



17th prof. Vladas Gronskas
International Scientific Conference

Reviewed Selected Papers



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International Scientific Conference
Reviewed Selected Papers**

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Foreword

In keeping with the scholarly traditions of Vilnius University Kaunas Faculty, the 17th “Prof. Vladas Gronskas International Scientific Conference” was held in December 2022. The conference was held online. This international conference is an arena for cooperation and scholarly fellowship, with young researchers, bachelor, master and doctoral students from Lithuania as well as Uzbekistan, Egypt, Latvia, Ukraine, Nigeria, Cameroon, Azerbaijan, Pakistan, Iran, Turkey, Ghana, Spain, Thailand, Israel, Azerbaijan, Georgia, Jordan, Lebanon participating in the different conference sections.

The main goal of this scientific gathering has always been to contribute to the reliable, safe, effective and sustainable economy and business development. Thus, the organizing committee strives to create a suitable platform for well-grounded and open discussion where young researchers have the opportunity to present and share their insights.

Encouraging entrepreneurship is a crucial condition for economic growth and this puts forward a new approach to business, creativity, value creation, and the implementation of innovations. It is precisely in this context where business and science should interact. To reinforce this relevant bond, the guest speakers of the plenary session were selected amongst experienced practitioners – Alessio Alonne (sociologist / VR specialist, teacher and tech artist, Inforelea, Italy), Emma Selene Ixchel Iturriaga Sauco (communication consultant, human development advisor, professional trainer, Inforelea, Italy), Giedrė Grimalauskienė (public relations project manager, public relations, employer branding, GO Vilnius, Lithuania).

This conference encourages internationalization and a closer cooperation between science and business. Hopefully, there has been some useful take-away for both academia and business conference participants: new insights and inspirations for further scientific research and possible solutions to boost Lithuanian economy.

On behalf of the Scientific Committee

Assoc. Prof. Dr Ingrida Šarkiūnaitė

The Impact of Green Human Resource Management Practices on Organisational Performance

Amenaghawon Igbiniyiesu Alegbesogie

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Abstract. GHRM integrates environmentally friendly principles into human resource policies and strategies, positively impacting the environment and organisational outcomes. By adopting GHRM practices, organisations can enhance their reputation, attract and retain top talent, and increase employee engagement. Initiatives such as eco-friendly recruitment processes, training programs on sustainability, and green employee benefits contribute to a positive organisational culture focused on environmental stewardship. Furthermore, GHRM practices promote resource efficiency, waste reduction, and eco-innovation within the organisation. These efforts result in cost savings, improved operational efficiency, and increased competitiveness. GHRM also facilitates compliance with environmental regulations and reduces the risk of legal and reputational damage. Ultimately, the implementation of GHRM practices leads to improved organisational performance by aligning environmental goals with strategic objectives, fostering employee commitment, and gaining a competitive advantage in the marketplace. Embracing sustainable HR practices is essential for organisations seeking long-term success in the context of environmental challenges and changing societal expectations.

Keywords: *Green human resources, management, organisational performance, green practices, sustainability.*

Introduction

Relevance of the article

The protection of the environment has been a vital concern around the world in recent decades. Environmental performance refers to the degree to which the natural environment is protected in terms of the firm's output. The number of operations conducted through an organization in the domains of waste management, pollution control systems, recycling, and mitigating environmental releases can be used to assess its environmental protection and performance. The growth of sustainable development through environmental management, also known as GHRM (Green Human Resource Management), is quickly becoming an essential and critical research topic in today's research challenges. These problems have increased the push on businesses to create and implement green management by implementing environmentally sustainable processes and procedures (Prasad, 2013). Many firms strive to adopt a formal environmental organisational structure to attain development. Since the 1990s, this method has been recognised as one of the most important elements for achieving long-term development (Chan, 2010).

Level of problem investigation

It is difficult for employees to be environmentally conscious. Being green simply means that the personnel are completely aware of their surroundings and are environmentally conscious. Due to excessive work pressure and the attainment of specific targets, employees are oblivious of the existence of a green atmosphere. There is a lack of environmental responsibility among employees when they are at work. Even though the organisation has frequent training sessions for recently hired employees, they are only provided information about their tasks and responsibilities, and the management fails to create awareness about the need of environmental protection and maintenance.

Scientific problem

What impact can be found between green human resource management practices and organisational performance?

Object of the article – Green Human Resource Management practices and their impact on organisational performance.

Aim of the article – investigate Green Human Resource Management practices and their impact on organisational performance.

Objectives of the article:

1. To examine the concepts of Green Human Resource Management practices and organisational performance.

2. To access the links between Green Human Resource Management practices and organisational performance.
3. To investigate the empirical level of research on GHRM practices impact on organisational performance.
4. To design a research model of Green Human Resource Management practices and organisational performance.
5. Highlight the strongest factors influencing organisational performance after performing an empirical evaluation of the model of investigation of green human resource management practices and organisational performance.

Methods of the article

Scientific literature analysis, synthesis.

1. Theoretical aspects of green human resource management practices and their impact on organisational performance

1.1. Concept of Green Human Resource practices

Jabbour et al. (2013) note that Human Resource Management is important at many levels of the management system of the environment. Ahmad focuses on the HR management function, which includes people's actions such as the reduction of energy, recycling, and so on (Ahmad, 2015). In 2016, Wehrmeyer wrote in his book "Greening People: Human Resources and Environmental Management", which focused on greening firms through the collaboration of human resources and environmental management systems (Hazen, Boone, Ezell, & Jones-Farmer, 2014). "He defined GHRM as the application of HRMP to promote the efficient use of resources within organisations and, more broadly, to promote environmental sustainability causes" (Marhatta, & Adhikari, 2013). Green Human Resource Management is defined as "the process whereby companies manage the environment by developing environmental management strategies" (Lee, 2019). In these strategies, "companies need to strike a balance between industrial growth and safeguarding the natural environment so that future generations may thrive" (Massoud, Daily, & Bishop, 2008).

Sustainability and environmental issues are increasingly driving HRM practices, yet there are few resources in the literature and academic work on the subject. For instance, if HR practices are connected to environmental and sustainability challenges, organisations may experience environmental sustainability and positive performance (Marhatta, & Adhikari, 2013). The structure of GHRM is combined with human resource practices in recruitment (Grolleau, Mzoughi, & Pekovic, 2012), performance reward system (Jabbour, Govindan, Teixeira, & Freitas, 2013), green culture in an enterprise, and training and development (Unnikrishnan, & Hegde, 2007).

Green recruitment and selection

Recruitment, according to DeCenzo (2018), is "the process of seeking people to work for an organisation and encouraging them to apply for positions." It is the activity that brings job seekers and employers together. The hiring process begins with managers strategising and finishes with the collection of work employment. If the recruiting process is carried out by people who are involved in green HRM and have a professional background, it will be much easier to sensitise, educate, and inform them about green recruitment. According to Mills, & Smith (2011), a lot of corporations in Germany, for example, Bayer and Mannesmann, as well as Siemens, are attracting prospective and very ambitious individuals through cultivating a green appearance, and engaging in environmentally responsible activities.

Green training and development

Another GHRM practice that leads to the progress of Green Human Resource Management in organisations is green training and development. Environmental training is often viewed as a main instrument for human resource development (Jabbour 2013). Its goal is to build individuals' mindfulness and information on environmental issues, cultivate positive attitudes, support proactive greening activities, and foster abilities in waste reduction and energy preservation (Zoogah, 2011). To gain the most environmental advantages from the trainings, they must be tailored according to the employees' training needs (Cherian, & Jacob, 2012).

Green reward system

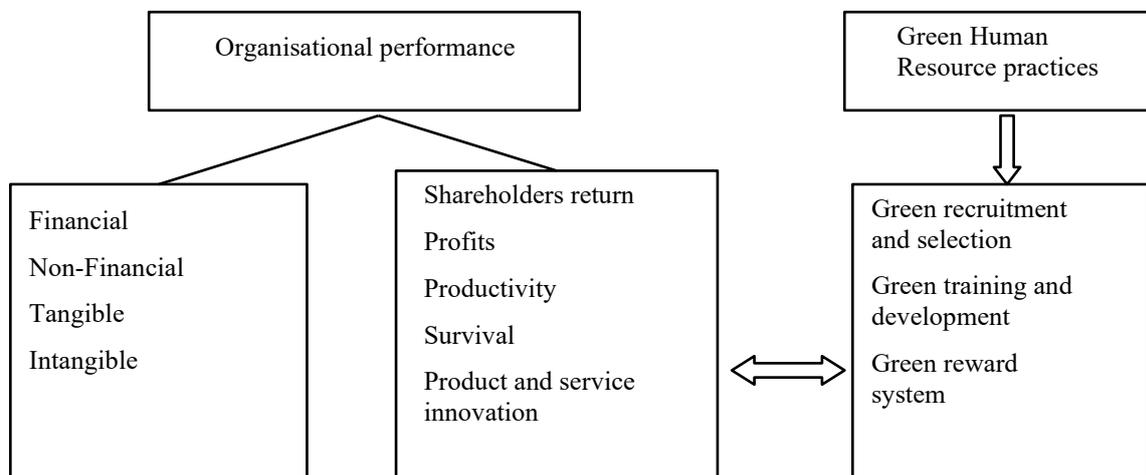
Green incentive systems are important for motivating employees and highlighting their substantial contributions to the organisation of the environment (Teixeira et al., 2012). Implementing incentives has the goal of achieving, maintaining, and motivating people to perform effectively while also recognising the need for environmental conservation (Lindstrom, & Vanhala, 2011). A green incentive process indicate aligning the reward structure to the company’s strategies and practices for protecting the environment. Much research has found organisations attain good environmental performance by rewarding employees with commendation letters, promotions, professional advancement, bounces, cash, and presents, among other things (Opatha, & Arulrajah, 2014).

1.2. Organisational performance

Organisational performance is determined by its success. It is the capability of an enterprise to adequately apply corporate strategies to achieve organisational goals and objectives (Randeree, & Al Youha, 2009). Organisational performance is defined by a variety of factors, including the effectiveness of the business model, efficiency, and outputs (Boyatzis, & Ratti, 2009). Implementation of a company’s strategy is a skill of an organisation’s manager, and this has a fundamental influence on the success of the organisation. Cho, & Dansereau (2010) defines organisational performance as “a company’s performance in relation to its goals and objectives”.

1.3. The link between Green Human Resource Management practices and organisational performance

Several studies have revealed that various GHRM methods have a favourable and considerable effect on organisational and environmental performance. GHRM methods such as green recruitment, training, and rewards can help organisations enhance and sustain their performance while also gaining a competitive advantage (Tonelli, Taticchi Garengo, & Nudurupat, 2014; Richard, & Johnson, 2004). The model (Figure 1) displays the relationships involving Green Human Resources Management practices and organisational performance.



Source: created by the author.

Fig. 1. The relationships involving Green Human Resources Management practices and organisational performance

2. Empirical levels of research on Green Human Resource Management on organisational performance

The results of this study suggest that GHRM can improve employee commitment, motivation, and job satisfaction, all of which can boost organisational performance and competitiveness. Studies have demonstrated, for instance, that GHRM techniques like green hiring, green training and

development can boost employee engagement and lower attrition. Additionally, GHRM techniques like green incentives and rewards can raise worker performance and output.

Overall, the GHRM literature has demonstrated that incorporating environmental sustainability into HRM processes can enhance employee performance, organisational performance, and competitiveness. Since the business environment is becoming more sustainable, GHRM has the potential to be a crucial tool for organisations aiming to increase their performance and competitiveness.

Table 1

Analysis of research on the impact of Green Human Resource Management on organisational performance

Authors	Aim of the research	Tools used	Results
Roscoe, Subramanian, Jabbour, & Chong (2019).	The relationship between GHRM practices, the enablers of green organisational culture and the performance of a firm.	A questionnaire.	Green HRM methods such as hiring, training, appraisal, and rewards help to establish the enablers of green organisational performance.
Janaka, Xu, & Xiaobing (2018).	The analysis of Green Human Resource Management.	Interviews.	Green recruitment and selection mean attracting and appointing workers that have some know-how and background knowledge about green environmental management that can facilitate in the implementation of green strategies and policies, leading and contributing to achieve the environmental objectives of the organisations.
Zhao, Kusi, Chen, Hu, Ahmed, & Sukamani (2021).	The influencing Mechanism of Green Human Resource Management on Organisational Sustainable Performance.	A structured questionnaire.	Investigated the Green Human Resource Management (GHRM) and Corporate Social Responsibility (CSR) mechanisms for achieving long-term performance goals. The findings supported all proposed hypotheses and validated the study methodology.
Soo-Cheng, Idaya, Juliana, & Nadia (2021).	The examination of the impact of Green Human Resource Management (GHRM) towards the green lifestyle and worker's organisational performance.	Non-probability convenient sampling method and questionnaires.	Implementing GHRM policies has a significant and favourable effect on workers' organisational performance. GHRM practices were discovered to be unrelated to a green lifestyle.

Source: created by the author.

This article discovered in the literature that sustainable organisational performance is a critical need for businesses today. There are numerous organisational and employee elements that influence performance of the organisation, either directly or indirectly. Green Human Resource Management, on the other hand, will ensure that stakeholders' requirements and environmental responsibilities are met. GHRM practices contribute to the growth of biodiversity since they focus on the preservation and protection of natural resources, as well as the minimisation of waste. As a result, there is a strong relationship between socially responsible businesses, GHRM, and sustainability. To achieve greater organisational performance, the organisation must comply with the green aspect. For this investigation, a quantitative methodology was employed. The objective of a quantitative research strategy is to gain information through numerical measurement and statistical analysis of the collected data.

To highlight the vital factors that impact organisational performance, a structured questionnaire has been used to get primary data. It was designed to identify personal factors like the respondents' age, gender, marital status, department, and so on, however, the second section which is section B

contains information that was drafted to get the respondents' point of view on Green Human Resource Management towards organisational performance.

Conclusions

Firms nowadays are increasingly giving focus to the importance of implementing new strategies like integrating the sustainability of the business environment into HRM strategies. Therefore, researchers should focus on understanding the implementation of these practices and their impact on the performance of the enterprise. Organizational performance is an organisation's output that is comparable to its goals and objectives. The goal of this study is to improve organisational performance by adopting practices from GHRM. Many researchers have analysed the influence of GHRM practices on organisational performance. For example, the study done by Sami (2021) indicated that "Green HRM practices have a good influence on employee performance". However, many organisations still do not see that GHRM organisational practices like green recruitment and selection, training and development, and reward systems can improve organisational outputs, thereby increasing performance.

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The Interrelation Between Responsible Research and Innovation Dimensions and Macro Indicators

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Abstract. Responsible Research and Innovation (RRI) concept has become an important topic in the academic community and in policy circles (van de Poel et al., 2017) and encompasses six main policy agendas (or dimensions): ethics; gender equality; governance; open access; public engagement; science education (RRI Tools, 2023). RRI concept, including gender (equality) as one of the dimensions, still lacks empirical explorations-based understanding. This paper aims to explore the peculiarities of interrelations between gender (equality) as one dimension of the Responsible Research and Innovation and societal progression in gender equality and innovativeness on macro level. Starting with generating original data-base of [n – 214] indicators quantitative secondary data analysis of descriptive characteristics of the selected variables and (Spearman) correlation (RS) analysis between the variables was accomplished. Descriptive and correlation analysis of interrelations between women's involvement in four R&I (i.e. Business, Higher education, Governmental and Private Non-profit) sectors and Gender Equality Index and Global Innovation Index in 2013–2020 shows rather small changes of the indicators and fragmental interrelations between them during the period.

Keywords: *responsible research and innovation (RRI), gender equality, global innovation index, gender equality index.*

Introduction

Relevance of the article

As a concept, Responsible Research and Innovation (RRI) emerged within EU policy discourse in the beginning of the 2010s (Jakobsen et al., 2019). Until now, the concept has become an important topic in the academic community and in policy circles (van de Poel et al., 2017) as it has been incorporated into European Framework Programmes such as Horizon 2020 and has become one of the key concepts of this programme (Ministry of Science, 2012).

By definition, RRI refers to research and innovation (R&I) that is ethically acceptable and socially desirable (Gurzawska et al., 2017) and encompasses six main policy agendas (or dimensions): ethics; gender equality; governance; open access; public engagement; science education (RRI Tools, 2023). Gender equality, as one of the RRI dimensions, is about “promoting gender-balanced teams, ensuring gender balance in decision-making bodies, and considering always the gender dimension in R&I to improve the quality and social relevance of the results” (RRI Tools, 2023). Moreover, gender equality is a long-lasting EU policy priority integrated among the European Research Area (ERA) priorities (i.e. “encouraging gender diversity to foster science excellence and relevance” (EC, 2019)) and in the EC guiding objectives for Horizon 2020 program projects (e.g., “integrating gender/sex analysis in research and innovation (R&I) content” (EC, 2021)).

However, as “the relationship between knowledge economies and ‘responsible’ research and innovation is not self-evident” (Deblonde, 2015), empirical substantiation is still needed. This article contributes to the elaboration of empirically based evidence by exploring such macro indicators as women's involvement in the RRI realm, gender equality level and innovation level in society.

Level of problem investigation

Jakobsen et al. (2019) claim that “RRI remains an immature and relatively narrow area of inquiry, with a top-down approach and guided by standardised principles”. Most of the recent studies on RRI focus on development of the definition and explanation of the conception of the RRI (Burget et al., 2017; Jakobsen et al., 2019; Rip, 2014), exploration of the RRI practices (Schuijff & Dijkstra, 2020) or development and adaptation of the RRI tools for enterprises (Gurzawska et al., 2017; Nazarko & Melnikas, 2019). Meanwhile analysis of separate RRI dimensions are rather rare

still (e.g. Otero-Hermida & García-Melón, 2018). Besides, exploration of interrelations between the RRI dimensions and their relation to other macro level processes are on initial phases still (EC, 2018; Wroblewski et al., 2015).

Scientific problem

How does the RRI interrelates with other societal processes on macro level? More specifically, how does gender (equality) status in RRI framework interrelates with more general gender equality achievements and general innovativeness level?

Object of the article – interrelations between gender (equality) as one of the RRI dimensions and societal progression in gender equality and innovativeness.

Aim of the article – to shed some light on peculiarities of interrelations between gender (equality) as one of the RRI dimensions and societal progression in gender equality and innovativeness on macro level.

Objectives of the article:

1. To discuss RRI concept including gender (equality) as one of the RRI dimensions;
2. To describe empirical explorations of RRI and gender (equality) as one of the RRI dimensions;
3. To reveal peculiarities of interrelations between gender (equality) as one of the RRI dimensions and Gender Equality Index (GEI) and Global Innovation Index (GII) as macro level indicators.

Methods of the article

Analysis and synthesis of scientific literature; quantitative statistical analysis of secondary data.

1. Theoretical aspects of responsible research and innovations and gender equality

The RRI concept was mentioned for the first time in the 7th Framework Programme in 2013 (EU, 2013). Then, the main emphasis was placed on cooperation between science and society and on building public trust in science. Later, the RRI concept has been given a prominent place in the policy context by the ongoing debate in the EU on the European R&I Policy (Jakobsen et al., 2019) and on how to link R&I for finding the impact of research on innovation (EC, 2014; Stilgoe & Guston, 2017; von Schomberg, 2013).

The concept of RRI is commonly based on research, most of which refers to “policy and socio-ethical perspective and focusing on academic R&D environments” (Blok & Lemmens, 2015, p. 20). Jakobsen et al. (2019) described the concept of RRI as a framework with three main features. First, RRI fosters debate about research goals and innovation and how to achieve them ethically, inclusively and democratically. In doing so, it initiates discussions about desirable societal benefits and public engagement (Genus & Stirling, 2018; Stilgoe et al., 2013). Second is “the need for developing mechanisms for reflection and inclusion in the R&I process” (Jakobsen et al., 2019, p. 2331). This would ensure equitable R&I outcomes in an open reflection process, where stakeholders are involved beyond those directly participating in the innovation activity. Third, “RRI is not a topic for researchers alone, but rather one that should engage entrepreneurs, businesspeople, policymakers, public institutions and research funding agencies” (Jakobsen et al., 2019, p. 2331). Although the concept of the RRI is frequently used in research publications and various institutional documents, its definition and aspects are still not clear and specific (Owen et al., 2012). Therefore researchers suggest that the main goal of the RRI is to move towards a broader innovation policy (Levidow & Neubauer, 2014; Stahl, 2013) as the RRI is “supposed to help research to move from bench to market, in order to create jobs, wealth and well-being” (Zwart et al., 2014, p. 16).

Thus, conceptualisation of the RRI leads to understanding of particular policy agendas (or dimensions – i.e. ethics, gender equality, governance, open access, public engagement, and science education) (see e.g. RRI Tools, 2023), to identification of numerous stakeholders and untangle of complex interrelations among them, and consideration of specific processual characteristic of the RRI (i.e. transparency, accessibility, reflexivity, inclusiveness) (see e.g. D’Haese et al., 2015).

Gender equality refers to “the equal rights, responsibilities and opportunities of women and men and girls and boys” and denotes that “women’s and men’s rights, responsibilities and opportunities

will not depend on whether they are born male or female” (UN Women, 2023). Inglehart et al. (2003, p. 92) claim that “growing emphasis on gender equality is an important factor in the process of democratisation”, as gender equality is “seen both as a human rights issue and as a precondition for, and indicator of, sustainable people-centred development” (UN Women, 2023). Thus, series of new concepts such as ‘gendered innovations’ (EC, 2013; Schiebinger & Schraudner, 2011), ‘women’s talents’, ‘women’s economic power’, other (Catalyst, 2004; McKinsey and Company, 2007) has been introduced in academic world.

Since middle of 1990s, call for gender equality in research has been taken up by many influential politicians (EC, 2010, p. 18–19) and the concept has been embedded in both political and academic discourses. Currently, the concept ‘gender equality’ is used for naming political issues without particular theoretical elaboration (see e.g. Lombardo et al., 2012; Squires, 2007).

2. Empirical explorations of the responsible research and innovations and gender equality

Results of inceptive and relatively still narrow analysis of the RRI (Jakobsen et al., 2019) suggest that at least 2 additional RRI dimensions – i.e. sustainability and care – should also be included in the future in the context of the RRI concept (Burget et al., 2017). Further, it is already known that the practice of RRI is most prevalent in North-Western Europe; that women are first authors of the RRI focused papers less frequently than men; that the RRI focused studies mostly cover nanotechnology, ICT and synthetic biology (Schuijff & Dijkstra, 2020). As it is known, RRI is described as a social innovation and as a part of broader institutionalisation process (some solidification of divisions of moral labour, discursively, culturally, and institutionally) (Rip, 2014). Other authors (Nazarko & Melnikas, 2019) suggest weighted responsibility criteria; RRI maturity models and RRI scorecards as RRI tools for enterprises and highlighted at company size matters (Gurzawska et al., 2017).

Other authors (Otero-Hermida & García-Melón, 2018) suggest a list of 23 indicators measuring gender equality in the context of RRI in Spain. The indicators consist of prioritised areas as different and asymmetric socialisation and education; organisational culture; substantive representation, informal and formal networks, intersectionality and science; vertical segregation; work relations; visibility of women researchers as references; research contents; gender expertise enhancement and resources.

3. Interrelation between women’s participation in research and innovation sectors, Gender Equality Index and Global Innovation Index

Research methodics

Aim of the research: To reveal peculiarities of interrelations between gender (equality) as one of the RRI dimensions and GEI and GII as macro level indicators.

Objectives of the research:

1. To describe distributions of women’s involvement in different R&I sectors in 2013–2020;
2. To describe tendencies of GEI and GII in 2013–2020;
3. To explore interrelations between women’s involvement in the sectors and the macro level indicators.

Research methods

Starting with generating original data-base of [n – 214] indicators defining three selected variables, quantitative secondary data analysis of descriptive characteristics (total number of cases (N), minimum (min) and maximum (max) indicators, mean, standard deviation) of the selected variables and (Spearman) correlation (R_s) analysis between the variables was accomplished using SPSS 18.0 software for Windows. The variables:

- The concept ‘gender equality’ in RRI context is defined by ‘women’s involvement in R&I sectors’. As a variable, it was measured by statistical data on women’s involvement in 4 R&I

sectors: business sector (BES), government sector (GS), higher education sector (HES) and private non-profit sector (PNPS).

