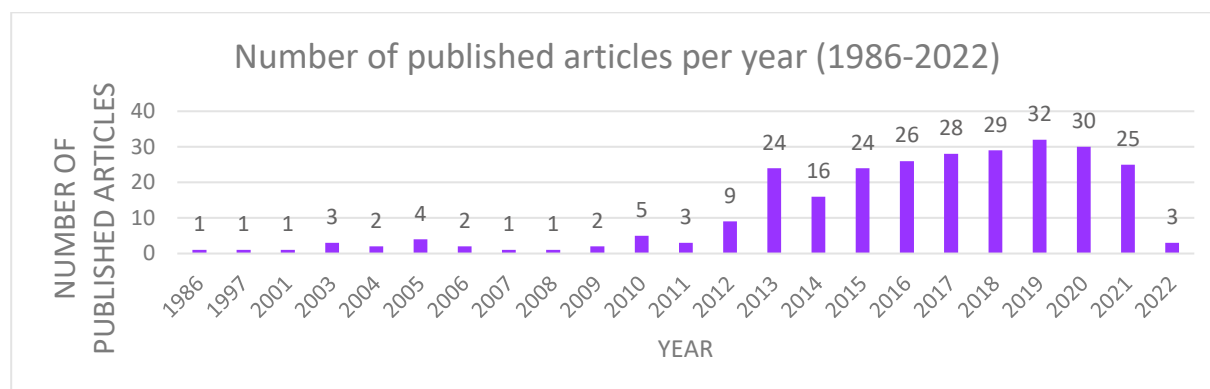


Source: own processing in VOSviewer

### 3.2 Smart brands

In order to identify the timeline of the neuromarketing articles, we wanted to see which years have the most published articles on this topic. However, VOSviewer does not provide such an analysis, so we computed the number of articles in Excel. The initial sample size was 274, but some of the articles didn't have the year so the final sample size was 272 articles from years starting from 1986 to 2022.

**Figure 5. Number of published articles over the years 1986 – 2022 for “smart brands”.**



Source: own processing in Excel

As seen in the figure above, we have a rising trend from 2015 to 2019 and a descending trend from 2020 until 2022. At the early 2000's only a few articles were published, but from 2014 until 2020 the interest in this topic has grown significantly.

Our next objective for smart brands was to aim to identify which is the most cited document and the main keywords that showed up. For smart brands our database contained only 274 records.

When looking into citations, from 274 documents only 84 had at least one citation and from these 84 only 10 are connected. We may observe from figure 6, that Tan Yigitcanlar has the

highest number of citations with 193 citations, on the second place there George Christodoulides with 54 citations followed by Jintao Wu on the third place with 45 citations.

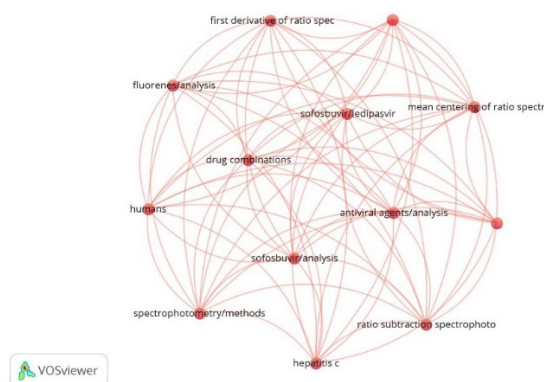
**Figure 6. Smart brands article citation with outliers.**



Source: own processing in VOSviewer

The third type of analysis made was keywords and when analysing them for smart brands articles, only 13 keywords were found, most of them in the medical field (figure 7). This may be a great opportunity to bring something new on a field that wasn't investigated before.

**Figure 7. Smart brands article citation without outliers.**

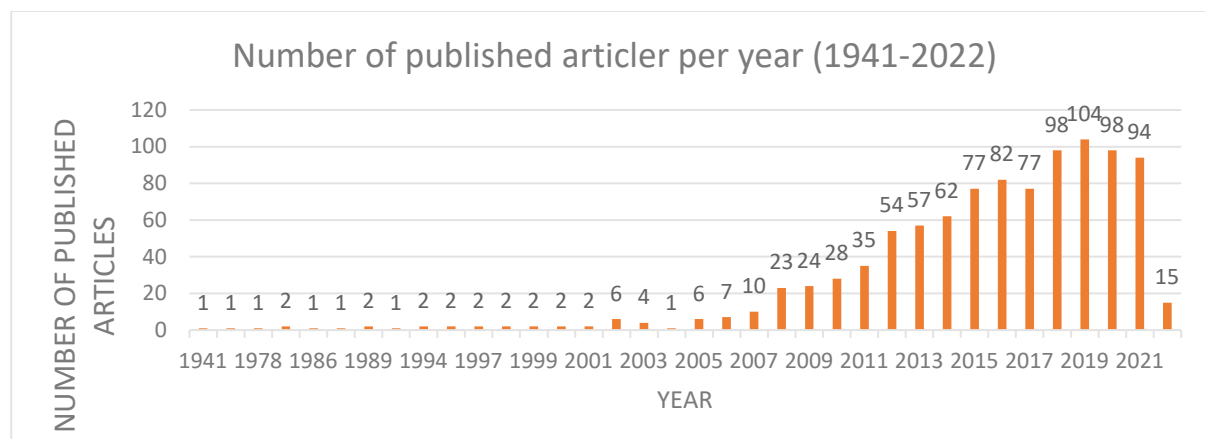


Source: own processing in VOSviewer

### 3.3 Smart consumers

In order to identify the timeline of the smart consumer articles, we wanted to see which years have the most published articles on this topic. However, VOSviewer does not provide such an analysis, so we computed the number of articles in Excel. The initial sample size was 1000, but some of the articles didn't have the year so the final sample size was 986 articles from years starting from 1941 to 2022.