- The concept ‘gender equality’ as the general societal achievement is defined by GEI, which is “a tool to measure the progress of gender equality in the EU” (EIGE, 2023). The GEI encompasses six general variables, which are based on several sub-variables: work, money, knowledge, time, power and health (EIGE, 2023).
- Societal innovativeness level is measured by GII, which is a striving to “provide a more complete picture of innovation ecosystems across the globe” (Dutta et al., 2022, p. 226). The overall GII score is the average of five innovation input sub-indexes (institutions; human capital and research; infrastructure; market sophistication; business sophistication) and two innovation output sub-indexes (knowledge and technology outputs; creative outputs), on which the GII economy rankings are produced (Ibid.).

The secondary data for all European Union countries were collected from Eurostat (<https://ec.europa.eu/eurostat>), EIGE (<https://eige.europa.eu/gender-equality-index/2022>) and GII (https://www.wipo.int/global_innovation_index/en/) databases between November 2022 and January 2023. The period 2013–2020 was chosen for the statistical analysis of the data. The year 2021 is not included in the data analysis as the data is not available yet.

The research data analysis and the discussion of the results

Descriptive analysis of the data (Table 1) shows, over the period analysed, the average indicators of women’s involvement in R&I activities ranged from 26% to 28% in the BES, from 47% to 49% in HES, from 48% to 52% in GS, and from 49% to 51% in PNPS. Thus, increase of women’s involvement in R&I activities was just 2% in the BES, HES and PNPS, but 4% in GS during the period. In the BES, women’s involvement is lower than in other sectors. This is not surprising given the stereotype of the male entrepreneur that still persists in Europe. The terminology is that of ‘hero’, and the constructed identities of entrepreneurs are ideological, based on the lifestyles of men (Allen & Truman, 1991; Cohen & Musson, 2000). Ogbor (2000) strongly critiques the language associated with the term ‘entrepreneur’ as essentially masculine; infused with supernormal qualities and myths that reflect the archetype of the male ‘white hero’, whereas women are purportedly the ‘antithesis of entrepreneurial norms’ (Ogbor, 2000, p. 21). Despite gender stereotypes are attempted to be removed, it still remains an open question for future research whether the business sector creates negative conditions for women to engage in R&I activities in the sector in terms of reconciling work and family, and in terms of raising and caring for young children.

Table 1

Descriptive findings											
	N	Min	Max	Mean	SD		N	Min	Max	Mean	SD
BES 2013	29	12,0	43,0	26,50	7,536	GS 2013	29	19,2	63,5	47,70	8,530
BES 2014	19	18,3	39,6	27,35	7,317	GS 2014	26	18,9	63,6	48,51	9,216
BES 2015	28	12,8	40,5	26,25	7,237	GS 2015	28	23,6	65,5	49,08	8,187
BES 2016	20	17,9	39,9	27,45	6,795	GS 2016	24	20,3	67,4	50,43	10,001
BES 2017	29	15,0	41,6	26,43	6,750	GS 2017	29	39,1	63,8	50,30	7,084
BES 2018	19	17,2	36,7	27,11	6,023	GS 2018	23	37,2	67,0	51,24	7,821
BES 2019	27	15,4	37,4	26,49	6,105	GS 2019	27	18,2	66,7	50,40	9,330
BES 2020	19	17,6	37,7	27,81	6,049	GS 2020	21	37,3	70,1	52,22	7,699
HES 2013	29	35,4	57,4	46,88	4,576	PNPS 2013	20	29,4	66,8	49,35	9,053
HES 2014	26	39,2	57,7	46,80	4,423	PNPS 2014	17	7,7	69,0	49,02	12,666
HES 2015	28	38,9	57,9	47,52	4,218	PNPS 2015	18	18,2	71,4	50,81	10,468
HES 2016	25	39,0	57,7	48,10	4,351	PNPS 2016	17	8,3	70,7	49,02	13,961
HES 2017	29	39,4	57,4	47,82	4,338	PNPS 2017	20	32,1	67,4	49,60	8,700
HES 2018	23	39,5	57,6	48,53	4,529	PNPS 2018	15	28,6	65,8	50,24	9,789
HES 2019	27	40,0	57,4	48,49	4,445	PNPS 2019	16	39,2	65,6	51,79	7,521
HES 2020	21	40,3	58,3	49,30	4,715	PNPS 2020	13	40,5	63,6	51,09	6,971
GEI 2013	n.i.	n.i.	n.i.	n.i.	n.i.	GII 2013	28	37,7	61,4	49,85	7,174
GEI 2014	n.i.	n.i.	n.i.	n.i.	n.i.	GII 2014	28	38,1	62,4	49,55	7,517

	N	Min	Max	Mean	SD		N	Min	Max	Mean	SD
GEI 2015	28	50,0	82,6	62,50	8,774	GII 2015	28	38,2	62,4	50,11	7,606
GEI 2016	n.i.	n.i.	n.i.	n.i.	n.i.	GII 2016	28	37,9	63,6	49,70	7,680
GEI 2017	28	51,2	83,6	63,72	8,535	GII 2017	28	38,8	63,8	49,85	7,643
GEI 2018	28	52,2	83,8	64,56	8,435	GII 2018	28	37,6	63,3	49,61	7,463
GEI 2019	28	52,5	83,9	65,40	8,533	GII 2019	28	36,8	63,7	49,10	7,762
GEI 2020	28	53,4	84,0	65,97	8,530	GII 2020	28	36,0	62,5	47,39	7,665

BES – business enterprise sector, percentage; GS – government sector, percentage; HES – higher education sector, percentage; PNPS – private non-profit sector, percentage; GEI – gender equality index; GII – global innovation index.

The GEI data show that the indicator has been growing during the period (from 62 to 65 points) which denote progress of gender equality in the EU. Meanwhile GII indicator fluctuated around 50 points during the period, but decreased to 47 points in 2020.

The correlation analysis (Table 2) shows rather strong interrelation ($R =$ from 0,430 to 0,679 $p < 0,05$) between the indicators of women's involvement in R&I activities in BES, GS, and HES. This finding suggests logical conclusion: the more women are involved in R&I activities in one sector, the more they are involved in other ones in the country. However, whereas the correlation coefficients elude maximum value 1 and the coefficients loose statistical significance in 2017, 2019, 2020, further explorations of the interrelations in broader socio-political and economical contexts would be useful.

Surprisingly, the correlation analysis did not reveal any statistically significant relationship between the indicators of women's involvement in R&I activities in different sectors and the GEI (all $p > 0,01$). Perhaps this could be explained by the fact that this index consists of number of work-related indicators (i.e. FTE employment rate; duration of working life (years); employed people in education, human health and social work activities; ability to take one hour or two off during working hours to take care of personal or family matters; Career Prospects Index) which do not relate with women's participation in R&I directly. However, it would be worthwhile to explore interrelation between separate components of the GEI and the indicators of women's participation in R&I activities.

Table 2

Correlations between women's involvement in different sectors, GEI and GII

	2013					2014				
	GS	HES	PNPS	GEI	GII	GS	HES	PNPS	GEI	GII
BES	,536**	,641**	-,250	n.i.	-,535**	,679**	,498*	-,301	n.i.	-,570*
GS		,541**	-,176	n.i.	-,588**		,538**	,015	n.i.	-,547**
HES			,188	n.i.	-,430*			,127	n.i.	-,490*
PNPS					,361					,332
GEI					n.i.					n.i.
	2015					2016				
	GS	HES	PNPS	GEI	GII	GS	HES	PNPS	GEI	GII
BES	,616**	,619**	-,098	-,013	-,547**	,589**	,550*	-,029	n.i.	-,565**
GS		,499**	-,245	-,051	-,418*		,430*	,118	n.i.	-,585**
HES			,042	-,076	-,341			,441	n.i.	-,346
PNPS				-,218	,171					,426
GEI					,023					n.i.
	2017					2018				
	GS	HES	PNPS	GEI	GII	GS	HES	PNPS	GEI	GII
BES	,514**	,494**	-,099	-,018	-,508**	,628**	,574*	,115	,116	-,462*
GS		,347	-,135	-,143	-,371		,425*	,171	-,161	-,425*
HES			,226	,007	-,390*			,364	,012	-,386
PNPS				-,128	,495*				-,307	,580*
GEI					-,009					,005

	2019					2020				
	GS	HES	PNPS	GEI	GII	GS	HES	PNPS	GEI	GII
BES	,448*	,617**	-,065	-,049	-,557**	,426	,561*	,099	,249	-,555*
GS		,329	,024	-,009	-,367		,469*	-,093	,068	-,261
HES			,265	,017	-,391*			,286	,072	-,422
PNPS				-,035	,641**				-,253	,488
GEI					,064					,093

** . Correlation is significant at the 0.01 level (2-tailed); * . Correlation is significant at the 0.05 level (2-tailed).

Analysis of correlation between the GII and women's involvement in the BES, GS and HES revealed a strong but negative relationships between these variables: from $R_s = -0,588$ $p < 0,01$ between GII and GS in 2013 to $R_s = -0,261$ $p < 0,01$ between GII and GS in 2020. Meanwhile correlation between the GII and women's involvement in the PNPS is positive and rather strong, especially in 2017 ($R_s = 0,495$ $p < 0,01$), 2018 ($R_s = 0,580$ $p < 0,01$), and 2019 ($R_s = 0,641$ $p < 0,01$). This finding suggests a tendency that the GII decreases as women's involvement in the BES, GS and HES increases and contrariwise. These results can be explained by the fact that Lithuania ranks high globally in the online creativity index (21st place), which consists of the following sub-indices: country-code TDLs/th pop 15–69 (21st place); wikipedia edits/mn pop. 15–69 (22nd place) and mobile app creation/bn PPP\$ GDP (8th place) (Dutta et al., 2022). Moreover, Lithuania ranks 21st in the world in ICT & organisational model creation (Dutta et al., 2022). Thus, Lithuania ranks so high in IT and STEM related fields, while there are not many women in these fields, and therefore there is a negative correlation with the GII.

The strong positive correlation between the GII and women's involvement in the PNPS in 2017–2019 might be interpreted in context of other indicators. For example, Lithuania is ranked 8th in the world in the Ecological Sustainability Index (Dutta et al., 2022). The environmental sustainability is directly linked to social innovation, which are most often found in a variety of non-profit organisations, where women compose majority.

Conclusions

The research sheds some light on peculiarities of interrelations between gender (equality) as one of the RRI dimensions and societal progression in gender equality and innovativeness on macro level. Succinct review of literature and previous studies in the field revealed that RRI concept, including gender (equality) as one of the RRI dimensions, still lacks empirical explorations based understanding. In general, RRI aims to move towards a broader innovation policy (Levidow & Neubauer, 2014; Stahl, 2013). Meanwhile gender (equality), as a component of the RRI, contributes to this by introducing new macro level concepts such as 'gendered innovations' (EC, 2013; Schiebinger & Schraudner, 2011), 'women's talents', 'women's economic power', other (Catalyst, 2004; McKinsey and Company, 2007), helping to move research from the theoretical level to the practical one.

Empirical analysis of peculiarities of interrelations between gender (equality) as one of the RRI dimensions and GEI and GII as macro level indicators revealed that women's involvement in different R&I sectors – i.e. BES, HES, GS and PNPS in 2013–2020 – had been increasing but very scarcely. Also GEI and GII had not changed significantly during the period. Moreover, indicators of women's involvement in R&I activities correlate with GII (mostly negatively though), but not with GEI. On the one hand, the findings provide some empirical evidence of interrelation between the indicators of women's involvement in R&I sectors and GII. However, on the other hand, in general, incompatibility of existent macro level indicators restrict in-depth explorations of the phenomena and ask for search for other indicators of macro-level processes in the countries.

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The Cohesion of the Error Management Culture and Risk Management Maturity in Healthcare

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Abstract. Errors and mistakes are an inevitable part of organisational life and certainly life in general. However, errors result in adverse events. The consequences of them influence the safety of the staff and the health of patients. The focus is on the following fundamental question regarding the scientific problem at the theoretical level: How the error management culture relates to risk management maturity in healthcare? The aim of this study is to theoretically ground the importance of the link between the error management culture and risk management maturity in the field of healthcare. Methods of the research are literature review and the critical analysis of the latest scientific articles on the issue. In conclusion, the error management culture leads to the lowered occurrence of adverse events, improved error reporting, improved prevention of medical errors, improved quality and safety of the clinical services, and proactivity with regard to errors.

Keywords: *error management culture, errors in healthcare, risk management, risk management maturity, risk management in healthcare.*

Introduction

Relevance of the article

Medical errors cause serious public health problems around the world. The consequences of them are related to the lower quality of healthcare and patient safety threats (Karande et al., 2021). The phenomenon of error occurrence is widespread in all organisations (Au et al., 2014). Therefore errors and mistakes are an inevitable part of organisational life and, certainly life in general (Yan et al., 2014). However, service-oriented industries confront errors more often. It is due to their impact on service experiences and operation processes (Au et al., 2014). Patient safety is a matter of concern requiring a more forceful and global solution. Accordingly, setting it as a priority in government agendas to promote quality management systems and the culture of patient safety at the institutional level becomes the focus of efficient and safe service (Chirinos Muñoz et al., 2021). Focusing on the pursuit of perfection, a lot of companies practice negative, even hostile attitudes toward errors by enforcement of zero tolerance for them (Wang et al., 2018). Although this approach seems logical and desirable, it does not eliminate neither errors nor negative outcomes (Wang et al., 2020). Organisations have to continually consolidate and improve their risk management processes, sustaining good practices. This objective can be achieved through the integration of risk management and building an organisational culture in which everyone is a risk manager (Araújo, & Gomes, 2021).

The substantiation of the scientific and practical relevance of this conceptual topic is evidenced by the abundance of the latest scientific articles regarding those separate two concepts. Nevertheless, the relationship between error management culture and risk management maturity has not been studied sufficiently. The links between the concepts are still not firmly theoretically grounded in the scientific literature. Thus, there is a lack of confirmed empirical evidence to ground those links.

Level of problem investigation

The concept of error management culture distinguishes by its novelty and lack of adequate research background in this area (Sheikhaboumasoudi et al., 2019). Although there are various risk management maturity assessment models, from a scientific point of view, there are no studies empirically investigating the factors that influence risk management maturity.

Scientific problem

The insufficiency of the conducted research and lack of empirical evidence has identified knowledge gaps regarding the cohesion of the error management culture and risk management maturity in healthcare. The focus is on the following fundamental question regarding the scientific problem at the theoretical level: How the error management culture is linked with risk management maturity in healthcare?

Object of the article – the cohesion of the error management culture and risk management maturity in healthcare.

Aim of the article – to theoretically substantiate the importance of the link between the error management culture and risk management maturity in the field of healthcare.

Objectives of the article:

1. To theoretically investigate the concepts of error and error management culture;
2. To theoretically identify the concepts of risk, risk management, and risk management maturity;
3. To theoretically determine the link between the error management culture and risk management maturity in the field of healthcare.

Methods of the article

Literature review and the critical analysis of the latest scientific articles on the issue. The latest scientific articles published in two main international databases (i.e. *Web of Science* and *Scopus*) and other scientific sources were searched and analysed. A period of 15 years (2007–2022) was one of the inclusion criteria. The goal of the search was to select research conducted on the topic using keywords of error management culture, risk management maturity, and the link between both concepts.

1. The definition of the error management culture and risk management maturity concepts

1.1. The concept of error management culture

The definition of errors can be perceived twofold. They can be defined as “unintended deviations from plans, goals or feedback processing”, or “incorrect actions resulting from lack of knowledge” (Frese, & Keith, 2015). An error is also conceptualised as an “unintended deviation from initial expectations” (Dimitrova et al., 2016; Frese, & Keith, 2015).

Organisational culture, known as organisational values and personality, plays a significant role in managerial performance and development (Mohamed, 2020). Moreover, it creates conditions for sharing similar values, goals, beliefs, attitudes, knowledge, and understanding among members of the organisation (Baharuddin, & Yusof, 2018). Error management culture, as one certain facet of organisational culture, reflects employees’ perceptions of their organisations’ shared beliefs and practices with regard to error analysis, error communication, assistance in error situations, error competence and learning (Gronewold et al., 2013). Accordingly, error management culture is an important element of organisational culture (Jung, & Yoon, 2017), related closely to other elements of it. Organisations need to ensure that error management practices step by step become the shared norms and an integrated part of the organisational culture (Wang et al., 2018). Therefore, it is essential to acknowledge the culture of safety which differs according to a certain understanding of the values, beliefs, and norms. They indicate, accordingly, what is significant in an organisation and what attitudes and behaviours with regard to patient safety are important and applicable (Lawati et al., 2018; Mohamed, 2020). While facing an error, two opposing choices and opportunities emerge. The first is covering up the error, and the second one is accepting it and asking for help. Error management culture contributes to more efficient error management through a common conception of error occurrence. In such a culture members are guided to anticipate errors without bias, focusing on problem-solving and learning (Schneider et al., 2012), which are fundamental components of a high error management culture (Guchait et al., 2018). Therefore, cultural factors play a relevant role (Fischer et al., 2018).

Organisations adopting the error management approach place emphasis not only on the minimisation of negative consequences of errors by quick detection, reporting, and error correction.

Focus is also put on preventing errors of a similar nature from reoccurrence by investigating causal sources of errors and subsequently learning from them (Jang et al., 2021). Therefore, the patient safety culture should be identified as a “learning culture” (Cheng et al., 2021). An effective error management culture not only prevents future errors but additionally is employed as a measure of restraint of their negative impacts (van Steenberg et al., 2020). In error management culture the focus is on attitudinal changes of the management toward error, an effort to frame a systemic vision for error management, well-balanced learning at all levels of the organisation, the integrity of the actions, and the principal development in the human resources system (Sheikhaboumasoudi et al., 2019). The “error-tolerance” policy encourages employees to discuss their mistakes more openly with their managers making them feel safe enough to offer new ideas for improvement (Cusin, & Goujon-Belghit, 2019), as well as sharing of critical information, personal perceptions and feelings, even at the risk of “losing face” (Alavi, & Gill, 2017).

Summarizing, the concept of error management culture defines cultural aspects of dealing effectively with errors (Porto et al., 2020). Error management culture can be described as a learning and innovation-driven orientation, which manifests through shared beliefs, rules, values, norms, positive active attitude toward error management practices, systemic integrity of the actions in an organisation. This “error-tolerance” policy operates as a preventive measure within a psychologically safe work environment being a restriction of negative error impacts. The main goal of promoting an error management culture is problem-solving and learning through the prism of cause and effect, not underlining “self-image”.

1.2. The concept of risk management maturity

The concept of risk is connected to many areas and is characteristic of human activity (Mouras, & Badri, 2020). In the scope of the ISO 9000 standard risk is defined as an “effect of uncertainty”. In addition, the risk is often defined with regard to potential events and consequences, or a combination of both. Risk can be comprehended in terms of a combination of the consequences of an event and the associated probability of occurrence (ISO, 2015). Additionally, the term ‘risk’ is specified as an “effect of uncertainty on objectives”. ‘An effect’ here is perceived as a deviation from the expected, resulting in opportunities and threats (ISO, 2018). Similarly, business risk is described as the sequence of potentially negative as well as positive effects (Proença et al., 2017), that can be caused by an unexpected event of technological, economic, financial, asset, or reputation type (Settembre-Blundo et al., 2021). The definition of risk, focusing on the safety of patients and other persons, is explained as a “combination of the probability of occurrence of harm and severity of that harm” (ISO, 2020). From an academic perspective, neither a coherent theory of risk has been developed, nor a unitary definition of risk has been established (Crovini, 2019). To sum up, the risk is related to uncertainty arising from unexpectedness.

Risk management conception refers to “coordinated activities to direct and control an organisation with regard to risk” (ISO, 2018). A more detailed definition of the term “risk management” would be: “the systematic application of management policies, procedures, and practices to the tasks of analysing, evaluating, controlling and monitoring risk” (ISO, 2020). Therefore, a systematic and methodical process operates as a foundation of risk management. The essence of its functionality regarding the achievement of the organisation’s goals refers to analysing, assessing, and addressing risks (Araújo, & Gomes, 2021). Risk Management is a maturing discipline. It aims at assisting organisations in proactive and effective coping with the constantly changing risk exposures and resulting strategic planning requirements (Farrell, & Gallagher, 2018). The literature thus covers various definitions of the risk management process (Araujo et al., 2017).

The risk management system structure is composed of processes and systems developed by management to ensure its risk philosophy is an integral part of the daily activities of the organisation (Araújo, & Gomes, 2021). Risk management should involve all processes of the organisation, enabling an organisation to respond appropriately to change (Bucké et al., 2022), hence focusing on a holistic approach to risk management (Farrell, & Gallagher, 2014). Existing

risk maturity models cover diverse sets of attributes comprising different dimensions of risk management. Despite each standard applying a different terminology to describe risk management processes, those are generally distinguished into six process steps, i.e. risk management planning, risk identification, risk analysis, risk response planning, implementation of risk responses, and risk monitoring (Roghabadi, & Moselhi, 2020).

Maturity in terms of risk management manifests through the progress gained against full development and application of the risk management process (Proença et al., 2017). Risk management maturity is based on the sophistication of risk management implementation (Farrell, & Gallagher, 2014; Zhao et al., 2014). The growing awareness of the potential benefits of effective risk management determines the goal to progress in risk management maturity (Wieczorek-Kosmala, 2014). Therefore, risk management maturity, outlining close linkage with continuous improvement, depicts the degree of formality and application of risk management activities (Hoseini et al., 2019). The higher anticipated benefits of risk management are conditioned by the higher level of maturity (Wieczorek-Kosmala, 2014). All in all, a logical rule follows from the arguments above. The higher the level of implementation of risk management practices, the higher the level of risk management maturity.

The main goal of evaluating the maturity level of the risk management process is to determine the current situation (Araujo et al., 2017; Proença et al., 2017) since maturity level is equivalent to the degree to which this process is implemented in a given organisation (Cavalcante de Souza Feitosa et al., 2021). More importantly, risk management maturity evaluation allows the identification of potential strengths and weaknesses of the organisation regarding risk management processes (Cavalcante de Souza Feitosa et al., 2021; Hoseini et al., 2019; Proença et al., 2017; Roghabadi, & Moselhi, 2020; Zhao et al., 2013; Zhao et al., 2014). Different maturity levels possess their characteristics defining the level of progress (Tubis, & Werbińska-Wojciechowska, 2021). Models described in the scientific sources designed to measure risk management maturity most often comprise 4 or 5 maturity levels (Tubis, & Werbińska-Wojciechowska, 2021).

In conclusion, despite different nonunitary terminology applied to label risk management maturity levels, the possibility of progressing between those levels depends on the ability to improve risk management capabilities through the implementation of risk management practices.

2. The effect of error management culture on risk management maturity

Although the occurrence of medical errors is inevitable, decisive actions can be taken to significantly reduce them and strengthen patient safety. To succeed in this, a durable culture to decrease medical errors needs to be promoted at regional, national, and international levels. Ensuring patient safety is not only an integral mission ahead but generally is a commitment to an equitable healthcare system (Karande et al., 2021). There is a growing need to integrate risk management into organisational culture (Farrell, & Gallagher, 2014; ISO, 2018). A change in perception of the frontline healthcare professionals in relation to patient safety was proven to be the most reliable and effective strategy to improve the quality of care. It results in reduced adverse events and communication failure (Sorra et al., 2012). Raising awareness regarding risk in organisational culture is of great importance (Tegeltija et al., 2018). Studies affirmed culture being the driving element for the implementation of risk management (Wibowo, & Taufik, 2017). Accordingly, a significant relationship between organisations' philosophy with regard to risk management and risk management maturity was identified (Alashwal et al., 2017). The assumption of all measures taken to diminish the consequences of human error is high transparency. Within the past decade, a culture assisting the reporting of data gaps, which is the basic precondition for effective risk and error management, has been consensually developed in healthcare (Bienzeisler et al., 2020). A higher level of perception of patient safety culture is linked to the lowered occurrence of adverse events (Kakemam et al., 2021; Owusu et al., 2021). Consequently, non-punitive culture is crucial to positively impact the practice of error reporting (Aljaffary et al., 2021). The development of a safety culture in healthcare is a meaningful part of the prevention or reduction of medical errors (Kucuk Alemdar, & Yilmaz, 2020). In spite of that, assessment and improvement of

patient safety culture is effective with the condition that healthcare institution strives to improve the quality and safety of the clinical services (ALFadhlah et al., 2021). Systematic management of errors, as part of an organisation's culture, through the appropriate use of error management culture features is a top priority (Farrell, & Gallagher, 2014; Jung, & Yoon, 2017). Organisational error processes are a reflection of both organisational and national cultures (Reis et al., 2018). The typical culture of blaming or punishing healthcare professionals for adverse events could be replaced with a non-punitive culture, encouraging healthcare personnel initiatives for voluntary reporting of adverse events (Kakemam et al., 2021). Basic assumptions and core beliefs, rooted in organisational or national culture, are crucial for the implementation of effective error management (Göktürk et al., 2017). In summary, a higher level of risk management maturity is influenced by the integration of error management into organisational culture. Moreover, the goal of high-quality healthcare can be addressed by attaining a higher level of risk management maturity. However, creating an error management culture should not be limited to separate healthcare institutional responsibility.

Error management culture has been determined as a conditioning factor of organisational and management-team effectiveness (Guchait et al., 2020). Generally, an error management culture fosters employees' proactive attitudes and behaviours with respect to errors. This includes accountability, controlling work processes, taking responsibility, and the readiness to report errors (Farnese et al., 2019). Hence, attitude toward risk comes as one of the critical attributes of a mature risk management organisation (Crispim et al., 2019). It was determined that just culture is one of the factors affecting patient safety activities. The results disclosed that the higher the nurses' perceived level of just culture, the better the performance in patient safety activities (Kim, & Yu, 2021). Promoting a Just Culture enables an organisation to shift its focus from judging errors and outcomes, and focus attention on their origins. In addition, this approach allows more productive discussions about system design and action choices instead of looking for guilty (Marx, 2019). A study revealed that organisational safety culture is significantly related to nurse-assessed patient safety (Lee, & Dahinten, 2021). A high error management culture in organisations contributes to a shared understanding of errors and error management among employees (Guchait et al., 2015). Consequently, lack of appropriate support from colleagues and managers has been discerned as a barrier to reporting errors (Murray et al., 2020). Fostering of safety culture should involve all hospitals. The total involvement would enable all healthcare providers to gain insight into promoting patient safety in a clinical setting (Krishnasamy et al., 2021). In addition, it is assumed that promoting patient safety culture has a potential role in reducing medication failures, and protecting patients from preventable harm (Owusu et al., 2021). Strong error management culture allocates resources to organisational members to minimise negative error consequences and establish more acceptable strategies for handling future errors (Guchait et al., 2018).

Summarising, an error management culture needs to be developed as a strategy for the whole healthcare system at the international level. The main benefits of the error management approach related to risk management maturity are strengthened patient safety, reduced adverse events, and communication failure, voluntary error reporting, improved prevention of medical errors, enhanced focus on error causes, protection from preventable harm, minimisation of negative error consequences and proactivity with regard to errors.

Conclusions

1. Error management culture can be described as a learning and innovation-driven orientation, which manifests through shared beliefs, rules, values, norms, positive active attitude toward error management practices, systemic integrity of the actions in an organisation. "Error-tolerance" policy operates as a preventive measure within a psychologically safe work environment being a restriction of negative error impacts.
2. The higher the level of implementation of risk management practices, the higher the level of risk management maturity. Notwithstanding the different nonunitary terminology applied to label risk management maturity levels, the possibility of progressing between those levels depends on the ability to improve risk management capabilities through the implementation of risk

management practices.

3. The main benefits of the error management approach related to risk management maturity are strengthened patient safety, reduced adverse events, and communication failure, voluntary error reporting, improved prevention of medical errors, enhanced focus on error causes, protection from preventable harm, minimisation of negative error consequences and proactivity with regard to errors.

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The Impact of Multi-Culture on International Business

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Abstract. Migration of populations from various backgrounds and cultures is an important feature of globalisation and the development of global society. Migration, free labour movement, and the cultural diversity they generate have all become significant components of current global economic theory and demographic growth. They stress the importance of coexistence and collaboration among different ethnicities, countries, and cultures. As many Western cultures experience declining working-age populations, the solution appears to be in the hiring of immigrants and foreigners. However, this results in a clash of cultures, beliefs, and fundamental societal ideals. It is consequently critical to recognise and grasp the nuances that exist in multicultural corporate environments, as well as to benefit from the managerial techniques that emerge in those environments. Multicultural and diversity management can thus become a useful instrument for boosting the efficacy of international business practices and, as a result, become more widely adopted.

Keywords: *culture, impact, multiculturalism, international market, international business practice.*

Terms:

Culture: *refers to the shared beliefs, values, customs, behaviours, and artefacts that characterise a group or society. Culture can include things like language, religion, food, music, art, and social norms. Culture shapes how people view the world and interact with others, and it can vary widely across different regions and groups.*

Impact: *refers to the effects or consequences of something on a particular person, group, or system.*

International Business Practice: *refers to the activities and strategies that businesses use to operate in multiple countries and navigate the challenges of global markets. It involves understanding cultural differences, legal and regulatory requirements, and market conditions in different regions, as well as developing cross-cultural communication and negotiation skills.*

International market: *refers to the exchange of goods, services, and capital across national borders. It involves businesses operating in multiple countries and competing with each other for customers and market share.*

Multiculturalism: *the coexistence of different cultural and ethnic groups within a society. It involves recognising and valuing the diverse backgrounds and experiences of individuals and promoting respect and equality among all members of the community.*

Introduction

Relevance of the article

As the global business landscape becomes more accessible to expansion by small and large companies alike, academic discourse on the interrelationship between diverse multicultural teams and international business management is similarly becoming more prevalent. According to Hofstede (2001), many multinational corporations fail to get off to a good start, owing to the multicultural issues they face in the countries where they operate. With advances in technology and transportation, businesses are increasingly operating across borders and dealing with customers and partners from diverse cultural backgrounds. Understanding the impact of multiculturalism on international business is crucial for companies to successfully navigate the complexities of global markets and build successful relationships with customers and partners from different cultures. The article highlights some of the key ways that multiculturalism can impact international business, such as cross-cultural communication, diversity in the workplace, cultural sensitivity, legal and regulatory requirements. By understanding these impacts and developing strategies to navigate them, companies can better position themselves for success in today's global marketplace.

Level of problem investigation

The multicultural in international business research gained prominence with Hofstede's (1980) ground-breaking study of the four main cultural dimensions. Further additions have been made to the theoretical construct of diversity in business by Trompenaars & Hampden-Turner (1993); Hofstede & Bond (1988); Schwartz & Sagiv (1995); House et al. (2003); Minkov (2007), etc. The extant literature in the research area has explored several theoretical frameworks to understand the impact of cultural differences on the process of internationalisation (Srivastava et al., 2020). These studies have chronicled factors that are impacted by multiculturalism in business. These factors

have the potential to hinder the smooth management of multicultural teams. Qu (2015) explores the impact of cultural differences on international business negotiations. According to the author, cultural differences manifest in what she terms “values differences,” which can be quite challenging to navigate in international business negotiations. For example, the American culture pays attention to the substance of issues and places emphasis on separating people from things when conducting international business negotiations. In China, on the other hand, Guanxi (personalised networks of influence) is the foundational ideology that guides Chinese business negotiations. Separating people from issues is considered almost impossible, as it would be dishonourable (Gerhart, 2009; Froese et al., 2019).

In Achinivu (2017), a study based on questionnaire data from 138 staff members of MAERSK Line Nig. Ltd. focused on the impact of culture on the management of a multinational company. This work lends credence to the notion of localising management strategies on a country-by-country basis as an improvement on implementing a central model that trickles down from the global headquarters and guides the management practices in subsidiaries. In another study (Adamczyk, 2017), based on the analysis of literature in the field of cross-cultural determinants of business, the researcher posits that ensuring effective communication within multicultural workforces is an area that should be prioritised in international business management.

Scientific problem

The scientific problem regarding the impact of multiculturalism on international business involves understanding the ways cultural diversity affects international business practices and outcomes. Some of the key questions that this article will investigate include:

- How does cultural diversity impact cross-cultural communication in international business, and what strategies can companies use to effectively communicate across cultures?
- How do cultural sensitivity impact customer behaviour and loyalty in international markets, and what are the best practices for developing culturally sensitive marketing strategies?
- How do legal and regulatory differences across cultures impact international business practices, and what are the best strategies for managing legal and financial risks in cross-cultural business contexts?

Object of the article

This article is aimed at helping businesses operating in international markets better understand and navigate the challenges and opportunities presented by multiculturalism. By highlighting best practices and strategies for managing cultural differences. It provides an overview of the key ways that multiculturalism impacts international business, including cross-cultural communication, workforce diversity, cultural sensitivity, legal and regulatory differences, and broader social and economic implications.

Aim of the article

The aim of the article is to provide a comprehensive overview of the ways in which cultural diversity affects business practices and outcomes in global markets. It seeks to achieve these specific aims:

- To highlight the importance of understanding and managing cultural differences in international business.
- To identify the key ways that multiculturalism impacts international business, including cross-cultural communication, workforce diversity, cultural sensitivity, legal and regulatory differences, and broader social and economic implications.
- To provide practical guidance and best practices for managing cultural differences in international business, including strategies for effective cross-cultural communication, building diverse and inclusive workforces, developing culturally sensitive marketing strategies, and managing legal and financial risks.

Objectives of the article

1. To investigate the impact of cultural diversity on international business.
2. To identify the key challenges and opportunities presented by multiculturalism in international business, and to offer practical guidance for navigating these complexities.

3. To offer insights to better understand and navigate the impact of multiculturalism on international business.

Methods of the article

This research article applies a general review of relevant secondary literature in the fields of multiculturalism and international business management, case studies and, based on a systematic classification of the findings, searches for valuable insights by drawing deductive conclusions.

1. Theoretical aspects

Multiculturalism

Dúbravová (2011) defines multiculturalism as the representation of a group of relatively proximate people with uniquely differing cultural affiliations and identities, based on race, ethnicity, or nationality. According to Mistrk (2006), multiculturalism does not simply refer to the coexistence of different cultures, but also to the efforts made to understand, tolerate, and accommodate people from other cultures. It is accepting cultural diversity, eliminating biases, stereotypes, and discrimination, and creating an environment where there is mutual respect, and everyone has an equal chance at self-fulfilment.

The pursuit of cross-cultural interaction has become a way to mitigate the tensions between majority and minority demographics. The growing occurrence of multicultural minority representation in the upper echelons of international business management confirms this reality. In 2020, people from minority races held about 15% of senior executive positions in the USA (Corry et al., 2020). Multiculturalism's fundamental principle involves considering the culture of any group as equal, i.e. all cultures are equal and equivalent, regardless of their economic or social context. Multiculturalism also advocates intercultural understanding, as two people from different cultures may develop intercultural sensitivity if they believe their cultures are being sacrificed for the sake of the other. When cultures interact, they must be confident that there is mutual respect and that they do not endanger each other.

The impact of multiculturalism on international business

The impact of multiculturalism on international business is complex and multifaceted, requiring businesses to be aware of and adapt to cultural differences in order to succeed in a global marketplace. It refers to the effects of cultural diversity and differences on business practices, strategies, and outcomes in a global context. As businesses expand their operations to different countries and regions, they encounter new challenges and opportunities related to cultural differences, such as language, values, customs, and behaviours. These cultural differences can have a significant impact on various aspects of international business, including communication, negotiation, decision-making, leadership, and employee management.

Effective communication across cultures requires an understanding of cultural differences in communication styles, nonverbal cues, and language. Failure to effectively communicate across cultures can result in misunderstandings, conflicts, and missed opportunities. Another impact of multiculturalism on international business is the need for diversity management. Managing a diverse workforce requires a deep understanding of cultural differences and the ability to create an inclusive workplace culture that values and leverages diversity. Failure to effectively manage diversity can lead to issues such as discrimination, low morale, and high turnover rates.

Multiculturalism can also impact international business in terms of marketing and consumer behaviour. Companies need to understand cultural differences in consumer preferences, values, and beliefs to successfully market their products and services in different countries and regions. Failure to effectively adapt to local cultural norms and preferences can result in failed marketing campaigns and low sales.

Key Challenges and Opportunities Presented by Multiculturalism In International Business

Multiculturalism in international business presents both challenges and opportunities. Some of the key challenges include:

- Communication barriers: different cultures have different communication styles, which can lead to misunderstandings and misinterpretations. This can be a significant barrier to effective communication in a multicultural workplace.
- Stereotypes and biases: cultural stereotypes and biases can lead to misunderstandings and prejudice, making it difficult to build trust and work collaboratively across cultures.
- Conflicting values and beliefs: different cultures have different values and beliefs, which can create conflicts and misunderstandings in the workplace.
- Legal and regulatory compliance: multiculturalism can create challenges in complying with legal and regulatory requirements in different countries, particularly in areas such as employment law, data protection, and intellectual property.

However, multiculturalism also presents several opportunities for international business, including:

- Greater creativity and innovation: multiculturalism brings a diversity of perspectives and experiences to the workplace, which can lead to greater creativity and innovation.
- Increased competitiveness: businesses that embrace multiculturalism can better understand and serve diverse markets, giving them a competitive advantage in the global marketplace.
- Improved problem-solving and decision-making: multicultural teams can bring a variety of approaches to problem-solving and decision-making, leading to better outcomes.
- Increased employee engagement and retention: businesses that embrace multiculturalism can create an inclusive workplace culture that values diversity, leading to increased employee engagement and retention.

In conclusion, multiculturalism in international business presents both challenges and opportunities. Businesses that embrace multiculturalism can reap the benefits of greater creativity, competitiveness, and employee engagement, but must also navigate the complexities of communication barriers, stereotypes, and conflicting values and beliefs.

2. Thematic Analysis

Objective 1: to investigate the role of cultural diversity in international business and its impact on management practice.

Table 1

Data and themes used in investigations

Author	Kind of data used	Elicited themes
Qu (2015)	Secondary data: literary sources on subject matter.	International business negotiation, negotiation and bargaining style.
Achinivu (2017)	Questionnaire data from 138 participants.	Leadership style, management practices, managerial decisions.
Zhao, et al. (2012)	Secondary data: literary sources on subject matter.	Communication process, management style, decision-making.

Source: created by the author.

Cultural diversity, being a current fact of life, is highly relevant in an increasingly globalised world. A moderate level of cultural diversity has no effect on team performance in terms of business outcomes, i.e. sales, profit, and market share. However, if at least the majority of team members are ethnically diverse, then more ethnic diversity has a positive impact on performance. (Sander Hoogendoorn, & Mirjam van Praag, 2012). Companies must display sensitivity towards different cultures when dealing with foreign clients or planning a marketing campaign for their foreign subsidiaries. Business executives should start by studying the local market's beliefs, values, and customs.

Objective 2: to find links between diversity management and organisational performance.

Table 2

Data and confirming statements used in investigations

Author	Kind of data used	Relevant excerpt
Richard et al. (2004)	Questionnaire data from 535 respondents.	<i>“More nationally diverse Top Management Teams (TMTs) initiate such change often, which subsequently increases firm performance”.</i>
Adjabeng et al. (2022)	Survey data from 200 participants (SME owner-manager).	<i>“Our findings show that management-level heterogeneity can be an asset in certain strategic circumstances”.</i>
Teixeira et al. (2018)	Qualitative interview data from 30 respondents.	<i>“When local cultural traits are taken in consideration and integrate its cultural identity, organisational communication dysfunctions are minimised, fostering chances of attaining organisational goals”.</i>
Inegbedion, et al. (2020)	Survey data from 178 respondents from nine multinational companies in south-south Nigeria.	<i>The results show that the management of cultural diversity, employees’ perception of marginalisation, and conflict significantly influence diversity management. Furthermore, diversity management and teamwork significantly influence organisational efficiency.</i>

Source: created by the author.

A study conducted by Gholami, Tajeddini, & Moradi (2020) investigated the impact of multiculturalism on international business intention among Iranian university students. The study found that exposure to different cultures positively influenced students’ intention to become entrepreneurs, as they gained greater insight into the diverse business practices and opportunities available in other cultures.

Fornoni, & Picozzi (2019) explored the impact of multiculturalism on the success of immigrant entrepreneurs in Italy. The study found that immigrant entrepreneurs who were able to navigate and leverage multiculturalism in their business operations were more successful than those who were not.

In summary, empirical investigations have demonstrated the positive impact of multiculturalism on international business. The ability to understand and adapt to different cultural practices and expectations helped these entrepreneurs build relationships with diverse customers and suppliers, leading to greater business success. Finally, exposure to different cultures and the development of intercultural competence can help entrepreneurs navigate diverse business practices and gain access to new opportunities.

Conclusion

1. The cultural environment has a big effect on how a business runs (its economic practices). This means that a business should be open to changing its activities and mode of operations to meet the social and cultural needs of a certain area. They are very important for doing international business (also called international business or international entrepreneurship), especially with the globalisation and integration of Europe. The effect of diversity on international business is a key part of how to manage an international business. In a global economy, companies work in an environment with many different languages, customs, beliefs, and values. Organisations must be aware of and respect cultural differences to manage their employees, clients, and business partners in different places and countries.
2. A workforce made up of people from different backgrounds offers a wide range of ideas and points of view, which can help people think of new ways to solve problems and be more creative. Also, teams made up of people from different backgrounds may find out more about the needs and wants of different markets. This lets businesses make goods and services that are better suited to customers in their own area.
3. In multinational business, cultural variety also helps decision-making. When a team is comprised of individuals from various cultural backgrounds, the problem or opportunity at hand may be analysed more thoroughly. This is because people from various cultures approach problems differently, which can lead to a more thorough grasp of the issue and better decision-making. Thus, it is essential for multinational firms to give cross-cultural

training to their staff, provide a secure and respected workplace, and encourage open communication to foster a collaborative and diverse work environment that can lead to more innovative solutions and better business outcomes. Additionally, understanding and respecting cultural differences can help companies avoid potential misunderstandings or conflicts that may arise, thus fostering unification and teamwork.

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The Reasons Behind Sustainable Product Purchases. What Affects Consumers More – Cognition or Emotions?

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Abstract. More and more scientists are pointing to the need for sustainable consumption research in order to find an effective way to promote sustainable products among consumers. Scientists note that sustainable consumption is often illusory. The research shows that consumers have a positive attitude towards sustainable products, but that does not always correlate with actual consumers' purchasing behaviour. Accordingly, the question arises of how to promote consumers to buy sustainable products. Recent theories in the field of decision-making, such as Dual Processing theories, place increasing importance on emotional response. The aim of this article is to investigate the emotional and cognitive factors that affect consumers' intentions to buy sustainable products. Based on theoretical aspects, a model that examines the intersection between the emotional and cognitive responses on consumers' intentions to buy sustainable products is proposed.

Keywords: *sustainable products, sustainability marketing, emotional response.*

Introduction

Relevance of the article

Sustainability is one of the most relevant topics of the 21st century among science, politics, business organisations, and society at large. The growing relevance of the sustainability topic is closely linked to various unresolved global problems, such as growing environmental pollution, climate change, scarcity of natural resources, and others. The relevance of the topic is also shown by the growth of scientific publications on this topic every year (Meschede, 2020; Elsevier, 2015). Meanwhile, unsustainable patterns of production and consumption that do not take into account the needs of the global community and future generations are cited in scientific articles as one of the main causes of these problems (Sheth, & Parvatiyar, 2020). Therefore, the promotion of sustainable consumption is becoming an increasingly important topic.

Level of problem investigation

The analysis of the scientific literature revealed that in order to explain consumer behaviour related to the consumption of sustainable products, researchers have applied a wide range of theories, but only few of them examine the emotional response factor. In the context of the consumption of sustainable products, Ajzen's (1991) Theory of Planned Behaviour has been most commonly used (Quoquab, & Mohammad, 2020), but the conducted studies provide contradictory results (Sheth, & Parvatiyar, 2020; Menzel, 2013). Meanwhile, researchers studying ethical consumption, which is very close to sustainable consumption, point out that traditional models of consumer behaviour (such as Ajzen's (1991) Theory of Planned Behaviour), which are dominated by a rational and cognitive approach, are not entirely suitable for predicting ethical consumption behaviour, because consumers' emotional response plays an important role (Magnusson et al., 2003). Also, recent theories in the field of decision-making and neuroscience, such as Evans & Stanovich's (2013; 2019) Default-Interventionist Theory, state that a person's emotional and cognitive responses interact strongly with each other and both of them might contribute to decision-making (Okon-Singer, Hendler, Pessoa, & Shackman, 2015). However, existing research does not reveal in which cases the consumer's emotional response and in which cognitive response has a greater influence on the purchase of sustainable products.

Scientific problem

How do emotional and cognitive responses influence consumer intention to purchase sustainable products?

Object of the article – the impact of emotional and cognitive responses on consumer intention to purchase sustainable products.

Aim of the article – to investigate the emotional and cognitive factors that affect consumers' intentions to buy sustainable products.

Objectives of the article:

1. To analyse the theories used in explaining sustainable consumption and the main theoretical aspects related to them.
2. To define the cognitive response factors and their influence on the consumer's intention to purchase sustainable products.
3. To define the emotional response factors and their influence on the consumer's intention to purchase sustainable products.
4. Based on theoretical aspects, to create a model that examines the intersection between emotional and cognitive responses on consumers' intentions to buy sustainable products.

Methods of the article

Analysis, synthesis, classification, theoretical modelling.

1. Theoretical aspects related to sustainable consumption

In order to explain consumer behaviour related to sustainable consumption, researchers have applied a wide range of theories, but only few of them examine the importance of emotional response. Quoquab & Mohammad (2020) performed an analysis of scientific articles on the topic of sustainability published in 2000–2020 to see what theories have been applied. The analysis showed that only one article used Stimulus-Organism-Response Theory that analyses the emotional response factor. Stimulus-Organism-Response Theory states that an external stimulus affects an individual's internal emotional state, which in turn causes a reactive response. Early proponents of this theory argued that emotional response is reactive, affects the consumer physically, and is not under volitional control (Nyoni, & Bonga, 2017). However, recent theories in the field of neuroscience suggest that not only the stimulus affects the emotional response, but also a person's existing knowledge, attitudes, and unconscious arousal influence the emotional response to the stimulus (LeDoux, & Brown, 2017). Piligrimienė, Žukauskaitė, Korzilius, Banytė, & Dovalienė (2020) were among the first to apply the Stimulus-Organism-Response Theory in the context of sustainable consumption and found that emotional engagement in evaluating sustainable products is more important than cognitive engagement. Thus, although the influence of emotional response on consumer behaviour and decision-making is not widely explored, there is growing evidence that it can be highly important.

Among all theories, Ajzen's (1991) Theory of Planned Behaviour, which explains sustainable consumption is the most commonly used (Quoquab, & Mohammad, 2020). In the Theory of Planned Behaviour (Ajzen, 1991), the attitude towards the object or towards the action is considered the main factor that can predict the individual's behaviour (Ajzen, 1991). In academic practice, this model is often used because it provides an opportunity to determine how different attributes influence consumer attitudes and subsequent behaviour (Pichauri, 2001). However, other researchers criticise the author of the model for overestimating the cognitive abilities of consumers – the assumption that consumers in a real purchase situation are able to evaluate all important attributes before making a purchase decision (Bagozzi, Gurhan-Canli et al. 2002 cited in Bray, 2008). Meanwhile, researchers studying sustainable consumption notice that there is an attitude-behaviour gap between consumer attitudes towards sustainable products and behaviour. Research shows that consumers have a positive attitude towards sustainable products, but tend not to buy them (Menzel, 2013, Shet, & Parvatiyar, 2020). The researchers point out that attitudes towards sustainable products do not correlate with actual consumer purchasing behaviour. Thus, there is evidence that attitude does not necessarily determine or explain consumer behaviour.