**Figure 8. Number of published articles over the years 1941 – 2022 for “smart consumer”.**



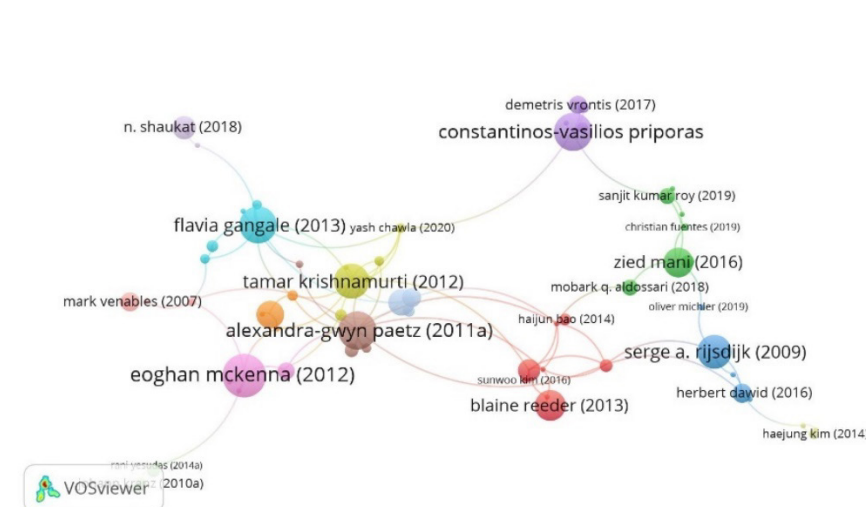
Source: own processing in Excel

As seen in figure 8, the number of articles published on the topic “smart consumer” have rose significantly starting with the year 2009. At the early 2000’s only a few articles were published, but from 2009 until 2021 the interest in this topic has grown significantly. In 2017 observe some decrease, but the trend it’s rising again starting with the next year.

Our next objective for smart consumers was to aim to identify which is the most cited document and the main keywords that showed up. For smart consumers our database contained 1000 records.

When looking into citations, from 1000 documents only 528 had at least one citation and from these 528 only 66 are connected. We may observe from figure 9, that Eoghan McKenna has the highest number of citations with 267 citations, on the second place there Constantinos-Vasilios Priporas with 210 citations followed by Alexandra-Gwyn Paetz on the third place with 199 citations.

**Figure 9. Smart consumer article citation without outliers.**

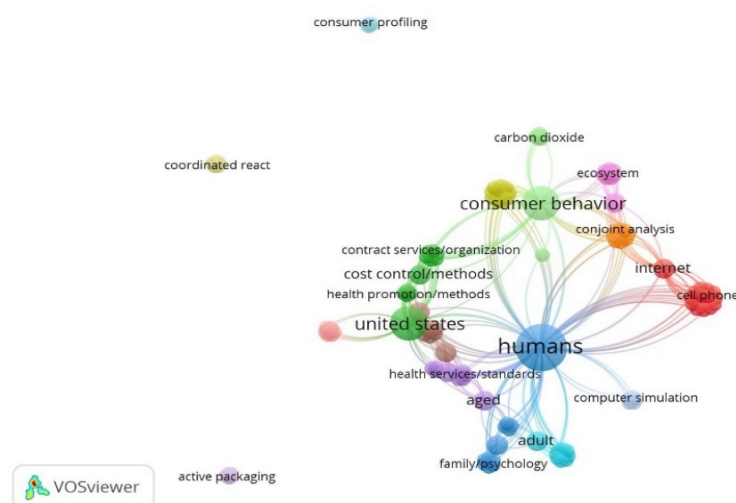


Source: own processing in VOSviewer



The third type of analysis made was on keywords, from 1000 records only 137 keywords were found, from these 137 only 122 are connected. In figure 10 we may observe that there are several outliers like consumer profiling, coordinated react and active packaging. The main cluster contains keywords like humans, consumer behaviour, internet, ecosystem, cost/control methods, computer stimulation, family/psychology, health services/standards.

**Figure 10. Smart consumer article clusters for keywords.**

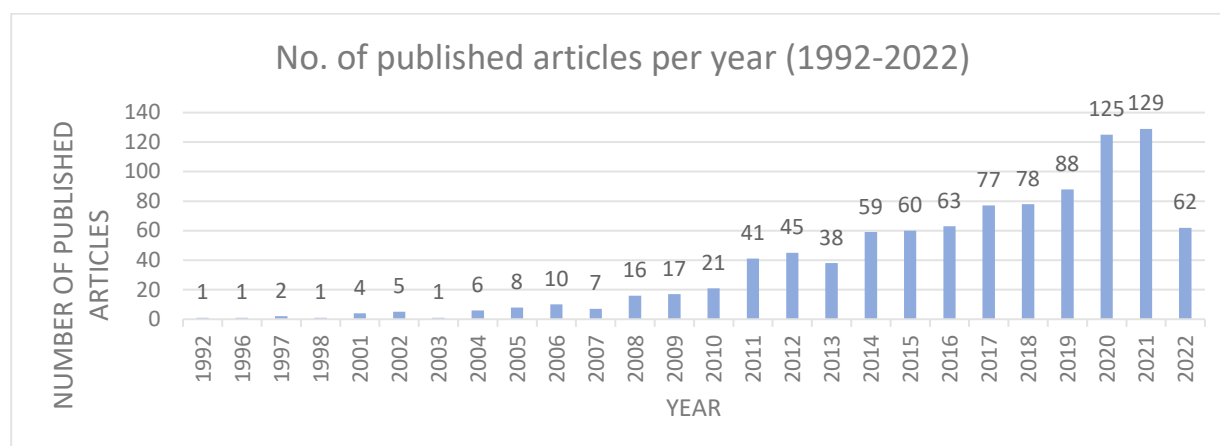


Source: own processing in VOSviewer

### 3.4 Sustainable consumers

In order to identify the timeline of the sustainable consumers articles, we wanted to see which years have the most published articles on this topic. However, VOSviewer does not provide such an analysis, so we computed the number of articles in Excel. The initial sample size was 1000, but some of the articles didn't have the year so the final sample size was 965 articles from years starting from 1992 to 2022.

**Figure 11. Number of published articles over the years 1992 – 2022 for “sustainable consumer”.**



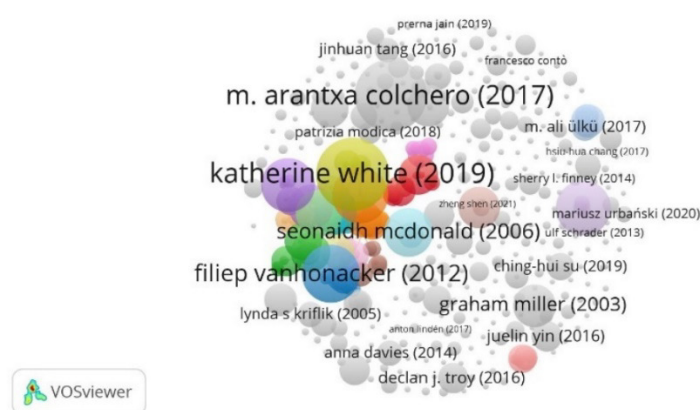
Source: own processing in Excel

As seen in figure 10, the number of articles published on the topic “sustainable consumer” have rose significantly starting with the year 2012. At the early 2000’s only a few articles were published, but from 2014 until 2021 the interest in this topic has grown significantly. In 2013 we observe some decrease. In 2022 the data it’s not already complete, since this research is computed in mid-July. By the time 2022 ends, there will be more articles published.

Our next objective for sustainable consumers was to identify which is the most cited document and the main keywords that showed up. For sustainable consumers our database contained 1000 records.

When looking into citations, from 1000 documents only 429 had at least one citation and from these 429 only 104 are connected. We may observe from figure 12, that Katherine White has the highest number of citations with 407 citations, on the second place there is M. Arantxa Colchero with 396 citations followed by Filiep Vanhonacker on the third place with 259 citations.

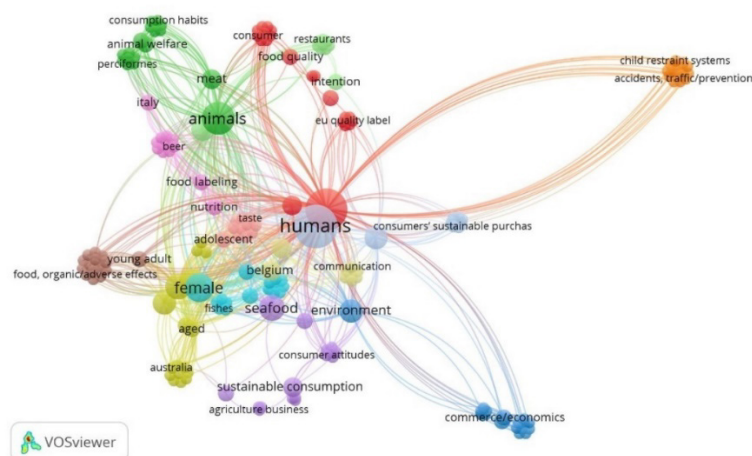
**Figure 12. Sustainable consumer article citation with outliers.**



Source: own processing in VOSviewer

The third type of analysis made was on keywords, from 1000 records only 208 keywords were found, from these 208 only 188 are connected. There are several outliers like consumer’s perception, family and friend support, consumer behaviour change and food waste. The main cluster contains keywords like humans, animals, sustainable consumption, books, animal welfare, food labelling, accidents, traffic/prevention etc. A clearer image for the cluster can be seen in figure 13. We may observe that sustainable consumer leads us more to the idea of food and how to be more sustainable regarding it.

**Figure 13. Sustainable consumer article clusters for keywords without outliers.**



Source: own processing in VOSviewer

### 3.5 Sustainable smart consumers

As seen in Table 1, a chronological analysis of the findings in the time period from 2009 to the present is given. Among the 26 selected studies, there are more studies which have three or most authors (73,07%), the majority being journal articles (100%) and using mostly the quantitative method (54,54%). Also, through the 26 studies we can see that mostly used as an analysis unit it's other (63,63%), the sample size being a thousand and below and not quantitative at the same percentage (45,45%). The main data collection method used was literature review and survey (36,36%) followed by mixed methods (18,18%), mostly using questionnaires.