In the scientific literature's field of neuroscience there is an indication that in everyday life, consumers often make decisions under the influence of automatic processes that are driven by an emotional response. The Dual Process Theories separate automatic processes, often referred to as the first system, which is fast, unconscious, and driven by emotional response, from reflective processes, often referred to as the second system, which is slower, conscious, and related

to available knowledge, motivation to act and feelings (Evans, & Stanovich, 2013; Evans, 2019). Over forty years, the academic world has developed a dozen theories of the dual process, which differ in their explanations of how the first and second systems work (Kahneman, 2003; Gawronski, & Bodenhausen, 2006, etc.). However, among all of the dual process theories, Evans & Stanovich's (2013; 2019) the Default-Interventionist Theory, according to other authors, best corresponds to the current understanding of the brain in neuroscience (Gronchi, & Giovannelli, 2018; Kruglanski, 2013). The authors of the Default-Interventionist Theory argue that when people make decisions, the first system makes a quick and automatic suggestion. Meanwhile, the role of the second system is to observe the default response suggestion provided by the first system. If the second system determines that this default response suggestion is good enough, it is executed. However, if the second system is motivated and has sufficient knowledge and reasoning abilities, it also has the power to intervene and perform a more deliberate response. The main difference between Evans & Stanovich's (2013; 2019) theory and other dual process theories is that the Default-Interventionist Theory does not strictly separate the processes of the two systems. This is consistent with the results of research by neuroscientists, who found that a person's emotional response, cognitive knowledge and abilities strongly interact with each other and together contribute to decision-making (Okon-Singer et al., 2015). Thus, although in the context of sustainable product marketing, the influence of emotional response on consumers' intentions to purchase sustainable products has been studied very narrowly, previously conducted studies in the general field of decision-making point to this factor as extremely important in the decision-making process.

Starting to analyse the emotional response, it is important to notice that there is no clear consensus among researchers on one specific definition of emotional response. Often, the terms emotional response and feelings are used as synonyms, especially in marketing research (Prescott, 2017; Poels, & Dewitte, 2019). However, the rest of this paper will follow the definitions of emotional response and feelings provided by neurobiologists Damasio & Carvalho (2013). These researchers state that emotional response is the body's physiological reaction to external stimuli, while feelings are the individual's conscious interpretation of the emotional response experienced (Damasio, & Carvalho, 2013). The metaphor of an iceberg is often used to describe the difference between emotional response and feelings. It symbolises that when human bodies respond to an external stimulus, the emotions they experience may be so subtle that a person may not consciously perceive them, but a reaction still occurs in the human body. Meanwhile, feelings are only the tip of the iceberg, and only when the reaction of the human body is strong enough, feelings become perceived and available for interpretation. The literature suggests that emotional response is a multidimensional construct consisting of valence, measured as negative or positive, and arousal, measured as high or low (Lang, 1995; Posner, Russell, & Peterson, 2009). Therefore, emotional response primarily affects the consumer physiologically through its two dimensions of arousal and valence that can influence the consumer's behaviour quickly and unconsciously, that is, without the user's cognitive awareness of it.

2. Empirical investigation level of the impact of emotional response on consumer intention to purchase sustainable products

The importance of emotional response in the context of sustainable consumption research is growing. Pilgrimienė et al. (2020) found that consumers are more likely to be emotionally engaged in sustainable consumption compared to cognitive and behavioural engagement, whereas consumers with higher overall engagement are more likely to buy environmentally sustainable products. These results are also supported by Lee, Choi, Han, Kim, Ko, & Kim (2020) study, in which researchers used functional magnetic resonance imaging (fMRI) to find that environmental labelling increases activation of the anterior cingulate cortex, which is involved in the control of attention, affecting both cognitive and emotional processes. Thus, the research results of these studies confirm the importance of emotional response in the context of sustainable consumption, but the number of studies that examine how emotional response affects consumer behaviour related to sustainable consumption is extremely limited (Pagan et al., 2020). Pagan et al. (2020) conducted a systematic

analysis of scientific articles that used psychophysiological research methods to measure emotional response in the context of sustainable consumption and revealed that there is only one study that examines the impact of psychophysiological emotional response on sustainable consumption. Meanwhile, researchers emphasise that it is important to study how emotional response affects consumers' intention to buy sustainable products (Ladhari, & Tchegnina, 2015).

Research shows that products with sustainability labelling are able to evoke an emotional response. Songa et al. (2019) in their study aimed to determine whether products with a recycling label on the packaging evoke a greater emotional response than products with non-recycling labelling. The results of the facial expression capture equipment showed that packaging with recycling labelling evoked higher positive valence in consumers than packaging with non-recycling labelling. The fact that sustainable products evoke a more positive valence in consumers is also confirmed by research conducted using subjective questionnaires (Gutierrez et al., 2020; Schouteten, Gellynck, & Slabbinck, 2019). Meanwhile, Maccioni et al. (2019) measured skin conductance and pupil dilation in their study to determine whether environmentally friendly products caused greater arousal compared to a control product group but found no significant difference. One of the reasons for such results could be that in their study, sustainability was not expressed through labelling, textual, or any other information, and consumers had to decide for themselves whether the product was sustainable only from the picture of the product package. Thus, while research on emotional arousal is contradictive, research on emotional valence suggests that environmentally sustainable products and labelling evoke more positive valence.

Research shows that emotional response affects consumers' intention to purchase sustainable products. Gutierrez et al. (2020) found that the emotional response of positive valence affects consumers' intention to purchase environmentally sustainable products. Researchers found that the more positive the valence, the higher the consumer's intention to purchase the products (Gutierrez et al., 2020). Authors who investigated the effect of emotional response on consumers' intention to purchase socially sustainable products also found that positive valence affects consumers' intention to purchase sustainable products (Ladhari, & Tchegnina, 2017). Meanwhile, researchers who studied the influence of both positive and negative valence on consumers' intention to purchase products with organic packaging found that both negative and positive emotional responses influence the intention to purchase sustainable products – a positive emotional response to the product positively influences the intention to purchase, while the negative emotional response has a negative impact on purchase intention (Koenig-Lewis, Palmer, Dermody, & Urbye, 2014). However, it is important to note that in the cases of these three reviewed studies, the emotional response was measured in relation to the products and not in relation to the advertisement associated with them. Hur, Lee, & Stoel (2020) conducted a study to determine how a positively and negatively valenced picture and message in an advertisement for a socially sustainable product affect consumers' intention to pay more for sustainable products. Researchers found that similarly to cause-related advertising, consumers are willing to pay more for a socially sustainable product when the ad features a negatively valenced picture and message (Hur et al., 2020). Thus, although research shows that emotional response affects consumers' intention to buy sustainable products, the current level of research on the topic does not allow us to identify precisely in which cases more positive valence, and in which cases more negative valence affects consumers' intention to buy or pay more for sustainable products.

Previous research suggests that a consumer's cognitive appraisal of a situation may be necessary to evoke an emotional response. Research shows that consumers' attitudes towards sustainability and concern for environmental issues can affect how strong and what kind of emotional response sustainable products cause. Songa et al. (2019) study found that people with prior positive attitudes toward recycling noticed a recyclable label on product packaging more quickly and spent more time processing the label, which in turn led to higher arousal. Thus, the results of this research show that consumers' attitudes influence both attentional focus and emotional response. However, a scientific experiment conducted by Balconi et al. (2019), in which researchers sought to determine the extent to which sensitivity towards sustainable issues influences the evaluation of luxury sustainable

Conclusions

1. The analysis of the theories used in explaining sustainable consumption revealed that the consumption of sustainable products has mostly been studied based on a cognitive approach to consumer behaviour with very limited consideration of the emotional response impact. While recent theories in the field of decision-making such Default-Interventionist Theory suggest that in everyday life, people are more likely to make decisions under the influence of an automatic system that is controlled by an emotional response rather than a cognitive system.
2. The analysis of empirical research showed that a significant relationship between emotional response and intention to purchase sustainable products exist, while cognitive factors such as positive attitude and knowledge provide contradictory results. Also, scientific literature has revealed that the knowledge a consumer has and the formed attitude affects the emotional response.
3. The created conceptual model is based on theoretical and empirical aspects. It shows that both emotional and cognitive responses might influence consumers' purchase intentions. The model suggests that the sustainability label awareness factor influences whether the cognitive or emotional response factor is more activated. Also, the model shows a close relationship between emotional response and sustainability awareness, attitudes to sustainable consumer behaviour, and attitudes to a product.

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The Conceptual Model of the BIM4NZEB-DS System for Selecting Technological Variants of Rational Passive Energy Efficiency Measures for a Sustainable Building

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Abstract. Implementing sustainable solutions in building design is one of the significant elements in achieving the transition to sustainability. The diversity of structural elements, construction materials, and the various preferences of interested parties complicate the decision-making process. Building Information Modeling (BIM) provides a wide range of available technological solutions and methods for automated decision support and can make decision-making more efficient. This study presents the conceptual model for BIM4NZEB-DS system for the automated selection of rational variants of passive energy efficiency measures. The algorithm of this system will integrate the solutions for data transfer from the BIM model and multi-criteria methods for the analysis of variants. The assessment of variants is based on economic and environmental criteria. The purpose of the system is to increase the reliability of the assessment, optimise the technological and human resources required, and minimise the time of decision-making. The developed system will be validated using the BIM model of real-case building.

Keywords: *early design stage solutions; BIM; multi-criteria analysis; sustainability; BIM4NZEB-DS.*

Introduction

Relevance of the article

Building Information Modeling (BIM) allows us to solve the problems of sustainable design by modelling various elements of a building. However, BIM does not guarantee that the designer or building user chooses them rationally. Sustainability is a multifaceted phenomenon that includes a variety of sustainability categories, like environmental, social and economic issues. However, in the traditional approach of building design, architects and structural engineers rarely assess the environmental dimension, which has been recognised in the integrated building design approach as one of the most important factors (Hou, Li & Rezgui, 2015). The importance of multiple criteria in decision-making is sometimes underestimated, which also influences the added value of construction projects. The opportunities that give an integrated application of digital technologies, multifaceted approach and relevant assessment methods and tools will help to locate a transparent and reliable decision-making environment.

Level of problem investigation

The observation was made based on the review of recent scientific research in the field of digitalisation that there is an apparent lack of investigations focused on integrated solutions for decision-making in the early design stage of a building. Specifically, there is a lack of solutions that will enable the user to select rational technological variants in the BIM model based on multiple criteria.

Scientific problem

Sustainability is a manifold phenomenon that includes various categories of sustainability, such as environmental, social and economic issues. However, in traditional building design practice, architects and civil engineers rarely consider the environmental dimension, which today is recognised as one of the most important factors (Hou, Li, & Rezgui, 2015). A sustainable design includes not only compliance with building standards but also foresees the production of repetitive elements and mass production, which allows to reduce costs (Burgan & Sansom, 2006). To ensure the sustainability

of the structural design, researchers also evaluate CO₂ emissions and lifetime (Yepes, García-Segura, & Moreno-Jiménez, 2015). The assessment of the eco-efficiency of construction materials used for load-bearing structures has been made (Brown, & Mueller, 2016). Load-bearing structures have been compared using physical parameters, cost of construction and cost of materials, technological considerations, and environmental impact (Vilutienė, Kumetaitis, Kiaulakis, & Kalibatas, 2020). The academic community also recognised the potential of BIM in sustainable design (Liu, Lu, & Peh, 2019). BIM allows to solve sustainable design problems by modelling various building elements. However, BIM does not guarantee that they will be chosen rationally by the designer or building user. Unreliable decisions can have a negative impact on the sustainable development of cities. In addition, choosing a specific solution based on the requirements of the organisation requires finding a compromise between different categories (e.g. environmental, social and economic). The complexity of buildings and the need to evaluate many sustainability categories requires that reliable tools based on a robust optimisation algorithm should be used to select the optimal set of solutions.

Object of the article is the conceptual model of the BIM4NZEB-DS system for the automated selection of rational variants of passive energy efficiency measures.

Aim of the article is to compile a structure of the BIM4NZEB-DS system for the automated selection of rational variants of passive energy efficiency measures.

Objectives of the article:

1. To analyse the research on the integration of multi-criteria analysis, BIM and sustainability criteria.
2. To select the initial set of criteria for the assessment of passive energy-saving measures.
3. To make considerations regarding the necessary functions of the BIM4NZEB-DS system and its components.

Methods of the article

This research is based on comprehensive literature review, analytical, numerical, and case study methods. Based on the literature analysis, the recent research on the integration of multi-criteria analysis, BIM and sustainability criteria was systematised, and the criteria for the assessment of passive energy-saving measures have been identified. The development of the BIM model examined in the case study was performed using modelling software tools.

1. Analysis of recent research on the integration of BIM, MCDM and sustainability issues

Sustainable building practices are highly debated and of great concern due to the increasing impact on environmental degradation and other aspects. Buildings consume about 25% of water, 55% of timber, and generate about 40% of waste (United Nations Environment Programme, 2020). In 2050 about 68% of society will live in cities that cover only 2% of the planet's surface, but consume 78% of energy and emit 60% of greenhouse gases (United Nations, 2019). The construction industry is responsible for a significant impact on the environment, consuming a large amount of natural resources worldwide and generating excessive construction waste (Jain, 2021; Gehlot & Shrivastava, 2021).

Growing environmental concerns, strict building regulations and the growing need to conserve natural energy are driving the demand for energy-efficient buildings. Recently, sustainability assessment initiatives have also been actively developed. The proposal for an EU Sustainability Reporting Directive (COM (2021)189) proposes that companies provide transparent and comparable information on the sustainability of their business practices as a basis for investment decisions. Market players will need to apply the requirements of this Directive and include sustainability criteria in their investment valuation models in order to contribute to the objectives of the Green Deal and to benefit from the financing and support mechanisms offered by the EU. This requirement is directly related to the planning, design, construction, and operation stages of the building life cycle. And it directly affects all players in the construction sector, from customers, designers, builders to users.

A distinctive feature of a sustainable building is its ability to significantly reduce environmental impact, energy consumption and greenhouse gas emissions throughout its life cycle (Kim & Yu, 2018). Applying sustainable building principles to the design process can improve the environmental

performance of the construction industry. Since the energy-efficient and sustainable building solutions proposed at the design stage have a direct impact on the building's energy consumption and the building's environmental performance throughout its life cycle, making the right decisions at an early design stage is vital. Sustainability decisions are multi-objective, so it is appropriate to apply multi-criteria decision-making (MCDM) models (Huang, Zhang, Ren, Liao, Zavadskas, & Antuchevičienė, 2020). MCDM has demonstrated its ability to integrate technical information and multi-stakeholder objectives into decision-making. These methods allow the ranking of decision-making schemes by integrating conflicting indicators (Ishizaka, & Siraj, 2018).

The benefits of MCDM application can be revealed better when these methods are combined with BIM (Chen, & Pan, 2016). The solution of construction project tasks in an integrated way using BIM methodology and multi-criteria analysis methods has recently been discussed in many studies. The application of MCDM helps to overcome the limitations of BIM in multi-objective optimisation (Elaheh, Vadiiee, & Johansson, 2019). With the development of construction technologies the complexity of projects and information requiring integration has also increased. BIM is expected to replace the traditional information management process and make possible the horizontal integration between different stakeholders and the vertical integration of information at different stages (Elonen, & Arto, 2003). BIM tools provide opportunities to integrate the fragmented architectural, engineering and construction parts of the project (Chang, & Shih, 2013); include in the model both geometric and non-geometric data (Singh, Gu, & Wang, 2011); by integrating data from different disciplines can quickly and accurately extract information from components and aid in evaluation (Staub-French, Fischer, Kunz, & Paulson, 2003). However, how to integrate and use building information to facilitate decision-making is still under discussion.

2. Steps of the development of a conceptual model of the BIM4NZEB-DS system

The analysis and research included the following steps:

Step 1. Analysis of literature on the integration of multi-criteria analysis, BIM and sustainability criteria. This step aims to examine the existing scientific papers and determine the situation and gaps in the integrated application of BIM, MCDM and sustainability criteria. The main research question in this step is "What are the main indicators used in the assessment of sustainable design and construction solutions?"

Step 2. Selection of sustainability criteria and methods to obtain their values. Based on literature analysis the initial set of sustainability criteria was selected. In this step, the final set of criteria and methods to obtain their values were considered by experts during the Delphi study. The assumptions were made regarding the data gathering and data sources.

Step 3. Development of a structure of the system (BIM4NZEB-DS) for the automated selection of rational variants of passive energy efficiency measures. In this step, considerations were made regarding the necessary functions and components of the BIM4NZEB-DS system.

3. Expert assessment of sustainability indicators and functions of the BIM4NZEB-DS system

Economic, social and environmental indicators are usually applied to the assessments of energy efficiency and sustainability in construction projects. There are also technological and structural parameters that are evaluated as additional criteria depending on the research objectives. The group of economic indicators often include design cost, construction cost, material cost, and payback period (Gorgolewski, Grindley, & Probert, 1996; Zavadskas, & Antuchevičienė, 2007; Sun et al., 2019; Dipasquale, 2019). As technological indicators considered: human labour cost (Shehata, & El-Gohary, 2012), efficiency and utilisation of heating devices (Mardiana-Idayu, & Riffat, 2012; Willem, Lin, & Lekov, 2017), efficiency and utilisation of ventilation systems (Giama, 2022). Solutions considered in the assessment of design: the orientation of the building with respect to the direction of north (Karimimoshaver, & Shahrak, 2022), compactness of the building (optimal ratio of external partitions and heated space) (Wang, Liu, & Zhang, 2021; Kistelegdi, Horváth, Storcz, & Ercsey, 2022), thermal insulation properties of partitions (Bojic, Yik, Wan, & Burnett, 2002;

Asdrubali, D'Alessandro, & Schiavoni, 2015; Karimimoshaver, & Shahrak, 2022), air circulation and indoor air quality (Xu, F., Xu, S., Passe, & Ganapathysubramanian, 2021), airtightness of the building (Zheng, Long, Cheng, Yang, & Jia, 2022). However, the greatest importance is given to environmental indicators, such as primary energy consumption (Jie, Zhang, Fang, Wang, & Zhao, 2018, Maslesa, Jensen, & Birkved, 2018), greenhouse gas emissions (Pervez, Ali, & Petrillo, 2021; Kongboon, Gheewala, & Sampattagul, 2022), indicators for assessing the generation of waste (Yuan, 2013; Solís-Guzmán et al., 2009; Lu, Webster, Chen, Zhang, & Chen, 2017).

The study was limited to the analysis of passive energy-saving measures. Passive energy-saving measures include external wall construction with thermal insulation, roof construction with thermal insulation, energy-efficient windows and the use of modular and more sustainable materials. Experts through the three-round Delphi study, based on literature analysis, proposed the initial set of criteria (Table 1) for the assessment of passive energy-saving measures. Ten experts of experienced and knowledgeable people from companies with BIM-related activities and academic institutions were selected for the panel. The set contains the most frequently used, from the environmental point of view the most important indicators. Deciding on the parameters for the sustainability assessment one of the criteria for the selection was the existence of a reliable and objective source of data. In order to declare the environmental parameters of products, manufacturers prepare EPD declarations in accordance with the requirements of the EN 15804:2012+A2:2019 standard, which ensures data reliability and comparability. In addition to the selected environmental indicators, the price of alternative solutions was considered as the basis for the assessment of the economic feasibility of a solution. The cumulative energy demand (CED) determines the impact on the environment and is mentioned as one of the key indicators in literature sources, and was also included in the selected set of indicators.

Table 1

Sustainability indicators determined by experts for the assessment of wall details

Indicators	Abbreviation	Measuring units	Optimisation direction	Weights
Construction cost	C	euro/(m ² , m ³ , unit)	min	0.30
Cumulative energy demand	CED	MJ/(m ² , m ³ , kg)	min	0.05
Global warming potential	GWP	kg CO ₂ eq	min	0.10
Ozone layer depletion potential	ODP	kg CFC-11 eq	min	0.10
Acidification potential	AP	H ⁺ moles eq	min	0.05
Eutrophication potential of fresh water	EP	kg P eq.	min	0.05
Formation potential of tropospheric ozone	POCP	kg NMVOC eq.	min	0.05
Abiotic depletion for fossil resources potential	ADP	MJ	min	0.05
Amount of construction waste	CW	%	min	0.10
Amount of demolition waste	DW	%	min	0.05
System thickness	t	mm	min	0.05
Thermal resistance of a system	R	m ² K/W	max	0.05

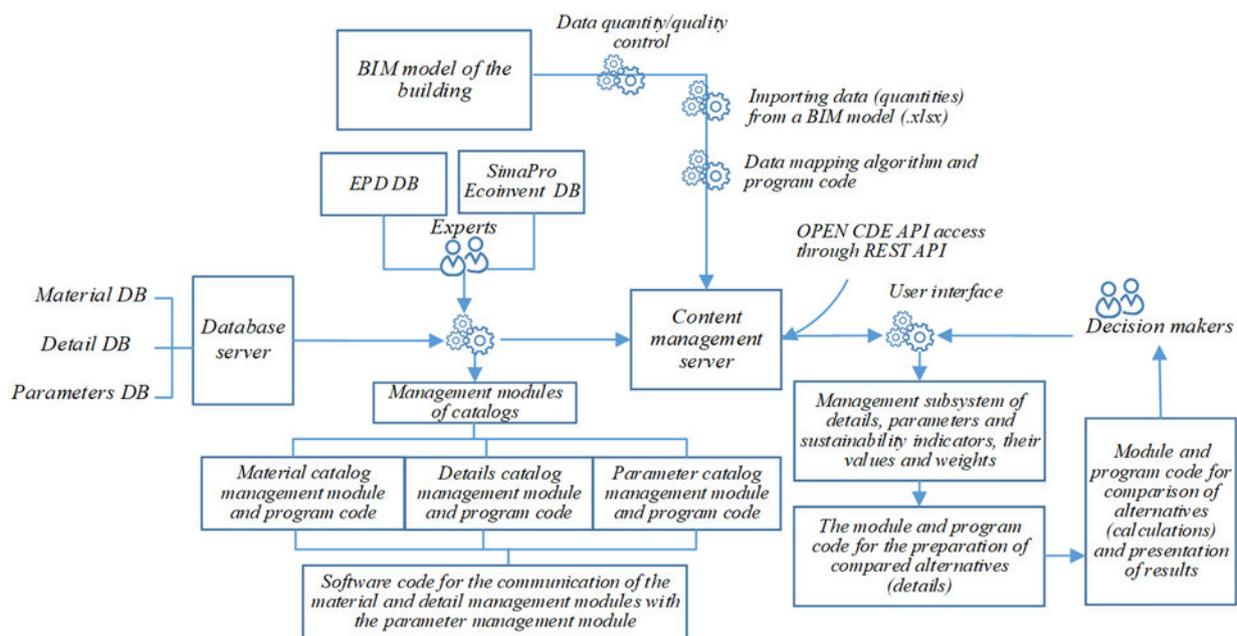
Source: created by the authors.

During the Delphi study, experts decided on the methods to be used for the calculation of environmental impact indicators and calculation of construction waste. For the calculations of environmental impact indicators was decided to use SimaPro (v9.3.0.3) software. This software uses different environmental impact methods (models) that can be applied to determine individual impact indicators. Cumulative energy demand (non-renewable) indicators calculated using CED v1.08 method, Global warming potential and Ozone layer depletion potential indicators – IMPACT 2002+ v2.1, Acidification potential indicators – TRACI 2 v3.03, Eutrophication potential and Formation potential of tropospheric ozone indicators – ReCiPe Midpoint (E) v1.05, Abiotic depletion for fossil resources potential indicators – Eco-indicator 99 (H) v2.08. Pollution parameters per unit quantity for environmental indicators can be obtained from the product EPD declaration database (<https://www.environdec.com/home>) if EPDs have been prepared. To identify expected waste quantities the method described by Solís-Guzmán et al. (2009) was proposed to use. Quantities of elements necessary for the calculation of environmental indicators, thickness of elements

and data necessary to calculate the thermal resistance of a system come from the BIM model.