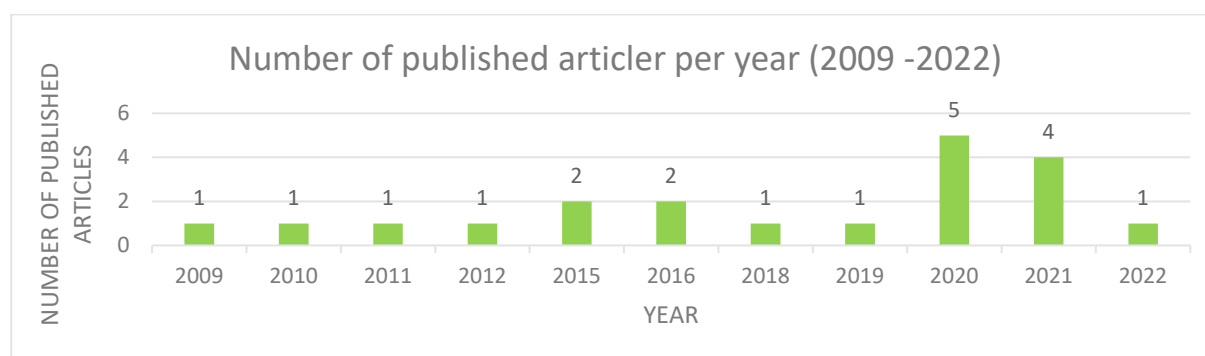
**Table 1: Bibliometric analysis for sustainable sustainable smart consumer.**

Bibliographic of Selected Studies		Time Period									
		2009 - 2014		2015- 2018		2019 - 2022		2020 - Present		2009 - Present	
		N1 = 10		N2 = 5		N3 = 11		N5 = 8		N6 = 26	
		f	%	f	%	f	%	f	%	f	%
Number of authors	One author	1	10	1	20	1	10,10	1	12,5	3	11,53
	Two authors			4	80					4	15,38
	Three or more authors	9	90			10	90,90	7	87,5	19	73,07
Study Attribute	Journal Article	4	100	3	100	4	100	3	100	11	100
Study type	Quantitative	2	50	1	33,33	3	75	2	66,66	6	54,54
	Qualitative	2	50	2	66,66	1	25	1	33,33	5	45,45
Analysis unit	Student and other					1	25			1	9,09

	Other	3	75	2	66,66	2	50	2	66,66	7	63,63
	Source	1	25	1	33,33	1	25	1	33,33	3	27,27
Sample size	A thousand and below	1	25	1	33,33	3	75	2	66,66	5	45,45
	Over a thousand	1	25							1	9,09
	Not quantitative	2	50	2	66,66	1	25	1	33,33	5	45,45
Data collection method	Survey	1	25			3	75	2	66,66	4	36,36
	Focus group	1	25							1	9,09
	Literature review	1	25	2	66,66	1	25	1	33,33	4	36,36
	Mixed (experiment, questionnaire)	1	25	1	33,33					2	18,18

In order to identify the timeline of the sustainable smart consumer articles, we wanted to see which years have the most published articles on this topic. However, VOSviewer does not provide such an analysis, so we computed the number of articles in Excel. The initial sample size was 20, and the years are from 2009 to 2022 with some gaps in 2013, 2014 and 2017 and having a peak in 2020.

**Figure 14. Number of published articles over the years 2009 – 2022 for “sustainable smart consumer”.**



Source: own processing in Excel

Our next objective for sustainable smart consumers was to identify which is the most cited document and the main keywords that showed up. For sustainable smart consumers our database contained 20 records. As it seems, not many articles have been written on this topic.

When looking into citations, from 20 documents only 9 had at least one citation and none of them are interconnected. We may observe from figure 15, that Alexandra-Gwyn Paetz has the highest number of citations with 209 citations, on the second place there Christos Vlachokostas with 12 citations followed by Haiyun Chen on the third place with 10 citations.

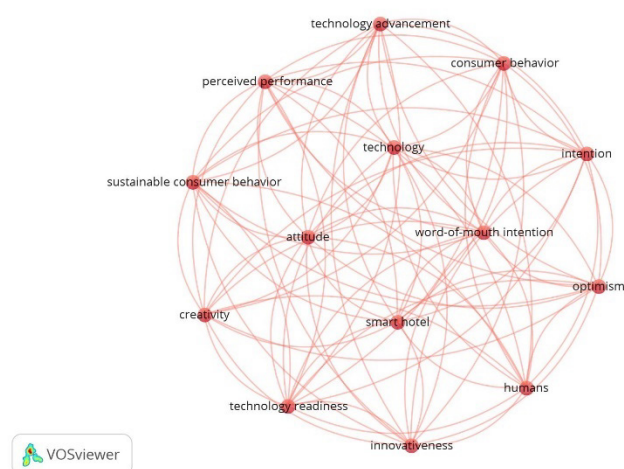
**Figure 15. Sustainable smart consumer article citation.**



Source: own processing in VOSviewer

The third type of analysis made was on keywords, from 20 records only 14 keywords were found and from these none are connected. In figure 16 we may observe that the cluster contains keywords like technology, smart hotel, humans, technology readiness, attitude, perceived performance etc. So, the focus is on technology, how advanced it is and how ready are people to adapt to it.

**Figure 16. Sustainable smart consumer article clusters for keywords.**



Source: own processing in VOSviewer

## 4. Conclusion

In conclusion, there hasn't been written many articles on smart sustainable consumer which gives an opportunity for research.

However, the most used keywords for the selected terms were humans, technology, consumer, environment, internet, algorithm.

The most cited authors were Alexandra-Gwyn Paetz, Katherine White, Eoghan McKenn, Tan Yigitcanlar and Gerd Kortuem.



The most published articles are on smart objects, smart consumers and sustainable consumer while a few were written on smart brands and sustainable smart consumers. For the last two, the trend of articles written on these topics emerged within the beginning of the 2000's.

### Acknowledgements

This paper was created with the help of my tutor professor to whom I give all my gratitude.