The main considerations made in the third step of research include the necessary functions and components of the BIM4NZEB-DS system, solutions for extraction of data from the BIM model, extracted data analysis and information structure optimisation, including classification of passive energy efficiency measures.

The purpose of BIM4NZEB-DS system is to enable the user to select rational technological variants of passive energy-saving measures based on the principles of sustainable design and construction. The assessment of technological variants must be made using multi-criteria decision-making methods. Therefore, a system algorithm must be developed based on them and must enable calculations and ranking of variants of the building's compatible sets of elements. The assessment of variants is based on economic and environmental criteria determined by experts. The system must increase the reliability of the assessment, optimise the necessary technological and human resources, and shorten the time spent on the assessment. Taking into account the purpose of the system and the functions it must perform, the necessary elements and their interrelationships are identified and presented in a conceptual model (Fig. 1).



Source: created by the authors

Fig. 1. The conceptual model of the BIM4NZEB-DS system

The system development will be performed by combining databases and several subsystems with specially designed interfaces. All algorithms and logic of calculations will be executed only in the server part (backend), thus separating rendering and processing mechanisms. Integration and testing will be carried out with the Web system BIMGates.It, which is developed for construction price estimates.

An evolutionary prototyping method will be used for the development of the BIM4NZEB-DS system prototype. In this method, prototype elements (subsystems) are development, delivery and improvement of steps (“sprints”) over many stages until the final version of the prototype is created. The user can experiment with the results (subsystems) presented while others are being created.

Conclusions

1. The analysis of the research on the integration of multi-criteria analysis, BIM and sustainability criteria was made to determine gaps in the integrated application of BIM, MCDM and sustainability criteria and to answer the question on the main indicators used in the assessment of sustainable design and construction solutions.

2. The original set of sustainability assessment criteria proposed (including economic and environmental criteria), allows the user of the system to select rational sustainable building solutions. Taking into account the goals of the decision maker in evaluating the building's passive energy efficiency measures, the system algorithm will allow the selection of relevant sustainability indicators from the set provided by experts.
3. The conceptual model of the BIM4NZEB-DS system was proposed and the main functions and components were considered. In the first testing stage, the prototype of the proposed system will include elements of the building envelope, i.e. the walls, roof, windows, doors, and foundation. In future research, the prototype will include the active engineering systems and the solutions for the possible integration of passive and active measures in a single assessment.

The findings can be interesting to all participants of the integrated construction project team who deliver the solutions and make decisions throughout the construction project life cycle on the concept, design, construction and building operation stages.

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Managers' Strategies to Support Employee Well-Being in Remote Work Environment

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Abstract. In today's dynamic environment, employees' well-being at work has become a matter of concern not only to employees, business but also to scholars. Workplace well-being relates to how employees feel about their work, their working environment, the climate at work and of course work organisation. Over the past few years in businesses environment numbers of remote workers had increased, thus this change leads to the need for theory and research on how managers can support employees' well-being in remote work environments. The analysis of the scientific literature allowed to detect aspects of employees' well-being, reveal managers' strategies related to supporting well-being at remote work. Based on the obtained results and scientific literature review, the conceptual model of managers' strategies to support employees' well-being in remote work environments is presented.

Keywords: *employees' well-being, remote work-related well-being, managers' support for remote employees.*

Introduction

Relevance of the article

The work environment is dynamic and ever-changing, driven by the convergence of three major forces: technological evolution has made the world a "global village", advances in technological infrastructures have led to a rise in remote work (Soroui, 2021), making it easy for companies to acquire, hire, and retain talent from anywhere in the world; economic challenges (e.g. COVID 19 pandemic) continue to serve business, a never-ending thread of surprises, finally, Generation Z entry into the labour market has ignited one of the most transformative changes in modern business history because, unlike Generation Y, new entrants are more than ever prioritising greater job flexibility and have unique features. The solution to all the changes that emerge is the adoption of flexible work culture and methods that support remote work. As authors Chatterjee et al. (2022) state, an employee who arranges to work away from the normally allocated place of work by using digital technology can be construed as working remotely. Remote employee well-being, as the object of research, is also a relatively new phenomenon in the field of remote work environments, thus the theory and research of strategies to support employees' well-being in remote work environments are relevant topics in management science.

Level of problem investigation

From a management perspective, as Wieneke et al. (2019) say, implementing employee well-being activities can be beneficial for employees as well as for the performance of the organisation. Ensuring that an organisation has a culture to support the remote workforce is critical to the success of all workplace well-being (Dimoff, & Kelloway, 2019; Newman, & Ford, 2021). Although employees need the tools to do their jobs and the feeling that someone cares about them and their progress at work, it is more challenging to achieve that in a remote environment where tech support, leader feedback, and collaborating team members are far away (Newman, & Ford, 2021). Thus, it is important to reveal which manager strategies in scientific literature could deepen knowledge on supporting remote employees' well-being. However, not many studies have theorised or modelled managers' strategies to support employees' well-being in remote work environments. Also, the increased presence of remote employees in the activities of organisations poses additional challenges, in this context, the scientific problem question arose.

Scientific problem

How do managers support remote employees' well-being?

Object of the article is managers' strategies for supporting remote employees' well-being.

Aim of the article is to investigate and determine the managers' strategies to support employees' well-being in remote work environment.

Objectives of the article:

1. To analyse the scientific literature and disclose managers' strategies that help maintain employee well-being in remote work environment.
2. To introduce a conceptual model of managers' strategies for supporting remote employees' well-being.

Methods of the article: analysis of literature sources, synthesis, comparative data analysis, systematisation, and generalisation.

1. The conceptualisation of managers' strategies to support employees' well-being in the remote work environment

Considering employees working remotely it is seen that the line between work and life is disappearing. Remote work is understood by many as work when the employee works outside the physical office of the company. Traditional work is based on linking an employee's time to work tasks and location. It is divided into employees gathered in a central location, which allows managers to coordinate activities and communication. In contrast, a remote work environment refers to coordinating and operating outside the traditional office (Mulki et al., 2009), from working from home, a coffee shop, or working from another country. A remote worker can be defined as an employee who, using digital technologies, agrees to work outside the normal workplace (Chatterjee et al., 2022). Organisations need to prioritise remote employee well-being and managers should give support in various ways to maintain work-related well-being. Author Lomas (2019) describes well-being as 'a state of successful performance across work-related contexts integrating physical, cognitive and social-emotional function'. Author Lomas (2019) states that scholars are beginning to appreciate the wide range of work-related 'drivers' of well-being better, those 'drivers' being the ways in which work may promote or hinder employees' well-being. His work (Lomas, 2019) provided a multidimensional overview of these drivers, psychological drivers (deploying strengths, managing emotions, aligning purpose, and personal and professional development), physical drivers (health and safety, workload and scheduling, and job content and control) and socio-cultural drivers (relationships, leadership, values, and reward and recognition).

Managers are in a key position to create a mentally healthy workplace for the staff they supervise (Gayed et al., 2019), thus supporting employees' well-being in the workplace. In attention to workplace support of employee mental health authors Dimoff, & Kelloway (2019) emphasise that most managers hesitate to provide support to employees struggling with mental health problems because they are among the most costly and common health issues affecting employees across industries and occupations throughout the developed world. In the literature, it is also highlighted that top managers defined as CEOs, CFOs and members of boards of directors decide to what degree their organisation offers and supports employees' work-life arrangements (Been et al., 2017). Thus top managers are likely to support work-life arrangements when there are few financial consequences for the organisation and when the arrangements are likely to contribute to employee commitment (Dimoff, & Kelloway, 2019; Been et al., 2017). In other words, top management has an influence on managers' support for employees' work-related well-being.

The technological resources are needed to support the team members at home (Newman, & Ford, 2021). Authors Saura, Ribeiro-Soriano, & Zegarra Saldaña (2022) examined various aspects of remote work well-being and found out that remote workers' adoption of new technologies is an opportunity to achieve a more efficient work routine, use of new digital platforms allows employees to move outside the city; therefore, adoption of new technologies can be considered as an opportunity promoting the well-being and health of employees. However, authors Luqman et al. (2021) suggest that the all-over use of technologies at work produces negative consequences for employees' well-being, creativity, and general productivity. Management should take caution introducing and implementing new technologies in the remote work environment, like authors Zahoor et al. (2022) suggest, it could be harmful to employees psychological state in the long run. The availability of employee support initiatives and organisational work-life balance strategies can help with the negative effect of technology use on psychological well-being (Zahoor et al., 2022).

Other authors like Büchler, Hoeven, & Zoonen (2020) state that constant connectivity is negatively related to employees' well-being due to the inability to disengage from work, also constant connectivity reduces psychological detachment, while psychological detachment is positively related to well-being. Thus, constant connectivity can be used to promote a recovery climate in which employees are able to disconnect from work after hours, thus helping to stimulate employee well-being (Büchler, Hoeven, & Zoonen, 2020; Luqman et al., 2021). However, managers should not emphasise the over-use of technology without taking into consideration that it is likely to compromise employee well-being by increasing their exhaustion (Luqman et al., 2021; Saura, Ribeiro-Soriano, & Zegarra Saldaña, 2022). Despite challenges in this constant connectivity, the remote work environment in the aspect of well-being helped to emerge different approaches to improve the health of remote workers, from online daily live workouts, questions and answers, weekly live well-being chats with health professionals and so on (Jeske, 2022). This can suggest that despite the negative aspect of the remote work environment's constant connectivity, the environment can enable to emerge the accessibility of health promotion initiatives to remote workers.

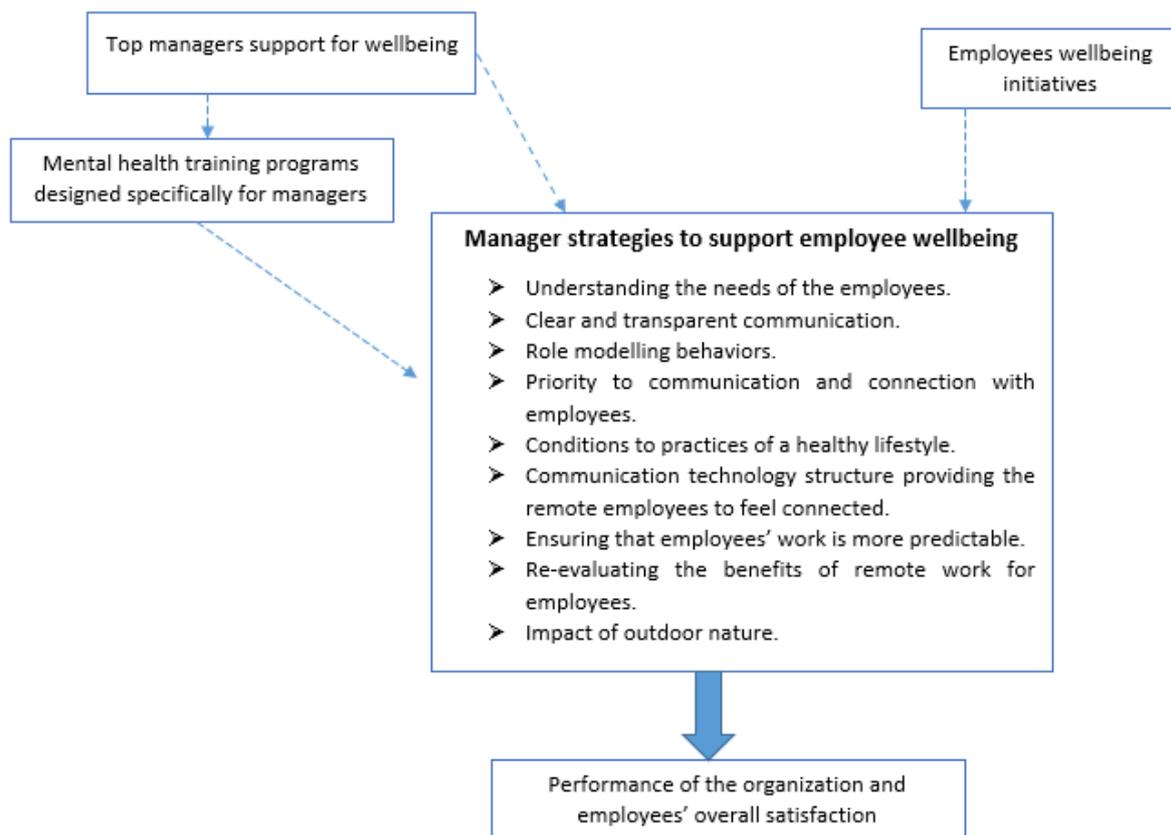
Some researchers like Sinclair et al. (2021) have highlighted the support of leadership to remote employees. Firstly, leaders must understand the needs of the worker and provide clear and transparent communication, secondly communication technology structure should provide the remote workforce to feel connected and, thirdly, leaders' communication and connection with employees must be a priority in order to inspire and foster growth and commitment (Sinclair et al., 2021). Authors Newman, & Ford (2021) have also expressed similar thoughts in stating that responsiveness is very important, providing necessary information to a team member, a leader's timely response also sends a strong message of respect to a distant employee, showing that the leader is paying attention and doing whatever is possible to support that member and the team. Authors Lanctot, & Duxbury (2021) also state this by emphasising that ensuring that employees' work is more predictable by simply keeping employees more in the loop on the goings on of the organisation, for example, could help reduce the number of unexpected important and urgent emails as it gives employees the opportunity to work proactively rather than reactively, also providing clarity at the workgroup level with respect to expectations regarding email use (e.g., response time, who should be copied, after hours use of email). Views about managers' behaviours also have been expressed by author Jeske (2022), suggesting that the role of managers in supporting relationship building during meetings and other interactions to increase bonding between people can play an important role in setting up opportunities that allow employees to exchange experiences, learn from one another and promote well-being by fostering a sense of belonging and team cohesion. Another opinion related to employees' well-being support strategy in remote work was acknowledged by Saura, Ribeiro-Soriano, & Zegarra Saldaña (2022), stating that managers should re-evaluate the benefits of remote work for employees in the medium and long term, in addition, new forms of work-life balance must be found to identify stress as a priority and to ensure that remote employees' comfort and effectiveness are not affected. Researchers Sadick, & Kamardeen (2020) states that impact of outdoor nature on well-being strongly supports physical access to maximise well-being benefits for office workers, thus possibly also for remote worker.

One additional view by authors Dimoff, & Kelloway (2019) suggests investing in mental health training programs designed specifically for supervisors, managers, and senior leaders in order to create a safe and mentally healthy workplace environment, this would help managers to recognise the warning signs of struggling employees, and to provide employees with appropriate support and access to organisational resources. Another opinion states that organisations must create the conditions for employees to practice a healthy lifestyle by doing so, as Wieneke et al. (2019) highlighted, employee well-being initiatives have the potential not only to improve personal health behaviours but to impact teamwork, trust, and respect within a work team. Authors Wieneke et al. (2019) were trying to evaluate the potential impact of a workplace well-being champion (self-identified employees who value health and wellness), as the results it is stated, that employees who value health and wellness is beneficial to organisation and could be replicated with appropriate investment in other organisations.

Literature analysis discloses that remote work well-being consists of psychological aspects, physical aspects, and sociocultural aspects. Those aspects can be promoted through the adoption of new technologies, although managers should take into consideration that too many technologies usage can compromise employee well-being by increasing their exhaustion and leading to constant connectivity. Strategies in the scientific literature regarding managers' support to remote employee well-being are described in ensuring organisational culture to support the remote workforce. The support is implemented in the practice of a healthy lifestyle, employee well-being initiatives, mental health training programs designed specifically for supervisors, managers, and senior leaders, top managers' support for well-being, managers understanding the needs of the employees, demonstrating role modelling behaviours, providing clear and transparent communication, technology structure for communication should provide the remote employees to feel connected, ensuring that work is more predictable, re-evaluating the benefits of remote work for employees, positioning impact of outdoor nature.

2. Conceptual model of managers' strategies to support employees' well-being in the remote work environment

Based on the insights of the literature analysis presented in the paper, the conceptual model of managers' strategies to support employees' well-being in remote work environments is presented (Fig. 1).



Source: created by the author.

Fig. 1. Managers' strategies to support employees' well-being in the remote work environment

It is important to mention that external factors can implement managers' strategies to support employees' well-being in remote work environments. Firstly, top management can implement the managers' role in maintaining work-related well-being a) if they have financial consequences for the company (Dimoff, & Kelloway, 2019; Been et al., 2017), the top management make a decision on which strategies could be carried out; b) top management can support managers by providing

opportunities to mental health training programs, in accordance creating a safe and mentally healthy workplace environment (Dimoff, & Kelloway, 2019). Secondly, employees also could implement manager strategies by suggesting various well-being initiatives (Wieneke et al., 2019), thus helping carry out employees initiatives suitable for specific team or group, in a way helping the manager.

The result of the literature analysis provides a clearer understanding of well-being in remote working environments as well as managers' supportive strategies. The conceptual model (Fig. 1) represents managers' strategies to support employees' well-being such as:

- *understand the needs of the employee;*
- *provide clear and transparent communication*, as Sinclair et al. (2021) states providing clarity at the workgroup level with respect to expectations regarding email use (e.g., response time, who should be copied, after-hours use of email);
- *role modelling behaviours, such as expressing gratitude, sharing experiences and disclosing struggle*, as suggested by Jeske (2022), can help remote workers build stronger relationships and enable them to exchange strategies on how to cope with certain challenges;
- several authors like Sinclair et al. (2021), Newman, & Ford (2021) share the view that *communication and connection with employees* must be a priority in order to inspire and foster growth and commitment a leader's timely response also sends a strong message to a distant employee of respect, showing that the leader is paying attention and doing whatever is possible to support that member and the team;
- *conditions for employees to practice a healthy lifestyle*: from online daily live workouts, answers question sessions, weekly live well-being chats with health professionals (Jeske, 2022);
- *communication technology structure should provide the remote workforce to feel connected;*
- *ensuring that employees' work is more predictable*, as Lanctot, & Duxbury (2021) suggest by simply keeping employees more in the loop on the goings on of the organisation, for example, could help reduce the number of unexpected important and urgent emails as it gives employees the opportunity to work proactively rather than reactively;
- *re-evaluate the benefits of remote work for employees in the medium and long term*, in addition, new forms of work-life balance must be found to identify stress as a priority and to ensure that remote employees' comfort and effectiveness are not affected (Saura, Ribeiro-Soriano, & Zegarra Saldaña, 2022);
- *impact of outdoor nature* on well-being as Sadick, & Kamardeen (2020) state, strongly supports physical access to maximise well-being benefits for employees.

To sum up, managers play a critical role in maintaining employee well-being, the remote work environment is no exception. However, managers are not fully aware of the positive but also the negative impact they had on their teams in remote work environment (Jeske, 2022). By supporting employee well-being managers have the potential to improve workers' well-being, but also to impact teamwork, trust, and other aspect of the team they manage. Managers' strategies can be beneficial not only to the team but as well to an organisation, as improving the performance of the organisation and overall employees satisfaction. Although a remote work environment can oppose additional challenges for its distinguished connectivity, the knowledge of how to maintain remote employees' well-being is critical, since more hybrid work forms are adopted widely in the world, thus understanding traditional and remote work spaces' attributes, and ensuring that organisation has a culture to support workforce well-being is critical to the success of all workplace.

Conclusions

1. The analysis of the scientific literature led to a clearer understanding of remote workplace well-being and how remote working space can support or, on the contrary not support the space for employee well-being. The analysis showed in literature existing and suggested strategies for managers on how to maintain remote employees' well-being, as also how other factors can have an impact on the manager's role to carry out those strategies. The analysis

helped to conceptualise managers' strategies to support employees' well-being in remote work environment.

2. Literature analysis results allowed to formulate a conceptual model of managers' strategies to support employees' well-being in remote work environment. The model shows not only managers' strategies but also includes external factors which implement well-being maintenance in remote work environments, like top management and employees. The model is useful for managers that seek knowledge of how properly support remote employees' well-being.

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The Importance of Information in Shaping Sustainable Human Behaviour

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Abstract. As the climate crisis has become a growing issue in recent decades, sustainable development has become a focus of attention for the international community. In 2015, the United Nations launched the Sustainable Development Goals (SDGs), which call on countries to grow their economies and meet their social needs with the least possible damage to the environment. The aim is to preserve natural resources for future generations. As a result, various policies have been introduced and integrated in different countries to address the problematic aspects of sustainable development. One of the most important catalysts for sustainable development is the promotion of sustainable consumer behaviour. Sustainability requires a fundamental change in individual behaviour. Achieving Sustainable Development Goals will help ensure that future generations can meet their needs. Research to date shows that individuals still do not behave sustainably. Understanding what factors influence sustainable individual behaviour and how to persuade people to behave sustainably is therefore of growing scientific interest. The external and internal factors influencing an individual's behaviour are based on information sources. The aim is to explain how, in what way, and at what level, initial information data is perceived and used by the individual. As a result, a study was carried out to investigate the impact of information in shaping sustainable individual behaviour in Lithuania.

Keywords: *sustainability, human behaviour, information, information management, sustainable human behaviour.*

Introduction

Relevance of the article

The individual has always been and still is, surrounded by materialistic temptations and desires. The desire for personal security, power, status, and, above all, physical comfort has persisted throughout human civilisation. As a result, we already have the following negative outcomes: carbon emissions from fossil fuels have reached record highs, the global average sea level has risen by 20 cm between 1900 and 2018, and heat waves, forest fires, and air pollution have increased (Guinot et al., 2022). Concentrations of the main greenhouse gases have continued to rise over the past few years, and global average surface temperatures between 2017 and 2021 are among the warmest ever recorded (United Nations, 2022; Guinot et al., 2022). The frequency and intensity of extreme weather and climate events have increased in all regions of the world (United Nations, 2022; Galarraga et al., 2011), driven by us humans, our daily activities, and our overwhelming desire to satisfy our personal desires.

Due to environmental problems and the increasing scarcity of resources, sustainable individual behaviour is becoming increasingly important in society. Individuals directly contribute to or exacerbate environmental problems through the use of 'polluting' services, and consumption of various goods that subsequently pollute the environment (Schrader et al., 2011). An individual's choice to consume one or another group of goods triggers corresponding responsibilities toward their family, community, and the environment (Gebauer et al., 2008). Individuals are increasingly starting to integrate sustainable, environmentally friendly choices into their daily lives. Nowadays, it has become routine for some individuals to separate waste (Concari et al., 2020), save electricity (Abrahamse & Steg, 2009), conserve water resources, and choose a product or a service with an ecolabel (Grankvist & Biel, 2001). In addition to individuals with sustainable behaviour, other groups of individuals have emerged with different mindsets and approaches to sustainability. Other individuals are simply apathetic towards any sustainable behaviour, they deny the ideology of sustainability and do not plan to change their habits. These observed differences in individual behaviour and the way society is divided naturally raise the question of what has been or is still being missed in the communication of sustainability and its importance to the public.

Level of problem investigation

Changing people's behaviour is rarely a simple or easy process. Information campaigns are commonly used to promote sustainable behavioural change, often with the aim of changing attitudes

or providing or increasing knowledge about environmental/ecological issues, thus promoting behavioural change (Štreimikienė & Mikalauskiene 2021; Dilienė J. et al., 2021). Unfortunately, such a superficial approach to behavioural influences is often an ineffective way to change an individual's behaviour (Pee & Pan, 2022).

Rarely is there an attempt to obtain feedback from the consumer as to whether the information obtained has been influential in changing the individual's behaviour in the long or short term (Chawla 1999; Chawla, 2010; Linder et al., 2018).

Scientific problem

Scholars in environmental psychology (Manning, 2009; Kollmuss & Agyeman, 2010) and behavioural economics (Lehmann, 1999; Huffman et al., 2003) have long pointed out that insights from behavioural science are not generally used to design information campaigns and dissemination strategies aimed at promoting environmentally friendly behaviour (Linder et al., 2018;). It is worth highlighting that there is currently not a great deal of scientific work on how information influences individual behaviour over time (Hines et al., 2010; Clayton et al., 2016). Although theoretical frameworks have been developed to explain how the environmental knowledge gap influences an individual's environmental awareness and, consequently, environmentally friendly behaviour (Mikalauskiene, 2014; Pinheiro & Farias, 2015; Otto & Pensini, 2017; Liobikienė & Poškus, 2019), definitive answers to the questions of how the possession of information impacts on environmentally friendly consumer behaviour, in the long run, are often not provided.