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#### Blog entry

- [4] Financial and Consumer Services Comissions: <https://www.fcnc.ca/en/guides/being-a-smart-consumer>

### Appendix

**Table 1: Chosen articles for the bibliometric analyses for sustainable smart consumers**

Year	Selected studies	Study attribute	N (number of authors)
2009	Wilma Mert; Melanie Watts; Wibke Tritthart - Smart domestic appliances in sustainable energy systems - consumer acceptance and restrictions	journal article	3
2010	Jacquelyn Ottman - A Smart New Way to Segment Green Consumers   Sustainability Marketing, The New Rules of Green Marketing Book   J. Ottman Consulting	book	1
2011	Alexandra-Gwyn Paetz; Elisabeth Dütschke; Wolf Fichtner - Smart Homes as a Means to Sustainable Energy Consumption: A Study of Consumer Perceptions	journal article	3
2012	E.M.F. van den Broek; M.A. Dolman; C.P.A. van Wagenberg - Smart consumer awareness of sustainability of food products	journal article	3
2015	François Coallier - The role of the "interconnected" consumer in smart and sustainable cities: the interconnectedness between new and emerging technologies, the Internet of Things (IoT)	journal article	1
2016	Valerie Graf-Drasch; Henner Gimpel - The Impact of Sustainability on Consumers' Technology Approval : Taking Smart Energy-Saving Systems as an Example of Application	journal article	2
2018	Nieke Lemmen; Ayça Berfu Ünal - Symposium. Designing smart energy technology: How to engage and motivate consumers' sustainable energy use	journal article	2

2019	C. A. Malarvizhi; Sreenivasan Jayashree; Shamima Raihan Manzoor - Examining a Model to Measure Green Packaging Practices Among Consumers in Malaysia: A Sustainable Contributor to Achieving Smart Environmental Goals	journal article	3
2020	Haiyun Chen; Ting Zhu; Jiazhen Huo; Habisch Andre - Sustainable co-governance of smart bike-sharing schemes based on consumers' perspective	journal article	4
2021	Saraju P. Mohanty - Low-Cost Consumer Technology Can Help to Build Sustainable Smart Villages	journal article	1
2022	M.M. Fouad; Stratis Kanarachos; Mahmoud Allam - Perceptions of consumers towards smart and sustainable energy market services: The role of early adopters	journal article	3

## Customer Experience as a Sustainability Driver: Evidence from the Airline Industry

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### Abstract

*The integration of sustainable development logic in the business world has been often approached under the stakeholder view of the firm and complemented by the concept of Triple Bottom Line (TBL). Under these perspectives, listening to the voice of the customers (a firm's major stakeholder) is of utmost importance to provide an offering that meets or even exceeds their expectations, leading thus to customer advocacy attitudes/behaviors and positive firm level outcomes. Focusing on the competitive -and severely affected by the recent health and energy crises- aviation industry, the aim of the present work is to provide insights on passengers' satisfaction with seven factors/stages of their flight experience and their impact on overall passenger satisfaction and loyalty behaviors. An online questionnaire has been completed by 192 passengers who have traveled after the implementation of the COVID-19 protection measures in Greece. The research findings underline the factors that contribute the most to passengers' overall satisfaction and customer advocacy behaviors (repurchasing and positive word-of-mouth), as well as the airline selection criteria, offering guidelines to airline companies for improving their operations, competitiveness, and performance.*

**Keywords:** Airlines in Greece, Passenger experience, Passenger satisfaction, Sustainability, TBL

**JEL Classification:** M14

## 1. Introduction

Airlines are looking for new ways to increase their customer base and consequently their viability. The best way to do so is to know the real opinion of travelers (Grant, 2021). Therefore, research in air passenger satisfaction has grown exponentially in the last years. Our work adds to this field of study by approaching the customer experience as a process that starts with booking and is completed with landing. More precisely, we highlight air passengers' satisfaction with seven aspects of their travelling experience -i.e., Pricing Policy, Website and Communication with the Company, Flight Schedule and Booking, Airport Service (check-in, security control, boarding, lounge), On-Board Service (flight experience), Deboarding and Protection Measures against COVID-19 and their impact on overall air passenger satisfaction. Furthermore, we examine the relationship between overall air passenger satisfaction and customer advocacy behaviors and shed light on the factors that affect the selection of an airline company. Finally, the current work provides insights from Greece in an era after Covid-19, where the attitudes, behaviors and requirements of passengers have changed, and consequently managers need evidence-based directions to increase their customer base and their viability.

### 1.1 Literature review

#### 1.1.1 Sustainable business development and air passenger/customer satisfaction

The integration of sustainable development logic in the business world has been often approached under the stakeholder view of the firm and complemented by the concept of Triple

Bottom Line (TBL). Under these perspectives is of utmost importance to provide an offering that meets or even exceeds customer expectations, leading thus to customer satisfaction and consequently to customer advocacy attitudes/behaviors and positive firm level outcomes (Gupta, Mishra, & Tandon, 2020). As Gupta et al (2020) underline, airline companies should operate to meet higher requirements of their stakeholders (particularly customers) and adjust their operations under the TBL perspective of the firm performance to be profitable and survive.

Customer satisfaction is often approached as the feeling of joy or displeasure when a customer compares a product's/service's perceived performance with their prior expectations (Oliver, 1981). Daub and Ergenzinger (2005) suggest that customer satisfaction should be viewed in a more holistic and multidimensional perspective than through a global perspective, if they wish to succeed in moving forward towards sustainable management, improve their image among customers, and differentiate from competition (Daub & Ergenzinger, 2005).

### *1.1.2 Factor affecting air passenger satisfaction*

As suggested earlier, research in air passenger satisfaction is rather rich. An interesting study Tsafarakis, Kokotas, & Pantouvakis, (2018) approaches air passenger satisfaction (also) as a process (multidimensional perspective) and applies MUSA (multicriteria satisfaction analysis) for data analysis. The results indicate the factors of the service experience that passengers value most (i.e., value for money, e-check in, schedule, staff service boarding), while interesting patterns emerge in different customer segments. Another research by Mihardjo et al. (2019), examines the influence of digital customer experience and electronic word of mouth on brand image and supply chain sustainable performance. The results indicate that digital customer experience and electronic word of mouth played a positive role on promoting brand image. Furthermore, according to Hussain's (2016) research study about the mediating effect of customer satisfaction in the context of the airline industry in the United Arab Emirates, customer satisfaction evolves as a mediator in the relationship between quality of service and brand loyalty.

## **2. Data and Methods**

### *2.1 Research strategy and data collection*

The quantitative method was selected for collecting data for our research. The aim of quantitative research is to determine the causes of change of social phenomena, through objective measurements (Papageorgiou, 2014). An online survey was conducted between March-May 2021. Convenience sampling (snowball technique) was used for reaching respondents. In total, 192 usable questionnaires were collected.

### *2.2 Research instrument*

The online questionnaire was designed consisting of 4 parts. The first part included close-ended questions on demographics (e.g., gender, age) and some general questions on understanding travel motives. The second part incorporated questions for understanding the criteria that affect customers' selection criteria of an airline company (such as price, time convenient flights). The third part includes questions on air passenger satisfaction. Lastly, in the 4<sup>th</sup> part we added a question on the overall consumer satisfaction and two question related to the customer loyalty (repurchase intention and positive word-of-mouth). The questions on customer satisfaction were originally proposed by Tsafarakis, Kokotas, & Pantouvakis, (2018) based on 7 factors

related to the overall experience of a trip, starting from the moment of booking until the departure from the airport. These 7 factors are the following: Pricing Policy, Website and Communication with the Company, Flight Schedule and Booking, Airport Service (check-in, security control, boarding, lounge), On-Board Service (flight experience), Deboarding and Protection Measures against COVID-19.

For evaluating, the importance of an airline selection criterion, a 5-point likert scale was used where: 1 = not at all important, 2= important, 3= neutral, 4= important, 5 = very important. Therefore, the higher the mean the more important the criterion. A 7-point likert scale, where: 1= extremely dissatisfied, 2= very dissatisfied, 3= somewhat dissatisfied, 4= not satisfied/not dissatisfied, 5= somewhat satisfied, 6= very satisfied, 7= extremely satisfied, was used for collecting customer responses regarding customer satisfaction. Thus, the higher the mean is, the higher the level of air passenger satisfaction. Lastly, customer advocacy behaviors (repurchasing and positive word-of-mouth) were evaluated through a 5-point Likert scale where: 1= never 2=almost never 3=sometimes 4= often and 5=always. So, the higher the mean the more positive the behavior.

### 2.3 Data analysis

Initially, data were analyzed through descriptives (percentages and means). Following, using SPSS correlation between the study variables were calculated. More precisely, using the compute variable command the contribution of the 7 satisfaction factors to overall air passenger satisfaction was computed. Also, the relationships between air passenger satisfaction and customer advocacy behaviors were explored.

## 3. Results and Discussion

The results of the study are about customer satisfaction in airline companies that operated in Greece during the Covid-19 pandemic.

### 3.1 The sample

The total number of questionnaires collected was 192. Two third of the participants were women. Regarding age, 60% were between 18-24 years old, followed by the age group of 46-55 (16%). Also, about 50% were high school graduates and/or students. Over 2/5 of the respondents said that travel once a semester, while 1/3 travel once a year. The vast majority (99%) travels economy class. The participants travel mainly for leisure (47.9%) or for visiting relatives and friends (40%), whilst 20% were traveling for business and less than 5% for health reasons. Almost, 45% of the respondents live on an island with an airport, and 35% in Athens or Thessaloniki. It is interesting to note that almost 60% of the people in the sample do not prefer a particular company when travelling.

### 3.2 Selection criteria of an airline company

Table 1 shows the factors that affect the choice of an airline company. The main criterion is ticket price, whilst the quality of the services provided is the least important criterion. Therefore, it could be supported that airlines need to know how satisfied their customers are with the pricing policies, as it is decisive in the choice of an airline (Wirtz & Lovelock, 2018).



**Table 1: Selection criteria**

Factor	Mean
Ticket pricing	4.17
Convenient flights	4.14
Safety	4.09
Reputation of company	3.82
Easy to book	3.83
Staff courtesy	3.68
Online services	3.55
Aircraft/fleet characteristics	3.47
Quality of provided services	3.39

PS: 5-point Likert scale (1= not at all important and 5 = very important)

### 3.3 Air passenger satisfaction

#### 3.3.1. First stage of the customer experience/journey: Pricing Policy, Website and Communication with the Company, Flight Schedule and Booking.

Starting the analysis with the pricing policy of the company and how satisfied air passengers are with this aspect (see Table 2), we observe that the mean is 4.55, which suggests that they are quite satisfied. Air passengers seem to be rather satisfied with the payment possibilities (5.03), in contrast to satisfaction with the level of additional charges (3.87). Comparing our findings with the results of the study by Tsafarakis, Kokotas, & Pantouvakis, (2018) the contrast is obvious since ticket price according to their research is the least important criterion.

**Table 2: Pricing policy**

Item	Mean
Choice in way of payment	5.03
Seasonal offers	4.43
Ticket pricing	4.40
Value for money	4.37
Extra charges	3.87
<b>Overall</b>	<b>4.55</b>

PS: 7-point Likert scale (1= extremely dissatisfied and 7 = extremely satisfied)

Most airlines use dynamic pricing, which is a pricing strategy that differentiates prices for different customers at different times, based on demand conditions. In general, pricing in services is complicated, and companies must always consider the pricing policies of their competitors as well (Wirtz & Lovelock, 2018).