Object of the article – the importance of information in shaping sustainable individual behaviour.

Aim of the article – To present the findings of research by scholars studying sustainable behaviour and to introduce them to the public, together with the results of an empirical study carried out in Lithuania.

Objectives of the article:

1. Theorise the identity of an individual's sustainable consumption behaviour.
2. To investigate which information sources impact the Lithuanian population and find out what would most influence people to behave sustainably.

Methods of the article

The insights and views of Lithuanian and foreign authors are analysed. The research methods used for the theoretical analysis were comparative and descriptive analysis of scientific literature; comparative and descriptive analysis of information sources; synthesis of the analysed data, and the method of generalisation. The quantitative method of data collection used in the study was a questionnaire survey. Quantitative analysis of survey data. Synthesis method.

1. Sustainable behaviour of individuals and factors promoting it.

At the landmark Sustainable Development Summit in 2015, the United Nations Member States adopted the Sustainable Development Goals (SDGs) to move towards sustainability (United Nations, 2016). SDG 12 deals with responsible consumption and production, aiming to change an individual's behaviour's current pattern and structure to a more sustainable one. The 12th MDG emphasises the need to provide relevant information and raise awareness among individuals about sustainability and lifestyles that are compatible with the environment (United Nations, 2016).

Sustainable behaviour is complex and challenging to grasp, encompassing many different aspects (Elhoushy, & Lanzini, 2020). Scholars understand sustainable individual behaviour differently, and it is composed of many elements and interpretations. Some features include buying 'sustainable' products, recycling, using energy-efficient appliances, making ethical investments (from an environmental point of view), switching to organic food, changing vehicles, buying recycled goods, and adopting minimalist consumption behaviour (Kernpton et al., 2008). A large body of research links sustainable consumer behaviour to the environmental impact of such behaviour. It is argued that everyday consumption choices indirectly or directly affect the environment. Ecological aspects are high on the political agenda in the policy field, particularly in policymaking related to sustainable consumption (Jackson et al., 2005). This link between individual behaviour and the environment is often referred to as environmentally appropriate

individual behaviour. This relationship is defined as the extent to which human behaviour influences the availability of materials or energy from the environment or changes the structure and dynamics of ecosystems or the biosphere (Stern, 1999). Stern (1999) refers to behaviours that directly or indirectly cause environmental change, such as the disposal of household waste or deforestation. In research, there is still no consensus or definition to describe sustainable individual behaviour (Geiger et al., 2018; Quoquab et al., 2019).

Many researchers refer to the meaning of 'sustainable behaviour' presented at the Oslo Symposium as 'the use of goods and services that meet the basic needs of the individual and provide a better quality of life while minimising the use of natural resources, the emission of toxic materials and waste and pollutants, and the life cycle of such materials, so as not to compromise the needs of future generations (Organisation for Economic Co-operation and Development, 1999). This definition constrains sustainable consumer behaviour from an environmental perspective (Geiger et al., 2018; Quoquab et al., 2019). This implies an emphasis on improving the quality of life while reducing the use of natural resources.

In some research, the definition proposed by the Oslo Symposium has been criticised because it originated in the political sphere and did not call for societal changes (Baker, 2007). Therefore, these scholars, drawing on Brundtland (World Commission on Environment and & Development, 1987), conceptualise sustainable individual behaviour as an integrative perspective that encompasses two dimensions - socio-ecological and ecological (Geiger et al., 2018). This definition refers to the scarcity of resources, which threatens the environment and human well-being (Leach et al., 2013). Sustainable development requires interaction between three systems: social, economic, and environmental, and a good balance between them. These three systems influence in parallel the definition of sustainable individual behaviour. Sustainable individual behaviour is defined in this paper as actions determined by internal and external factors that meet the needs of the individual with the least possible damage to the environment and future generations.

Researchers studying the motives behind individuals' sustainable behaviour have approached it from different perspectives (Piligrimiene et al., 2020). Most research can be roughly categorised into behavioural economics, social and environmental psychology contexts (Liu et al., 2017), or external and internal approaches.

Environmental psychology focuses on identifying an individual's intrinsic motives for sustainable consumption behaviour. Some believe sustainable consumption behaviour determined by internal factors is more sustainable than external factors (Liu et al., 2017). Meanwhile, social context-based sustainable consumer behaviour assesses the importance of the structural context of society. A wide variety of social context-based factors have been studied (Milfont & Markowitz, 2016), such as politics (Mikalauskiene, 2014; Dilienė J. et al., 2021; Štreimikienė, & Mikalauskiene, 2021) and the social environment surrounding an individual (Piligrimiene et al., 2020). Researchers argue that sustainable individual behaviour's psychological (internal) drivers are fundamental. Even small changes in personal/societal behaviour can have a significant cumulative positive impact on avoiding potentially catastrophic global environmental change (Quoquab et al., 2019). Cultural and social contextual factors cannot be ignored, as individual behaviour cannot 'escape the structural circumstances surrounding it' (Liu et al., 2017).

The psychological (internal) influences on the individual that determine the link between ideological identity and beliefs about climate change are identity-protective cognitions (Kahan et al. 2007), i.e., people adapt their beliefs and worldviews to their personal and social identities (Welsch, 2022). Methods used to construct identity-protective knowledge include varying individuals' attention (through selective exposure or avoidance) and processing of information (through reasoning) (Garrett et al. 2011) in a way that is consistent with their values and worldview. For identity-protective cognition, partitioning by ideological stance can translate into partitioning by beliefs about climate change.

Gifford (2011) argues that people who are unaware of or sceptical about climate change's existence, origins, and impacts are unlikely to promote sustainability or take action to support climate policies. Conversely, those who are aware of the current problem, but lack knowledge about

the causes and extent of climate change, may not know what actions (individual and collective) can be taken and how different effective measures are. Therefore, sound science-based knowledge about climate change and mitigation options is an essential prerequisite for effective climate policy. An obvious source of more accurate knowledge on climate change is the education of individuals in various educational institutions. Indeed, educational attainment has long been identified as a consistent predictor of environmental perceptions and concerns (Welsch, 2022). Hornsey et al. (2016) report that a meta-analysis of nearly 200 academic surveys and studies revealed that an individual's education is one of the strongest correlates of belief in climate change. A study by Hornsey et al. (2016) found that prevailing political ideology and individual affiliation is a stronger predictor of belief in climate change than any other demographic variable.

Researchers argue that an individual has a strong incentive to behave sustainably when receiving information from governing institutions and scientific discourses. While this is undoubtedly an essential source of knowledge, it becomes problematic when used as a master narrative to hegemonise local and lived understandings that underpin social and ecological relations (Gobbo, 2022). Information provision alone, without structural (material, cultural, semiotic) behavioural changes, is not enough for individuals to practice what they learn as 'good' or 'right' behaviour about natural resource conservation (Shove 2010).

The external and internal determinants of an individual's behaviour are based on information sources and how, in what way, and at what level the initial information data are perceived and used by the individual. Consequently, researchers have questions about the assimilation of knowledge and its role in shaping sustainable individual behaviour (Elhoushy & Lanzini, 2020). Suppose we assume that an individual acts based on rational, ethical expertise about a given situation; then, it is crucial to provide information about environmental problems and possible solutions to them to develop awareness and the ability to make choices. According to this approach, knowledge about unsustainable practices changes attitudes and, as a result, behaviour (Stern 2000).

2. Present study

Aim of the research – to find out which information sources are most influential in influencing or encouraging individuals to make sustainable choices.

Objectives of the research:

1. Investigate which sources of information are most influential in an individual's choice of sustainable behaviour in Lithuania.
2. Identify the need for information related to promoting sustainable behaviour.

Research methods

An empirical study was carried out in 2022. The questionnaire was based on a theoretical analysis of the scientific literature. The questionnaire had two parts: the first part contained closed-ended questions to identify the socio-demographics of the respondents. The second block of questions consisted of statements to which the respondents were asked to apply a Likert scale assessment: "strongly agree, agree, no opinion, strongly disagree, disagree". The questionnaire was distributed via social networks (Facebook, LinkedIn).

The research data analysis and the discussion of the results

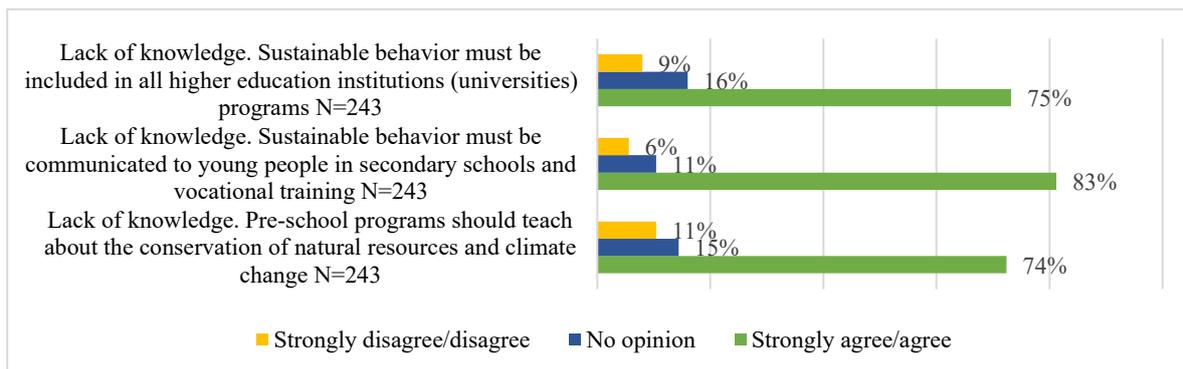
243 respondents took part in the survey. The age distribution of the respondents showed that the first and largest age group is between 49 and 58 years old – 36.2%. The second largest age group of respondents is 39 to 48 years old, 21.8%. The third largest age group was 31 to 38 – 14.8%. The fourth largest age group was 59 to 65 years old, with 14.0%. The age groups: under 25 years – 4.9% and 26-30 years – 4.9% had the same number of respondents. The lowest number of respondents was in the age groups 66 to 75 years and older, 3.3%.

The distribution of respondents by education shows that most respondents have a university degree – 67.1%. 23.5% had a non-university higher education, 4.9% had a vocational education, 4.1% had completed secondary education, and 0.4% had incomplete secondary education. This data

shows that most respondents have developed values, are educated, and have a clear view of current global issues.

The next set of statements was designed to determine what information sources influence respondents to purchase sustainable goods and services. Respondents identified three primary dominant information sources. Firstly, they rely on science-based knowledge 80% (N=243), secondly on the opinion of family members and relatives 75% (N=243), and thirdly, respondents indicated that they are influenced by information on social media 68% (N=243). These results suggest that most respondents are educated and that the Covid-19 pandemic has affected how humanity “approaches science-based information in its daily activities”. During the pandemic, respondents became accustomed to scientific information on one topic or another and the conclusions and advice provided by scientists. Respondents appreciated the importance of the work done by scientists. Respondents are ‘turning to science’ and trusting the research done by scientists. Public speaking by scientists influences individual behaviour. The results also highlight the importance of the immediate environment and social media as sources of information.

The last group of statements was designed to determine what information gaps respondents identified in promoting sustainable behaviour (Fig. 1). Respondents perceive a lack of knowledge and indicate that this situation needs to be changed in educational institutions, including secondary schools, vocational training 83% (N=243), university programs 75% (N=243), and preschool programs 74% (N=243). The views expressed by respondents suggest and confirm the previous insight that people want accurate and precise information as early as possible – in all educational and personal skills development settings. Environmental awareness must start from a young age and be promoted throughout an individual’s life.



Source: created by the authors.

Fig. 1. Information gaps respondents identified in promoting sustainable behaviour

Noteworthy is the choice of respondents to classify places of worship as an institution that educates and enlightens people about the current environmental situation 52% (N=243). These results show that some people would trust and be influenced to behave sustainably if the topic of sustainability were developed in religious communities and sustainability and its principles were discussed in places of worship. Places of worship have the potential to reach and influence groups of individuals of all ages and social classes. Places of worship do not offer a service or a product to the individual. It is therefore assumed that the individual would not accept the information received as ‘green brainwashing’ and that this information flow would not lead to a rejection reaction.

Conclusions

1. During the Covid-19 pandemic, people got used to receiving and accepting information validated by scientists. The information received periodically from a scientific source influenced the individual’s choices. This post-pandemic period is an excellent opportunity for scientists to become even more vocal about sustainability and its issues. Doing so in a coherent, clear way, communicating the problem, and sharing research results in a way that is engaging to the public and in all the information sources and formats that are available and most frequently chosen by

respondents will increase the chances that individuals will learn about the need for sustainable behaviour and the choices they can make about this way of living.

2. The promotion of sustainable behavioural change requires practical, explicit communication of information knowledge initiated by the highest authorities and governments through the use of scientists, complementing educational institutions, teacher and vocational training policies, and curricula with environmental and sustainable behavioural science (including seminars (etc.) to include places of faith in the information sources/objects that can be used for the dissemination of sustainable behaviours).
3. Most scientific sources are in a foreign language. Integrating intelligent technologies such as online translators into people's daily lives would make scientific knowledge available.

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The Impact of Corporate Image on Consumer Engagement in Sustainable Consumption

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Abstract. In order to raise public awareness of sustainability, companies need to take an important step towards sustainable consumption. A positive corporate image can help consumers to change their consumption habits and promote sustainable consumption. Corporate social responsibility becomes important in the context of corporate image, showing how companies themselves contribute to solving social, economic and environmental problems. Corporate image – what consumers think of a company – can influence consumer engagement in sustainable consumption. The objective is to determine the impact of corporate image on consumer engagement in sustainable consumption. The results showed that a positive corporate image can lead to consumer satisfaction and long-term customer retention, i.e. loyalty, indicating a positive consumer engagement with sustainable consumption. Consumer engagement in sustainable consumption is not only determined by a positive corporate image together with CSR, but also by the external and internal environment of consumers.

Keywords: *corporate image, sustainable consumption, customer engagement, social corporate responsibility.*

Introduction

Relevance of the article

Changing consumer lifestyles, attitudes and increasing demands are having a negative impact on the environment around us. Rampant consumption leads to severe environmental pollution, which contributes to the transformation of the effects of climate change and to a deteriorating quality of life. In order to promote public awareness and the principle of sustainability in all areas of life, companies must take an important step towards sustainable consumption. Corporate image, including the development of corporate social responsibility, can be one of the key elements influencing consumer engagement in sustainable consumption.

Level of problem investigation

The concept of corporate image has been studied by Lee (2019), Özkan, Süer, Keser, & Kocakoç (2020), Yu, Han, Ding, & He (2021), Triatmano, Respati, & Wahyuni (2021). The components of corporate image and what shapes corporate image are detailed by Rubtcova & Pavenkov (2019). The links between corporate image and corporate social responsibility and sustainability aspects have been explored by Wang (2020), Chen, Khan, Hongsuchon, & Ruangkanjanases (2021), Wong, & Kim (2020). Corporate social responsibility has been addressed and presented by Nor, & Udin, (2021), Gürlek, Düzgün, & Uygur (2017). Quoquab, & Mohammad (2020); Huy (2021); Pilgrimienė et al. (2020) highlighted the key factors that determine consumer engagement in sustainable consumption.

The literature review lacks a specific author's perspective on the links between corporate image and sustainable consumption. In order to assess the impact of corporate image on consumer engagement in sustainable consumption, what aspects of corporate image are determinants of consumers' sustainable consumption, and how corporate image can encourage consumers to engage in sustainable consumption, it is important to further explore this area of concern.

Scientific problem is how does corporate image affect consumer engagement in sustainable consumption?

Object of the article the impact of corporate image on consumer engagement in sustainable consumption.

Aim of the article is to identify the impact of corporate image on consumer engagement in sustainable consumption.

Objectives of the article:

1. To summarise the concept and meaning of corporate image.
2. To identify the determinants of consumer engagement in sustainable consumption.

- To establish the empirical level of empirical investigation of the impact of corporate image on consumer engagement in sustainable consumption.

Methods of the article

A comparative analysis of the scientific literature is used to analyse the concepts of corporate image, consumer engagement and sustainable consumption as defined by different authors, as well as their views on the links between corporate image and consumer engagement in sustainable consumption. A synthesis approach is used to combine the components identified by several authors as constituting the structure of corporate image and the factors influencing consumer engagement in sustainable consumption.

1. Theoretical aspects of the influence of corporate image on consumers' engagement in sustainable consumption

1.1. The concept and meaning of corporate image

Corporate image is an important objective of the activities carried out in order to retain and attract consumers and to create a favourable public perception. Corporate image building is an important and necessary step in the development of a company on the market, internationally or nationally. According to Geidraitis, & Viningienė (2017), corporate image is an important step in order to compete in any market, and that the right corporate image can be the reason for a successful business.

Many variations of the concept of corporate image can be found in the literature, but many authors describe the concept in similar terms (Table 1).

Table 1

Concept of corporate image

Author	Definition
Hornig, Liu, Chou, Tsai, & Hu, (2018)	It is a concept that defines customers' overall perception of a company, based on their knowledge and the characteristics of the company that they have become familiar with and evaluated.
Lee (2019)	It is a concept that reflects the general public's evaluation of the company.
Özkan, Süer, Keser, & Kocakoç (2020)	It is a portrait of the company created in the subconscious of consumers.
Yu, Han, Ding, & He (2021)	It is a term describing consumers' perceptions, emotions, attitudes, beliefs, evaluations, impressions through direct or indirect experience.
Triatmano, Respati, & Wahyuni (2021)	It is the sum of perceptions, beliefs and impressions of external parties to the organisation.

Source: created by the authors.

The definitions in *Table 1* show that at the centre of the concept of corporate image is the consumer, who determines the perception of a company's image based on his/her personal experience, recommendations and perceptions. This means that corporate image is evaluated by the consumer, whose actions and communication with other consumers can be an important aspect in defining corporate image.

Rubtcova, & Pavenkov (2019) have identified eight similar components that encompass the ideas of the above-mentioned authors and combine to categorise corporate image: product/service image (name, design elements, packaging, etc.); consumer image – this image defines the consumer who chooses a particular service or product; internal image of the organisation – this image reflects the attitudes of the individuals working in the company, working environment; the image of the founder and/or key managers of the organisation; the image of the staff, the visual image of the organisation – includes the aesthetic highlights of the company; social image of the organisation – includes participation in social and community projects, cooperation with other institutions; the image of the organisation as a business – includes building corporate reputation, adhering to ethical standards, ensuring fairness.

According to Chen, Khan, Hongsuchon, & Ruangkanjanases (2021), CSR can describe how a company manages its activities while taking responsibility for its social and environmental impacts. Many authors use Carroll's (2016) pyramid to define the key areas of CSR. The economic

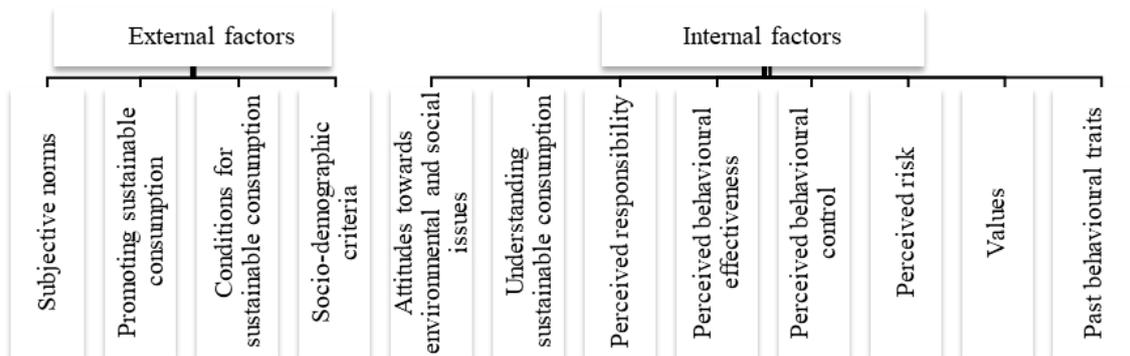
dimension refers to the ability of an enterprise to ensure the supply of goods or services to consumers, while at the same time being able to sustain economic growth. The legal domain defines the implementation of legal regulations in the business. Ethical responsibility refers to social norms and ethics, while the philanthropic domain is defined as the “voluntary” domain, which is manifested through the provision of assistance in the fields of education, health, art, and culture (Nor, & Udin, 2021; Gürlek, Düzgün, & Uygur, 2017).

Summarising the concept of corporate image, it can be said that the concept of corporate image can be defined as a consumer’s attitude and opinion of a company. Corporate social responsibility can be one of the factors contributing to a positive corporate image.

1.2. Determinants of consumer engagement in sustainable consumption

According to Simanavičiūtė, & Paužuolienė (2021), sustainable consumption can be understood as a multifaceted concept that defines the benefits it provides to people and the environment. A broader definition of sustainable consumption is provided by Quoquab, Mohammad, & Sukari (2019), who define the term as the ongoing act of managing desire by avoiding extravagant purchases and rationalising the use of goods and services that meet basic needs, or, in other words, the reduction of mindless consumption.

According to Quoquab, & Mohammad (2020), Huy (2021), Piligrimienė, Žukauskaitė, Korzilius, Banytė, & Dovalienė (2020), it is possible to summarise the most important factors influencing the engagement of consumers in sustainable consumption (Fig 1).



Source: created by the authors in accordance with Huy, L.T. (2021). *Analysis of Sustainable Consumption Determinants, Business Management*, 1–124; Quoquab, F., & Mohammad, J. (2020). *A Review of Sustainable Consumption (2000 to 2020): What We Know and What We Need to Know*, 305–334; Piligrimienė, Ž., Žukauskaitė, A., Korzilius, H., Banytė, J., & Dovalienė, A. (2020). *Internal and External Determinants of Consumer Engagement in Sustainable Consumption*, 1–20.

Fig. 1. Determinants of Consumer Engagement in Sustainable Consumption

When looking at internal factors, the focus is on consumer attitudes towards sustainability issues. Attitudes towards environmental issues show that consumers tend to make sustainable choices when the environment is involved (Joshi, & Rahman, 2019). Perceived consumer behavioural effectiveness is defined as consumers’ belief that their green purchasing behaviour affects the environment in various ways. They will only choose a more sustainable product or service if they believe that this behaviour will benefit the environment, nature, and quality of life (Huy, 2021). Among the externalities, the literature focuses on the influence of other social groups. Lazaric, Guel, Belin, Oltra, Lavaud, & Douai (2020) looked at factors such as gender, education, age and income, while Quoquab, & Mohammad (2020) suggested that place of residence, the size of the residence, may also have an impact.

The concept of sustainability can be broadly defined as consumers’ choice to buy sustainable products and services. Consumer engagement in sustainable consumption can be influenced by internal (directed at the consumer, their perception of responsibility) and external (including the influence of other social groups, societal incentives or social demographic criteria).

2. Empirical level of research on the influence of corporate image on consumers' engagement in sustainable consumption

Many authors have looked at various sustainable consumption phenomena, which can be influenced by companies themselves, but the focus has been on the purchasing behaviour of environmentally friendly products. *Table 2* shows and represents the findings of the studies conducted by various authors on corporate image influence on customer engagement in sustainable consumption.