According to Donald Porter, Vice president of British Airways, "Customers don't expect you to be perfect. They do expect you to fix things when they go wrong." This is exactly where the airlines operating in Greece seem to be lagging. From Table 3 below that presents the results on air passenger satisfaction with elements related to Website and Communication with the Company, we conclude that air passengers seem to be neutral towards their ability to express their complaints (4.43) , make suggestions for improvement (4.45) and the speed of response to their requests (4.46) , compared to being rather satisfied with elements such as on line check in (5.34) and buying tickets online (5.25). This evidence may present a problem for airlines in handling complaints, which is extremely important for creating customer loyalty. This is

something that airlines should take seriously into account, as the constant communication of the company with their customers can reveal problems that the company was not aware of.

**Table 3: Website & Communication with the Company**

<i>Item</i>	<i>Mean</i>
Online Check-in	5.34
Buying ticket online	5.25
Travel information	5.00
User friendly website	4.97
Staff behavior on phone	4.74
Knowledge/accuracy in replies	4.73
Information about company policies	4.68
Speed of response	4.46
Suggested improvements	4.45
Ability to express complaints	4.43
<b>Overall</b>	<b>5.00</b>

PS: 7-point Likert scale (1= extremely dissatisfied and 7 = extremely satisfied)

Regarding flight schedule and booking (see Table 4), the accuracy of departures-arrivals shows the highest degree of satisfaction (4.92). Therefore, regarding the service quality dimensions (REART: Reliability, Empathy, Assurance, Responsiveness, Tangibles) in the case of reliability, airlines can be improved to provide their services as promised, accurately and always on-time. Overall, passengers seem to be rather satisfied with the flight schedule and routes with an average of 4.64 (Wirtz & Lovelock, 2018). Collating with the study of Tsafarakis, Kokotas, & Pantouvakis, (2018) the results of the main categories Website and Communication with the Company and Flights show a similar satisfaction level.

**Table 4: Flight schedule and Booking**

<i>Item</i>	<i>Mean</i>
On time arrival & departure	4.92
Destinations	4.90
Airport proximity	4.83
Flight schedule	4.64
<b>Overall</b>	<b>4.96</b>

PS: 7-point Likert scale (1= extremely dissatisfied and 7 = extremely satisfied)

### 3.3.2. Second stage of the customer experience/journey: Airport service (check-in, security control, boarding, lounge)

According to the results of our survey, it appears that air passengers are rather satisfied (4.91) from their experience during the check-in process. However, they are less satisfied with the exclusive use of the counter for the company's check-in (4.83) and more satisfied with the staff (5.05).

**Table 5: Check-in**

Factor	Mean
Staff behavior and competence	5.05
Service	4.93
Waiting time	4.87
Exclusive use of Check in desks	4.83
<b>Overall</b>	<b>4.91</b>

PS: 7-point Likert scale (1= extremely dissatisfied and 7 = extremely satisfied)

Additionally, the results show that air passengers are neutral towards the security check, both for the waiting time and for the ability to use and the speed of the fast track, with an average of 4.80 respectively (see Table 6).

**Table 6: Security control**

Factor	Mean
Waiting time	4.80
Capability to use and speed of fast track	4.80
<b>Overall</b>	<b>4.80</b>

PS: 7-point Likert scale (1= extremely dissatisfied and 7 = extremely satisfied)

As far as boarding is concerned (see Table 7) passengers are more satisfied with the behavior, than with the efficiency of the staff regarding the time, manner and priority of the boarding process.

**Table 7: Boarding**

Factor	Mean
Staff behavior	5.26
Efficiency of the staff (time, manner, priority)	4.92
<b>Overall</b>	<b>5.10</b>

PS: 7-point Likert scale (1= extremely dissatisfied and 7 = extremely satisfied)

Regarding the airport lounge (see Table 8), satisfaction rating ranges from 4.40 to 4.78. Quality and variety of food are aspects of the lounge with the lowest satisfaction rating (4.50 and 4.40 respectively) and behavior of the staff (4.78) and lounge area characteristics (4.78) the aspects with the highest satisfaction.

**Table 8: Lounge**

Factor	Mean
Staff behavior	4.78
Space (size, décor)	4.78
Accessibility	4.76
Additional benefits	4.54
Food quality	4.50
Food variety	4.40
<b>Overall</b>	<b>4.62</b>

PS: 7-point Likert scale (1= extremely dissatisfied and 7 = extremely satisfied)

Our findings about the customer experience in the airport, concurs with the results of Kavaxis, I., Papatheodorou, A. (2021). The characteristics of the samples in both studies were similar, with the participants in both studies declaring their tendency to be moderately satisfied by the airport services (Check in, security, boarding, lounge, and seating space).

### 3.3.3. Third stage of the customer experience/ journey: On Board Service and De-boarding

From the service quality dimensions, tangibles are very important as the physical elements in providing a service experienced by passengers, is a key factor in shaping the experience and enhancing customer satisfaction. According to our results, satisfaction with the passenger's experience during the flight is the highest in all stages, with an average 5.11 (see Table 9). Although, customers declared that entertainment and accessibility to Wi-Fi and USB portals for charging devices needs improvement (4.34).