Table 2

Research supporting the impact of corporate image on consumer engagement in sustainable consumption

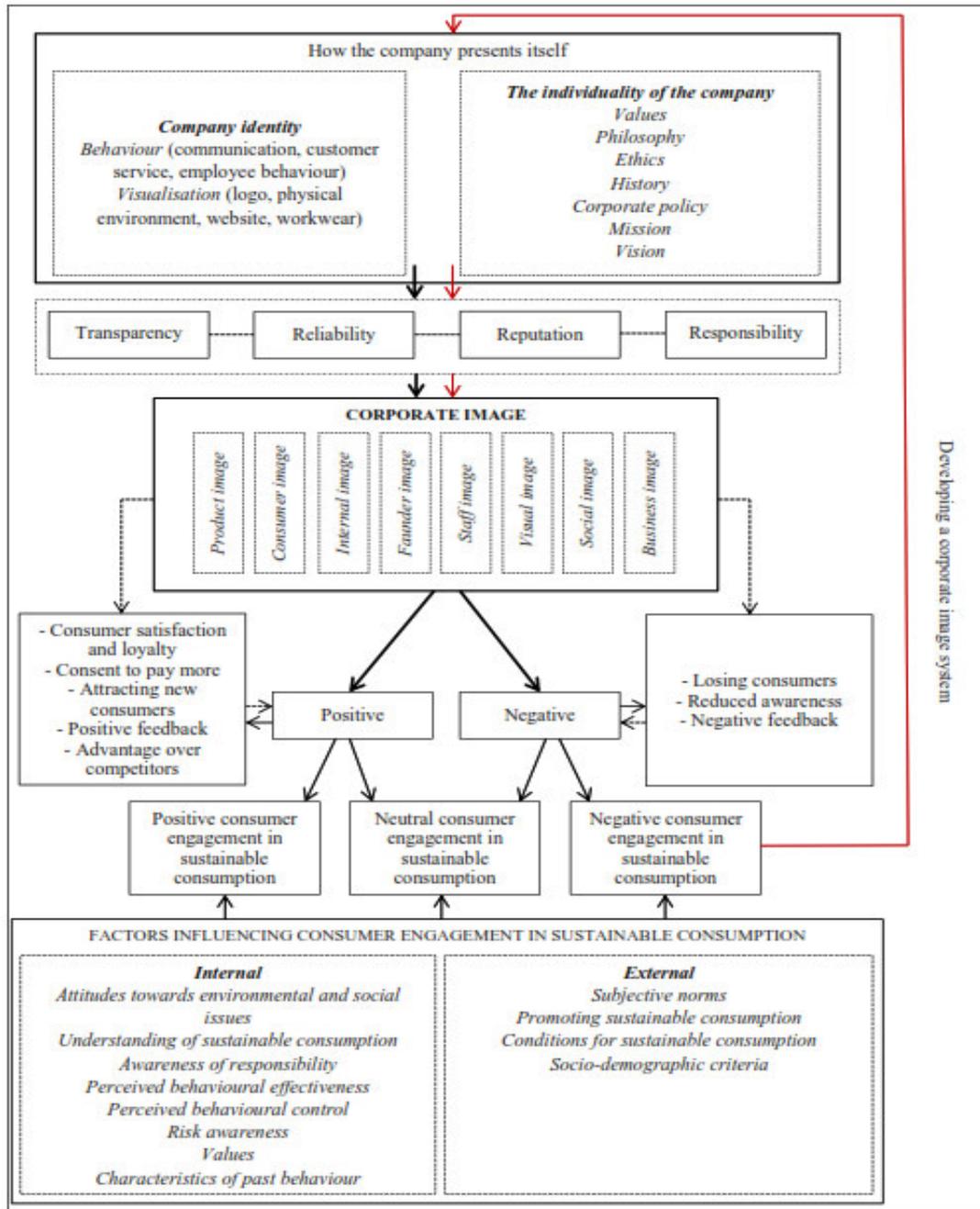
Authors	Objective	Results
Zhang, & Cui (2018)	To investigate whether Chinese consumers' perceptions of fashion companies' CSR initiatives have an impact on the image of the company and their behavioural intentions.	CSR initiatives have an impact on the image of the company, but no direct impact of CSR on consumers' purchase intentions has been identified.
Lee, & Lee (2018)	To investigate the impact of CSR of a multi-brand fashion company on purchase intentions.	CSR at the company level had a positive and direct impact on purchase intentions. It also had a positive effect on corporate image, which had a positive effect on product image.
Blazquez, Henninger, Alexander, & Franquesa (2020)	To analyse consumer knowledge, attitudes and behaviour towards sustainable fashion in the Spanish fashion industry.	Spanish consumers associate sustainable fashion with ethical and environmentally friendly fashion. Attitudes, subjective norms, perceived behavioural control influence behavioural intentions towards sustainable fashion.
Yu, Han, Ding, & He (2021)	Examine how the CSR attitude of fashion companies influences their reputation, image and consumers' choice to buy sustainable products.	Corporate image and CSR have a positive impact on consumer confidence and intention to buy green products.
Vătămanescu, Dabija, Gazzola, Cegarra-Navarro, & Buzzi, (2021)	To identify consumers' intention to engage in sustainable practices and their intention to purchase sustainable clothing.	The attitude of fashion companies towards CSR has a direct impact on the company's reputation and the social image of the company, which in turn influences consumers' intention to buy sustainable products.
Rosa, & Jorgensen (2021)	Examine the impact of CSR on sustainable purchasing intentions in the textile and clothing industry.	Consumer engagement in sustainable consumption is influenced by consumer attitudes, subjective norms and perceived behavioural control.
Huo, Hammed, Zhang, Ali, & Hashim (2022)	To examine consumer perceptions of corporate image in the context of sustainability.	CSR can positively influence the decision of consumers of Pakistani garment companies to engage in sustainable consumption, i.e. to choose sustainable garment products.
James, & James (2022)	To investigate the relationship between green perceived value, CSR and consumer purchase intention.	Corporate image in the context of sustainability can help to achieve consumer satisfaction, loyalty and engagement. Corporate social responsibility is seen as a positive way of communicating the importance of environmental issues.
Huang, Lee & Chen (2022)	To examine consumers' attitudes towards the sustainability of fashion companies and how these attitudes influence their purchasing decisions.	Green perceived value and CSR have a significant impact on corporate image, but CSR does not have a positive impact on consumer attitudes towards environmentally friendly products.
Mandari, Hunjet, & Vukovi (2022)	Examine how the CSR attitude of fashion companies influences their reputation, image and consumers' choice to buy sustainable products.	Respondents have a positive perception of sustainability in the fashion industry, with a positive correlation between the importance of sustainability in fashion companies and consumers' choice to buy sustainable clothing products.

Source: created by the authors.

To summarise the empirical studies already carried out, corporate image is addressed through corporate social responsibility. It is identified as a key factor in creating a positive corporate image in the context of sustainability. This means that socially responsible companies are positively

perceived by consumers, but consumers' perceptions of environmental issues do not always translate into real action. Research has also shown that the image of companies influenced by CSR has a positive impact on their purchasing behaviour, resulting in positive consumer engagement with sustainable consumption. As in the theoretical part, the results of the empirical studies reflected not only the influence of corporate image but also the influence of other internal and external factors. Empirical research focuses on the fashion industry, the clothing industry and consumer engagement in sustainable consumption choices, i.e. the choice to buy sustainable and environmentally friendly clothing products. The authors examine this as one of the most important sectors in the context of sustainability, which needs to be given the utmost attention due to the negative environmental consequences of fast fashion, indiscriminate consumption.

Based on the results of the literature review and empirical research, Fig 2 presents the model developed.



Source: created by the authors.

Fig. 2. A theoretical model of the influence of corporate image on consumers' engagement in sustainable consumption

The model reflects that CSR can affect the image of a company, which can lead to a positive corporate image that encourages consumers to engage in sustainable consumption. However, empirical research has shown that other important factors also influence consumer engagement in sustainable consumption and need to be considered in the context of engagement in sustainable consumption. A negative image encourages consumers to choose alternatives, leading to a reduction in the number of consumers, a reduction in awareness, and the dissemination of consumer feedback that includes negative aspects. A positive image can lead to consumer engagement in sustainable consumption, while a negative image can lead to negative engagement in sustainable consumption. Consumers with weak engagement characteristics are identified as having neutral engagement with sustainable consumption. The theoretical model uses the corporate image as a key factor, but other internal and external factors may also determine consumer engagement in sustainable consumption.

Conclusions

1. Summarising the theoretical framework of corporate image and consumer engagement, it has been found that the concept of corporate image can be defined in terms of two key concepts in the context of corporate image: individuality and identity. The literature has been synthesised to define the impact of corporate image on consumer engagement in sustainable consumption. A positive corporate image can lead consumers to choose sustainable consumption. It is not only a positive corporate image and CSR that influence consumer engagement in sustainable consumption, but also the external and internal environment of the consumer.
2. The analysis of the factors influencing consumers' engagement in sustainable consumption shows that the most emphasised consumer attitudes towards current issues are related to sustainability. Consumer perception and knowledge. Among the external factors, the literature places a strong emphasis on the influence of social groups, as consumer behaviour is often influenced by the attitudes of social groups. Socio-demographic factors act as mediators between the factors influencing consumer engagement. These include gender, education, age and income, and place of residence.
3. The empirical level of empirical investigation of the influence of corporate image on consumer engagement in sustainable consumption has shown that corporate social responsibility plays an important role in the context of corporate image. Corporate image is measured through the implementation of corporate social responsibility initiatives.

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The Role of Artificial Intelligence, Financial and Non-Financial Data in Credit Risk Prediction: Literature Review

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Abstract. Small and medium-sized enterprises (SMEs) are of major importance in world economies and job creation. Financing is one of the key issues for SME development since SMEs are often considered riskier than large companies. It is argued in the literature that artificial intelligence (AI) and non-financial data could increase the financial inclusion of disadvantaged groups, such as SMEs. This article presents an overview of selected studies on credit risk prediction from the 1960s to 2022, covering topics of research work applying classical statistical methods, studies using AI methods on traditional financial data and studies applying AI methods on non-financial data. Literature overview results showed that the inclusion of non-financial data in credit risk prediction models could increase credit risk prediction performance, while AI methods can enable the inclusion of non-financial data. Since non-financial data potentially could be used as alternative data in credit prediction models, AI and non-financial data could help to increase access to finance for SMEs.

Keywords: *credit risk, small and medium-sized enterprises, artificial intelligence, non-financial data.*

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Introduction

Relevance of the article

It is argued in the literature, that artificial intelligence (AI) and non-financial data could increase the financial inclusion of disadvantaged groups (Aitken, 2017; Mhlanga, 2021). This is particularly relevant in the case of small and medium-sized enterprises (SMEs), which are of major importance in world economies and job creation. Financing is one of the key issues for SME development. SMEs are often considered to be riskier than large companies and one of the main reasons for that lies in the quality and availability of financial data. The lack of data creates an information asymmetry between banks and SMEs which seek bank financing, resulting in higher demands from banks to hedge against potential risks (Pettit, & Singer, 1985; Yoshino, & Taghizadeh-Hesary, 2018; Mhlanga, 2021). Consequently, companies sometimes fall into a vicious circle when they cannot access bank financing because banks do not have sufficient financial data about SMEs, and the company cannot afford higher borrowing costs (Aitken, 2017; Rybakovas, & Žigienė, 2021).

Level of problem investigation

Non-financial data potentially could be used as alternative data in credit risk prediction models, which could help to increase access to finance for previously excluded entities. From an economic perspective, this could not only improve the financial inclusion of frequently credit-invisible SMEs but also stimulate economic growth in related areas (Sadok et al., 2022). Some FinTechs are already applying AI and non-financial data to evaluate the creditworthiness of clients and make decisions on whether to extend the credit, what should be the terms of funding or what actions should be taken in managing the risk of the loan portfolio (Sadok et al., 2022). However, the use of such unconventional data among traditional banks is rare.

Scientific problem

Can AI and non-financial data increase the financial inclusion of disadvantaged groups such as SMEs?

Object of the article is the impact of AI methods and non-financial data on the financial inclusion of SMEs.

Aim of the article – to overview and compare credit risk prediction methods using financial and non-financial data, which are presented in scientific literature.

Objectives of the article:

1. To perform a literature analysis of the application of classical statistical methods in credit risk prediction.
2. To conduct a literature analysis of the application of AI methods on traditional financial data in credit risk prediction.
3. To overview the literature on credit risk prediction using AI and non-financial data.

Methods of the article: literature review.

1. Theoretical analysis of traditional and unconventional methods and data in credit risk prediction

Definitions. Credit risk could be defined as “the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms” (Principles for the Management of Credit Risk, 2000, p. 1). One of the key elements of credit risk is the probability that the borrower will default on his or her obligations (Brown, & Moles, 2014). Although the credit risk prediction topic has been widely discussed in scientific literature since the 1960s, there is no clear consensus on the default definition. Many studies focus on bankruptcy prediction (Altman, 1968; Ohlson, 1980; Odom, & Sharda, 1990; Zhang et al., 1999; Charalambous et al., 2000; Shin et al., 2005; Hewa Wellalage, & Locke, 2012; Tobback et al., 2017), which is considered as an extreme case of default when the entity is declared bankrupt by a court and is dissolved (Brown, & Moles, 2014). Others use terms such as failure or failing company (Beaver, 1966; Tam, & Kiang, 1992; Bell, 1997; Horta, & Camanho, 2013; Lextrait, 2022), referring to the inability to fulfil financial obligations, which do not necessarily end up as bankruptcy.

1.1. Overview of the application of classical statistical methods in credit risk prediction

One of the first studies in the field of credit risk prediction was conducted by Beaver (1966), where he performed a univariate analysis of six financial ratios. The analysis was very limited as it assessed only one financial ratio at a time. A couple of years later, Altman used the Multiple Discriminant Analysis (MDA) method to predict the default of the companies (Altman, 1968). MDA soon gained popularity in credit risk prediction studies. However, it had several drawbacks and required satisfying assumptions, which with real financial data were difficult to satisfy. Therefore, other methods were suggested in later studies, including but not limited to multivariate regression analysis (Orgler, 1970), Naïve Bayes classifier (Sarkar, & Sriram, 2001; Dastile et al., 2020) and logistic regression, which is one of the most popular methods for scoring borrowers until these days both in the academic world (for example, used by (Wiginton, 1980), (Sun, & Li, 2009), (Dong et al., 2010), (Hewa Wellalage, & Locke, 2012), (Thiel, & Raaij, 2019) and (Yin et al., 2020)) and in the banking industry (Dong et al., 2010) as it does not require satisfying as many assumptions as other statistical methods (Ohlson, 1980; Hewa Wellalage, & Locke, 2012) and is appreciated due to its simplicity and interpretability (Dong et al., 2010; Óskarsdóttir et al., 2019; Dastile et al., 2020). Nevertheless, logistic regression requires fulfilling certain assumptions, such as a sample should be random and large, there should be no collinearity between explanatory variables and observations should be independent (Ptak-Chmielewska, 2019).

Overall, the limitations of classical statistical methods lie in the strict assumptions that must be met to rely on the results and established functional forms between dependent and independent variables, which makes the real-world application of these methods difficult (Kim & Sohn, 2010). These limitations stimulated research of other credit risk prediction methods, including but not limited to AI methods.

1.2. Literature overview on credit risk prediction using AI and traditional financial data

Traditional financial data mainly include various financial ratios calculated using data from financial statements, which measure liquidity, profitability, turnover, solvency and similar areas. Many various AI and other intelligent methods are found in the credit risk prediction literature, such as neural networks, support vector machines (SVM), decision trees, k-nearest neighbours algorithm

and various modifications of these methods as well as ensemble methods, such as random forests or Gradient Boosting Decision Trees models. It should be noted that this list is not finite and includes more frequently mentioned methods in the reviewed literature.

In the case of traditional financial data, neural networks and SVM were one of the most frequently mentioned methods in overviewed literature. Studies comparing neural networks with other methods, such as MDA, linear discriminant model, logistic regression, k nearest neighbours method and decision trees showed that the neural networks can achieve equally well or higher accuracy (Odom & Sharda, 1990; Tam & Kiang, 1992; Bell, 1997; Zhang et al., 1999; Charalambous et al., 2000). SVM is also presented as a promising method in credit risk prediction, capable to outperform other classical and AI methods, such as neural networks, especially when the dataset is smaller (Shin et al., 2005; Lahmiri, 2016).

Generally, one of the benefits of AI is that it does not require as much data processing and satisfying assumptions as traditional statistical methods and allows faster processing of potential borrowers' applications without compromising the quality of processing (Sadok et al., 2022). On the other side, most AI models are criticised for their lack of opacity and interpretability (Dastile et al., 2020; Sadok et al., 2022). However, the most recent studies are addressing the issue of AI model opacity by applying post-prediction explanation models such as Shapley additive explanation (SHAP) (Lextrait, 2022). Although most of the overviewed articles claim that AI methods can achieve equally well or better performance compared with traditional statistical methods, other studies claim that the performance results of AI models are debatable, especially when only traditional financial data is used. For example, Sadok et al. overviewed studies on the topic of credit analysis using AI and concluded that AI offers only minor performance improvements when applied to the same data set as classical statistical methods (Sadok et al., 2022). However, AI methods allowed the inclusion of new types and larger volumes of data, often referred to as big data, which seems to be able to improve credit risk prediction performance (Sadok et al., 2022).

The possibility to include non-financial data in credit risk prediction could expand opportunities to receive financing for SMEs, which usually are lacking quality data for credit risk assessment. Although the application of classical statistical methods and AI on traditional financial data in credit risk prediction has been widely analysed for the past several decades, the application of non-financial data in credit risk prediction is less explored. Thus, the next section will overview empirical studies, which used AI and different types of non-financial data in credit risk prediction.

1.3. Literature overview on credit risk prediction using AI and non-financial data

Simple non-financial data. Non-financial data could include noncomplex information about the company's main activity or sector, the company's size, location, age, whether the company has employees and the number of employees (Horta, & Camanho, 2013; Lextrait, 2022). Such simple non-financial data do not necessarily require sophisticated AI models and could be analysed using both AI and classical statistical methods. Horta, & Camanho (2013) found that the credit risk prediction model achieved better results when it included not only financial but also non-financial variables. Another financial, but unconventional variable found to improve credit risk prediction performance is payment behaviour data. For instance, Malakauskas, & Lakstutiene (2021) found that the best results were achieved when the dataset included information about overdue payments, while Ciampi et al. (2020) found that including payment behaviour data in a model with traditional financial ratios could improve prediction performance, especially when the size of the company gets smaller. Other studies investigating credit risk prediction have included industry-specific non-financial variables, such as technology evaluation factors (Kim & Sohn, 2010) or subjective criteria such as the morality of the SME, partnerships and state of production capacity among others (Gulsoy, & Kulluk, 2019).

More complex non-financial data. Alternatively, recent studies started to use more complex data in credit rating models, which require more sophisticated methods of analysis. The data could be of a sizeable amount and include unstructured information, language, perceptions and visual information, inter alia (Sadok et al., 2022). For example, Óskarsdóttir et al. (2019) used call detail

records provided by the telecommunications operator and commercial bank data about customers to create call networks and forecast the creditworthiness of consumers applying for a credit card. Researchers found that models incorporating calling behaviour features performed better compared to models containing only conventional data and call logs data could even be used as the only data source for evaluating consumer credit risk. Tsai, & Wang (2017) used textual information from financial reports and sentiment analysis with finance-specific words to evaluate the riskiness of publicly traded companies. The results of the analysis confirmed that textual information from financial reports, especially financial sentiment words, is important in credit risk prediction. Social media information is another example of data used for credit risk prediction. Yao et al. (2022) tested if financial social media data can improve credit risk prediction performance in the supply chain of listed companies in China. The authors applied sentiment analysis to analyse the data. Results confirmed the hypothesis that social media data improves credit risk prediction model performance and even in most cases social media-based features, especially time-weighted text sentiment feature, have better prediction power than traditional data-based features because it has forward-looking information about enterprise credit risk. Yin et al. (2020) used publicly available legal judgment data on China's SMEs' for credit risk prediction, where they constructed variables from legal judgements information, which indicated how many judgements the company has in distinguished legal judgement categories. Authors found that adding certain features extracted from legal judgments to a model with conventional variables improves model performance. Tობback et al. (2017) used information about current and past management and directors of Belgian SMEs and their links with other companies to predict credit risk. Authors hypothesised that a company, related to many other bankrupt companies, have a greater failure rate, particularly when this company is in a bad financial position. The authors found that relational data on its own does not have enough predictive power but supplementing a financial data-based model with relational data improves prediction performance, especially when predicting the bankruptcy of the riskiest SMEs.

Overall, in most of these examples, it was concluded that non-financial data shows promising results in credit risk prediction and some authors even stated that non-financial data could be used as the only data source for evaluating credit risk (Óskarsdóttir et al., 2019). However, non-financial data has some drawbacks. For instance, sometimes predictive power of non-financial data can overshadow traditional data-based features. Therefore, some authors emphasised, that it is important to use non-financial data only as supplementary data showing good financial behaviour for subjects lacking traditional information for credit assessment (Óskarsdóttir et al., 2019). In addition, some forms of non-financial data are already questioned in the literature. For example, Wei et al. (2016) stated that although initially consumer credit scoring models based on social media data might improve the accuracy of credit scores and improve the financial inclusion of disadvantaged groups, later consumers might start to deliberately alter their social networks to improve their credit scores.

Overview of applied AI methods. Neural networks and SVM mentioned previously were also popular in studies using non-financial data. Besides these methods, there were also used neural networks-based Kohonen maps, Gradient Boosting Decision Trees (GBDT) models, extreme random tree, random forests and decision tree-based algorithms. The latter two methods – decision trees and random forests, were mentioned by several authors as best-performing models (Gulsoy, & Kulluk, 2019; Óskarsdóttir et al., 2019; Malakauskas, & Lakštutienė, 2021; Yao et al., 2022). Another observation which could be drawn from the reviewed literature is that a variety of different applied AI methods in overviewed studies implies that when predicting credit risk with AI, there is no one-size-fits-all and the most suitable methods might differ depending on data. Furthermore, credit risk prediction results can be assessed by various measures, such as accuracy, specificity, sensitivity, etc. and some authors noticed, that different methods provide the best results under different measures, thus it is important to use multiple AI methods when predicting the credit risk (Lahmiri, 2016).

Conclusions

1. Although some statistical methods are still widely used both by banks and in the academic world, they have several drawbacks which make it challenging to apply these methods in real-world situations. The main downsides of classical statistical methods listed in the literature include the predetermined functional relationships between dependent and independent variables and the rigid assumptions that must be followed to rely on the results.
2. AI methods are promising alternatives to statistical methods, as they do not require as much data processing and satisfying assumptions and can be applied to analyse non-financial data. However, it is important to try multiple AI methods as the best-performing AI methods vary depending on the data.
3. Various types of non-financial data have already been tested and demonstrated promising results in credit risk prediction modelling. Examples of simple non-financial information include company size, location, industry, ownership-related variables and payment behaviour data. While more complex non-financial data examples include mobile phone call information, connections of directors and managers of the company to other entities, public legal judgments information, social media information and textual information from financial statements.
4. Overall, an overview of empirical literature showed that the inclusion of non-financial data in credit risk prediction models can increase the prediction performance of the models compared to traditional models that use only financial data. Since non-financial data potentially could be used as alternative data in credit risk prediction models, it can be concluded that AI and non-financial data could help to increase access to finance for SMEs.
5. The main limitation of this study is related to the literature search and selection process for the literature review, which included authors' judgemental decisions, therefore, conclusions of the review might be biased and the present paper should be considered as a starting point for future research on the topic.

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The Development of Sustainable Business Models: Concept, Elements and Importance

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Abstract. Advances in technology, falling trade barriers, economies of scale and domestic market saturation are considered some of the key drivers behind globalisation. Globalising businesses require the management of complex solutions to coordinate resources and processes across functions and geographies. The importance of strong business models is therefore vital in view of increasing global competition. Aided by the development of sustainable business models, entrepreneurs and small firms can confidently participate in networks and capture value from networking relationships, regionally and internationally, to enhance their global presence. The aim of this research is to investigate the importance of development of sustainable business models for international companies. Results showed the development of sustainable business models are important in motivating corporate innovative measures for sustainability, and this is a driving force behind competitiveness.

Keywords: *sustainable business models (SBMs), elements, company, sustainability.*

Introduction

Relevance of the article

Sustainable business models are increasingly being recognised as a key component of a company's competitiveness in the global marketplace (Farinha et al., 2018). Sustainable Business models have gained significant ground and popularity in literature and practice due to increasing competitive pressures and sustainability concerns, quickly changing industry landscapes, and, correspondingly, the need to search for new ways to gain global presence (Massa et al., 2017). Sustainable business models matter to business and other forms of organisations, such as non-profits and social enterprises as they can be an important source of firm survival and competitive advantage. According to McGrath (2010), the business model concept offers strategists a novel way to consider their options in uncertain and fast-moving environments. It is also recognised that companies should be trailing multiple business models to remain competitive in the long-term as focusing on just one might put the future of the organisation at risk (Andries et al., 2013).