**Table 9: Flights**

Factor	Mean
Physical appearance of the staff	5.68
Welcome/ announcements/ information	5.58
Knowledge and guidance in safety issues	5.57
Staff behavior	5.52
Cleanliness and cabin comfort	5.30
Cleanliness of the restrooms	5.18
Cleanliness/quality of the seat	5.13
Comfort of the seat	4.67
Quality/quantity of food and beverages	4.67
Entertainment (magazine, newspaper, movies)	4.65
Access to Wi-Fi and USB portals for charging devices	4.34
<b>Overall</b>	<b>5.11</b>

PS: 7-point Likert scale (1= extremely dissatisfied and 7 = extremely satisfied)

Passengers are moderately satisfied by the deboarding process (see Table 10). They low level of satisfaction with the company policies on lost or damaged luggage (4.53), pick-up time (4.66) and the handling of their luggage in general (4.53 ). These results confirm the findings Tsafarakis, Kokotas, & Pantouvakis, (2018).

**Table 10: Deboarding**

Factor	Mean
Deboarding	5.03
Staff behavior	5.11
Disembarking efficiency (time, way, priority)	4.99
Luggage pick-up time	4.66
Policy on lost or damaged luggage	4.62
Luggage treatment	4.53
<b>Overall</b>	<b>5.03</b>

PS: 7-point Likert scale (1= extremely dissatisfied and 7 = extremely satisfied)

In summary, the functionality and proper management of this stage's procedures are of particular importance for the effectiveness of the service and the strengthening of the passenger's trust in the airlines (Wirtz & Lovelock, 2018).

### 3.3.4. Protection measures against Covid-19

Of course, due to the time the study was conducted, it would be interesting to consider Covid-19 and the compliance that companies presented regarding the safety measures and guidelines (see Table 11). Specifically, the information passengers received about the safety protocols was rather sufficient receiving a rather high degree of satisfaction (5.14). The reduction of the need

for direct contact during the procedures carried out on the ground (4.61) shows the lowest degree of satisfaction, which means that passengers feel that airlines could improve. Relating this finding to the fact that safety (which includes measures against Covid-19) is the third most important selection criterion, airlines companies need to advance their effort on safety and hygiene.

**Table 11: Covid-19**

Factor	Mean
Pre-flight and in-flight information on protective measures	5.14
Food packaging and disposal	4.95
Enforcement of protective measures	4.90
Provision of protective equipment	4.68
Reduction of need for immediate contact	4.61
<b>Overall</b>	<b>4.93</b>

PS: 7-point Likert scale (1= extremely dissatisfied and 7 = extremely satisfied)

### 3.4. The impact of satisfaction with the examined aspects of the air customer travelling experience on overall air passenger satisfaction

In line with our previous analysis, price seems to be the most important factor in choosing an airline, but it is the least important for the overall assessment of the travel experience ( $r=.482^{**}$ ; see Table 12). On the contrary, the main elements in promoting overall air passenger satisfaction are the company's website & communication ( $r=.696^{**}$ ) and the on-board service ( $r=.561^{**}$ ). Also, protection measures against covid-19 are an important factor in overall air passenger satisfaction ( $r=.580^{**}$ ).

**Table 12: The impact of satisfaction with the examined aspects of the travelling experience on overall air passenger satisfaction**

	Pricing Policy	Website and Communication with the company	Flight Schedule and Booking	Airport Service	On Board Service	De-boarding	Protection measures against Covid-19
Overall air passenger satisfaction	.482**	.596**	.596**	.548**	.561**	.550**	.589**

\*\*Correlation is significant at the 0.01 level (2-tailed)

### 3.5. Customer attitudes and behaviors

One of our research aims was to understand the attitudes and behaviors of air passengers. As seen in Table 13 air travelers show a medium level of satisfaction with the overall experience of the trip (5.19). Nonetheless, they seem ready to choose the airline again for their next trip (Re-purchasing=4.31), but they are less willing to recommend it to third parties (positive word-of-mouth=3.99).



**Table 13: Attitudes and behaviors**

Factor	Mean
Overall satisfaction*	5.19
Re-purchasing **	4.31
Positive word-of-mouth**	3.99

PS: \*7-point Likert scale (1= extremely dissatisfied and 7 = extremely satisfied)

\*\*5-point Likert scale (1= never and 5=always)

### 3.6. The relationship between overall air passenger satisfaction and customer advocacy behaviors/intentions

The correlation table below (Table 14) shows that overall air passenger satisfaction is positively related to repurchase ( $r=.709^{**}$ ) and positive word-of-mouth ( $r=.707^{**}$ ). Essentially, customer loyalty is fundamental in the sustainability of the airline, since loyal customers compile positive experience and create a stable income for the company. This outcome confirms research previous evidence (Tsafarakis, Kokotas, & Pantouvakis, 2018).

**Table 14: Correlations between the study variables**

Variables	Positive word-of-mouth	Re-purchasing
Positive word-of-mouth	1	
Re-purchasing	.774**	1
Overall satisfaction	.707**	.709**

\*\* Correlation is significant at the 0.01 level (2-tailed)

## 4. Concluding remarks and suggestions

It is extremely important that airlines are aware of the wishes and needs of their customers so that they can offer them the best possible experience, which is a major step towards the sustainability of the business. Our survey of air passengers of airline companies operating in Greece during the Covid-19 pandemic offers insights to help airline companies regarding what is important for customers, their level of satisfaction with major aspects of the service/travel experience, as well as the contribution of these aspects on overall satisfaction. Our findings indicate that although price is a highly important selection criterion, air passengers showed the lowest satisfaction score with the pricing policies. Also, pricing contributes the least to air passenger satisfaction. Moreover, to improve the level of air passenger overall satisfaction, and positively affect customer advocacy behaviors, airline companies need to concentrate on enhancing the friendliness of their websites and the communication with the customers, as well as design more convenient flight schedules and redesign the booking procedures. Protection measures against Covid-19 contribute also to air passenger overall satisfaction.

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# Summer School

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