Level of problem investigation

Scholars have been researching environmental and societal issues since the 1960's, however, there is no established theoretical foundation in economics or business studies, and there is a lack of clarity, conceptual consensus, and consistency in the use of the term "sustainable business models" (Bocken, 2021), there is a lack of agreement on the definition, categorisation, and bounds of this concept (Nosratabadi, et l. 2019). However, the importance of developing sustainable models is recognised. A study by Schaltegger, Hansen, & Lüdeke-Freund (2016) found that companies that adopted sustainable practices tended to have better financial performance than their peers (Schaltegger et al., 2016). Additionally, a review of literature by De Jong, Karen and Susanne (2017) found that companies that engaged in sustainable practices had a lower cost of capital, and were more likely to attract and retain customers and employees. Researchers (Jolink, & Niesten, 2015) highlight that developing sustainable business models can have a positive impact on the competitiveness of international companies.

Scientific problem is how to develop sustainable business models.

Object of the article is the development of sustainable business models.

Aim of the article is to investigate the importance of development of sustainable business models for international companies.

Objectives of the article:

1. To examine concept and elements of sustainable business models.
2. To analyse the empirical level of research regarding the development of sustainable business models in international companies.

Methods of the article

The scientific research was carried out through the comparative analysis of scientific literature, synthesis.

1. Theoretical aspects of the development of sustainable business models

1.1. The concept of sustainable business models

The definition of a business model appears to vary between authors. However, while there is not a definitive definition, most agree that it intends to describe how a business works and how value is created and captured (Chesbrough, 2010). The concept of sustainable business models has been growing in popularity and is currently a major focus in the academic literature (Table 1).

Table 1

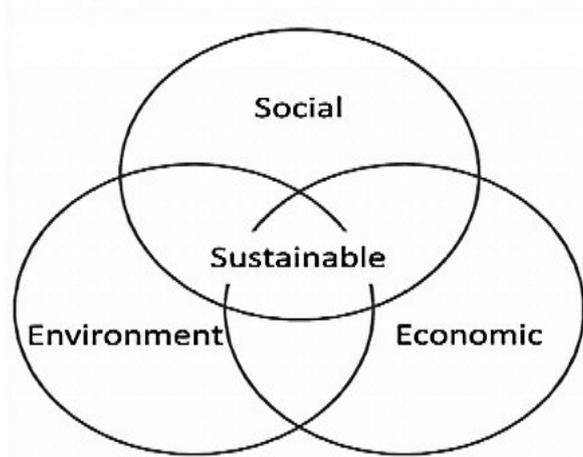
Concept and framework of sustainable business models

Authors	Definitions
Bocken, Short, Rana, & Evans (2014)	SBMs are important in driving and implementing corporate innovation for sustainability, can help embed sustainability into business purpose and processes, and serve as a key driver of competitive advantage.
Jones (2016)	Sustainability means the combination of economic, environmental and social components, therefore sustainable business models are models that are seen from the sustainability point of view on how to add the dimensions of sustainability.
Schaltegger, Hansen, & Lüdeke-Freund (2016)	Suggests that sustainable business model notion has the ability to provide a holistic perspective of a firm's activities, going beyond basic storytelling of how a firm does business.
Wagner (2018)	"Sustainable business model" (SBMs) business model frameworks are expected to be reshaped when changes are made to implement sustainability concerns at the strategic level and in processes. The definition of sustainable business models is presented using the most well acknowledged approach to sustainability.
Purvis, Mao, & Robinson (2019)	Sustainable Business Models is all about creating a business framework directed towards maintaining/protecting resources and causing no negative externalities when operating in a given context.
Hakkarainen (2021)	Sustainable business models are a more comprehensive way of understanding the focus of international competition.

Source: created by the authors.

It is assumed that changes that are made to implement sustainability issues at strategic level and in processes result in reshaping the business model frameworks. Taking into consideration the most recognised approach to sustainability (Triple Bottom Line), definition of sustainable business models is proposed. (Bocken et al., 2014; Jonker, 2012; Lüdeke-Freund, 2010).

Fig. 1 illustrates the three-pillar conception of (social, economic and environmental) sustainability.



Source: Purvis, B., Mao, Y., & Robinson, D. (2019). *Three pillars of sustainability: in search of conceptual origins*, p. 683.

Fig 1. Three pillars of sustainability: in search of conceptual origins

The three-pillar conception of sustainability commonly represented by three intersecting circles with overall sustainability at the centre. Dunphy (2019) states in order for firms to develop sustainable business models, they are to be committed to the development and protection of the society, environment and economy in which they operate.

1.2. The elements of sustainable business models

The elements of sustainable business models are business innovation, resilience, and technological advantage (Table 2).

Table 2

The elements of sustainable business models

Element	Explanation
Business innovation	Business model innovation is a hierarchical development through which firms investigate better approaches to characterise offers, make and get incentive for clients, providers, and partners (Gambardella, & McGahan 2010). A large amount of research claims that business model innovation is critical to firm survival, performance, and as a source of competitive advantage (Casadesus-Masanell, & Zhu, 2013).
Technological advantage	Customer experience is the ultimate differentiator in today’s business competition. It is not just a question of the feel, look, or usability of a product, but of an entire spectrum of feelings, emotions, and physical and psychological responses. Technical product supremacy is thus not sufficient, because the value is in the experience. Such experience is created by business models. Competition in business is thus rapidly becoming competition between business models rather than competition between mere products (Talonon, & Hakkarainen, 2014).
Strategic resilience	A new business model is not all the time within the sphere of business dynamics. It demands work, it takes time, and it’s high risk. However, maintaining an established company model is also a challenging and complex problem. It entails striking a balance between the needs and aspirations of different generations while also addressing a variety of social, environmental, and economic restrictions (Trusko et al., 2012). Any company that must survive needs strategic resilience. It refers to the ability of a company to develop itself before it is compelled to develop by performance issues. Strategic resilience is taking steps in times when the number of options is relatively broad.

Source: created by the authors.

For business survival it is important for firms to develop sustainable business models for their organisation, which includes business processes, operations and competencies. The elements of sustainable business models are business innovation, strategic resilience and technological

advantage. Therefore, the model must have these elements in order to adapt to the constantly changing environment.

2. Empirical investigation level of the development of sustainable business models

This chapter discusses the development of sustainable business models and how it is portrayed by other researchers. There have already been some studies carried out by various scientists and proven the importance of sustainable business models, though the research conducted is very abstract and only based on theoretical level.

Concepts of sustainable business models, analyses of SBM's elements, or case study presentations of empirical research. SBMs are business models that, from a long-term view, involve proactive management of value generation, both financial and nonfinancial, for a variety of stakeholders (Geissdoerfer, Vladimirova, & Evans, 2018). According to empirical studies, by Rudnicka (2016), the findings drew attention to sustainable business models as a system concept, which gives opportunity to satisfy present and future needs of all market participants. Sustainable business models must be improved and adjusted to the changing environment to act as the primary function, which is earning money and creating added value to sustain a competitive advantage. Adiguzel (2019), international business management in terms of sustainability, considering the effects of the cultural and social environment in understanding the management and the impact of the economy, other authors such as Bocken, (2021), in their research present the elements constituting an advantageous business model, and suggest how to achieve that competitive edge. In papers underlining the need to reevaluate the depth of the SBMs research, the collaborative/network concept emerged (Dreyer et al., 2017; Rossignoli, & Lionzo, 2018). Analyses that are restricted to the BMs of single enterprises are unable to capture this pertinent feature because many sustainability breakthroughs result from the collaboration of various players and organisations.

Bocken (2021) in sustainable business model research focuses on understanding the role of multi-stakeholder collaboration and experimentation with a pivotal role for business (models) and investigating the interplay between micro, and macro actors in experiments. It was also found by Ramdani (2019) that changing business models encompasses modifying a single element, altering multiple elements simultaneously, and/or changing the interactions between elements in four areas of innovation: value proposition, operational value, human capital, and financial value. Table 3 shows and represents the findings of the studies conducted by various authors to conceptualise the concept and elements of sustainable business models.

Table 3

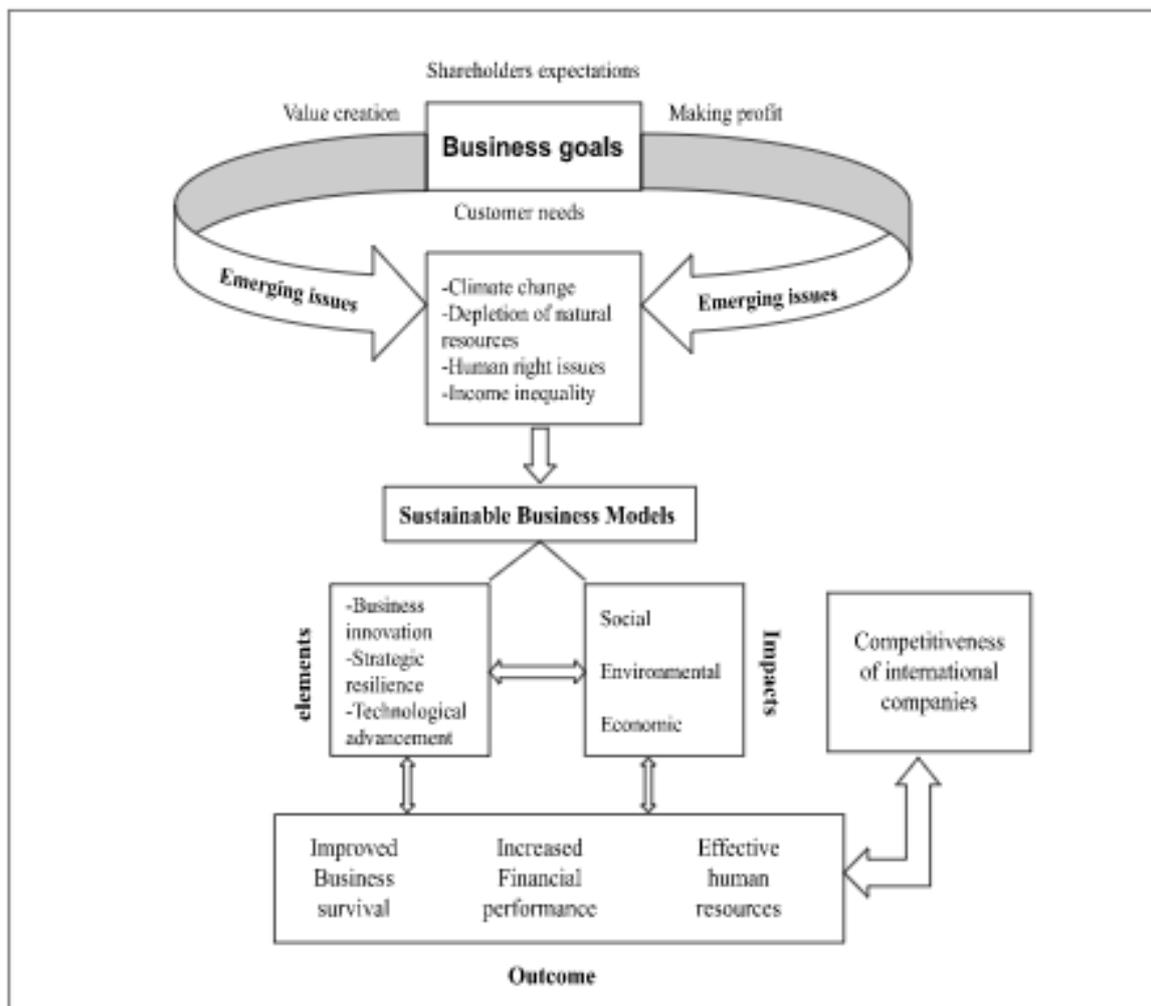
Analysis of research conducted on Sustainable Business Models

Authors	Literature Origins	Main findings – Theoretical foundation
Adiguzel (2019), Bocken (2021)	Elements of Sustainable business models	The authors in their research present the elements constituting an advantageous business model, and suggest how to achieve that competitive edge. They argue that traditional innovation processes with funnelling front-end, stage-gate with affect decisions, and similar processes have inherent limitations in such an inclusive concept. They propose an alternative approach, driven by sustainable business models, which are business innovation, strategic resilience and technology.
Geissdoerfer, Vladimirova, & Evans, (2018), Rudnicka (2016)	Sustainable business model innovation	The findings drew attention to sustainable business models as a system concept, which gives opportunity to satisfy present and future needs of all market participants. Taking into account the criteria and the awareness of change that must occur both at the level of the organisation and its products, the paper gave a general outline of how to analyse if the process of transformation is possible and what the current state looks like.

Authors	Literature Origins	Main findings – Theoretical foundation
Ramdani, Binsaif, & Boukrami (2019)	Business model innovation: a review and research agenda	It was also found that sustainable business models encompass modifying a single element, altering multiple elements simultaneously, and changing the interactions between elements in four areas: value proposition, operational value, human capital, and financial value.
Dreyer, Lüdeke-Freund, Hamann, & Faccar (2017), Rossignoli, & Lionzo, (2018)	Business models for sustainability	Sustainable business models must be improved and adjusted to the changing environment to act as the primary function, which is increasing wealth and creating value, the paper gave a general outline of how to analyse business models for sustainability.

Source: created by the authors.

The findings drew attention to sustainable business models as a system concept, which gives opportunity to satisfy present and future needs of all market participants. Taking into account the criteria and the awareness of change. Sustainable Business Models must be improved and adjusted to the changing environment to act as the primary function, which is increasing wealth and creating value. According to empirical studies, a theoretical model on the development of sustainable business models is presented in Fig. 2.



Source: created by the authors in accordance with Bocken, N. (2021). Sustainable business models, p. 4, Boons, & Lüdeke-Freund. (2013). *Business models for sustainable innovation: State of the art and steps towards a research agenda*, p. 9.

Fig. 2. A conceptual model on the development of sustainable business models

Conventional businesses are established to make profit, create value, meet stakeholders expectations and solve customers needs. However, there are emerging environmental issues such as climate change, human rights issues, income inequality, depletion of natural resources and so on. SBMs have the potential to act as a driver for innovation, resilience and technological advancement as the SBMs lens gives the opportunity to take a holistic view on how business is done. As an ideal type, SBMs draw on economic, environmental and social aspects of sustainability in defining an organisation's purpose; use a triple bottom line approach in measuring performance; consider the needs of all stakeholders rather than giving priority to shareholders' expectations; treat nature as a stakeholder and promote environmental stewardship; and encompass a system, as well as a firm-level perspective. The adoption of sustainable business models will lead to business survival, competitive advantage and achievement of business goals.

Conclusions

1. After examining the concept and elements of sustainable business models, it was revealed that sustainable business models are about developing a framework in business, which is centered on the maintenance and protection of resources and also not causing any negative externalities on the environment and society where it is operating. Sustainable business models can be achieved through the development and improvement of social, economic, and environmental elements of a business.
2. After analysing the empirical level of research regarding the development of sustainable business models in companies, it was found the importance of the development of sustainable business models in companies. The conceptual model showed that SBMs allow for a holistic view on how business is done; involving concerns of multiple stakeholders; including sustainability metrics; and internalising environmental and societal concerns. This highlights a stark contrast compared to purely conventional profit oriented business models focused on profit generation, financial performance, shareholder value optimisation and a firm-centric motive. Nonetheless, sustainable business models as a prerequisite must be economically, socially, and environmentally sustainable.

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Assessment of the Sustainable Development of a Tourism Destination: The Case of an Adventure Park

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Abstract. The sustainable development of a tourism destination is a process that is continuously improved and has long-term value. By applying and distributing the economic, social and cultural dimensions equally, it is possible to achieve well-being for the environment and local people not only now, but also in the future. The study showed that the sustainable development of a tourism destination is presented differently by each of the authors, but all of them convey the idea that it is a process that includes economy, environmental protection, social dimensions and their management. By applying the process of sustainable development, tourism destinations achieve economic benefits without harming the environment and taking into account the social and cultural well-being of local people. It is recommended that voluntary publicity of environmental and socio-cultural activities in a tourism destination is an important factor that improves the image and increases value in society. Sustainability management is a more comprehensive, constructive, holistic approach than the management systems offered so far.

Keywords: *adventure park, tourism, tourism destination, sustainable development, performance evaluation.*

Introduction

Relevance of the article

Tourism is one of the most promising businesses in the world. Many new jobs are created, and large investments, such as support from the European Union and own finances, are allocated to the development of tourism throughout the world.

However, tourism needs to be developed responsibly, purposefully and harmoniously, finding trade-offs between environmental, social and economic goals. This is sustainable tourism, which is based on the principles of sustainable development. Such tourism development meets the needs of current generations without limiting the ability of future generations to meet their needs. Everyone, when developing and creating their business and activities in the tourism sector, must assess the possible impact of these activities on the environment, community, people and culture, since only improperly planned and executed tourism activities can harm the surrounding nature and community. Therefore, it is important in the development or creation of each tourist destination to assess possible threats and to look for ways, based on the principles of sustainable development, that would reduce this possible damage, negative impact on the environment and increase the positive benefits of tourism.

Level of problem investigation

Sustainability in tourism facilities was studied by Rahman et al. (2022) who in the International Journal of Tourism Research analysed sustainable development in tourism destinations, Roman, Roman, & Niedzolka (2020), Roblek et al. (2021), Estol, Camilleri, & Font (2018), Jasinskis (2015), Rahmadian, Feitosa, & Zwitter (2022), Panic, Kaščiakov, & Pavlakovič (2018). Sustainability is widely researched in hotels as tourism destinations by Palazzo et. al (2022), Leon – Gomez et al. (2021), Wullur, & Samehe (2020), Luo et al. (2016). In adventure parks that are not traditional tourism facilities, such as hotels or rural tourism farms, sustainability has not been widely studied by researchers. The study of sustainability in adventure parks provides an opportunity to assess sustainability not only in traditional tourism facilities and to contribute to the general field of tourism sustainability. The scientific novelty of this study is associated with the assessment of sustainable development in tourism destinations – adventure parks.

Scientific problem

How to evaluate the sustainable development of the tourism destination?

Object of the article

Assessment of the sustainable development of the tourism destination.

Aim of the article

To assess the sustainable development of the tourism destination.

Objectives of the article:

1. To present the essence of the concept of sustainable development.
2. To distinguish the advantages and disadvantages of sustainable tourism evaluation methodologies.
3. To analyse the level of sustainable tourism research.
4. To determine the level of sustainable development dimensions of the adventure park.

Methods of the article

Analysis of scientific literature, semi-standardised (structured) interview, qualitative content analysis.

1. Evaluation of sustainable tourism destinations

1.1. The concept of sustainable tourism destination development

Sustainable development is like a never-ending process that includes environmental, social and economic fields. In comparison, tourism has only recently begun to be assessed with regard to sustainable development. However, the activity of the tourism sector is very important in terms of sustainable development.

As stated by Roman, Roman, & Niedzolkka (2020), sustainability in today's life is a popular trend that includes the development, operation and also tourism sectors. Sustainable development, as a never-ending process, must be evaluated by taking into account the country's economic, social and environmental status. For a long time, it was believed that the activity of the tourism sector, as a service provision, should not be evaluated in terms of sustainable development, but in the long run, it became clear that this branch of the economy is important not only from the point of view of the general development of the country's economy but also from the point of view of sustainable development.

One important aspect of sustainable tourism development is the development of sustainable tourism destinations, such as hotels, restaurants, and other tourism-related businesses. These destinations should be designed and operated in a way that minimises their environmental impact and maximises their positive economic, social, and cultural contributions to the destination (Estol, Camilleri, & Font, 2018).

To achieve this, sustainable tourism destinations development should consider a number of key factors, including:

- *Environmental impacts*: sustainable tourism destinations should be designed and operated in a way that minimises their environmental impact, through measures such as energy and water efficiency, waste reduction, and the use of renewable energy sources.
- *Social and cultural impacts*: sustainable tourism destinations should respect and support the local community and culture and should aim to minimise negative impacts on local residents. This may involve working with local suppliers, hiring local staff, and supporting local community initiatives.
- *Economic impacts*: sustainable tourism destination development should aim to contribute to the overall economic development of the destination, through the creation of jobs and the generation of income for local businesses and communities.
- *Accessibility*: sustainable tourism destinations should be accessible to all, including people with disabilities and different cultural backgrounds (Palazzo et. al, 2022).

1.2. Advantages and disadvantages of sustainable tourism assessment methodologies

Assessing sustainability in such businesses as tourism requires the integration of as many tools and methods as possible to achieve a comprehensive impact on the environment, social, and economic aspects (Sala et al., 2020) (Table 1).

Table 1

Methods for evaluating sustainable development

	Indicators/indices/ criteria	Evaluation of goods – technology	Project evaluation	Sectoral/country assessment
Environmental	<ul style="list-style-type: none"> • Environmental pressure indicators • Ecological foot • GSTC criteria 	<ul style="list-style-type: none"> • Life cycle assessment • Material consumption per service unit • Material flow analysis • Energy process analysis • Ex-energy analysis • Energy analysis 	<ul style="list-style-type: none"> • Environmental impact assessment • Environmental risk analysis 	<ul style="list-style-type: none"> • Environmental advanced input-output analysis • Input-output energy analysis • Strategic environmental assessment • Regional energy analysis • Regional analysis of ex-energy
Economical	<ul style="list-style-type: none"> • Gross national production product • GSTC criteria 	<ul style="list-style-type: none"> • Life cycle costs 	<ul style="list-style-type: none"> • Accounting for all life cycles 	<ul style="list-style-type: none"> • Analysis of all economic flows • Analysis of economic materials • Economic input-output
Social	<ul style="list-style-type: none"> • Social indicators • GSTC criteria 		<ul style="list-style-type: none"> • Social impact assessment 	<ul style="list-style-type: none"> • Social input-output analysis
Sustainable development	<ul style="list-style-type: none"> • Sustainable Development Indicators • Sustainable Energy Development Indicators • GSTC criteria 			<ul style="list-style-type: none"> • Conceptual modelling • System dynamics • Assessment of impact on sustainability • Integrated sustainability assessment

Source: Mikalauskienė, & Mikalauskas (2015)

Indicators/indices are a tool for evaluating sustainability. Sustainability assessments are often based on a variety of indicators. Different indicators are measured and show the share of the related specific indicator. Given a common unit of measure, indicators are useful for comparison (Pollesch & Dale, 2016). But the problem is that indicators/indices are more suitable for broad evaluations at the national or regional level, rather than being specifically focused on the individual tourism company.

Life cycle assessment, otherwise known as LCA, is an important tool to help ensure sustainability through environmental impacts that shows the costs necessary to create the service. It can also be described differently, i.e. that the energy expended on it is shown to create sustainable development throughout the entire period of the harmonious development of a particular area, destination, service or product (Chang, Lee, & Chen, 2014; Oželienė, & Drejeris, 2015). The main problem is that life-cycle assessment as a method is more aimed at a tourist service or product and only covers the environmental dimension.

Another tool for evaluating the sustainable development of tourism is the global sustainable development criteria – the latest initiative to harmonise sustainable tourism standards and promote convergence, which appeared in 2008. The GSTC are universal sustainability criteria developed for a multi-stakeholder consultation process and global tourism sustainability. In 2010, these criteria began to be implemented by setting minimum criteria so that any tourism company could aim to protect natural and cultural resources and reduce poverty using tourism as a tool (Hamimah et al., 2022).

The GSTC criteria are the result of using a common assessment of the sustainability of tourism. The assessment focuses on social and environmental responsibility, as well as the positive and

negative impact of economic and cultural tourism. These evaluation criteria are divided into 4 categories:

- Sustainable management.
- Socioeconomic impact.
- Cultural impact.
- Environmental impact (GSTC, 2022).

Each of the above-mentioned categories defines a certain general goal for evaluating the criteria. Sustainable management aims to demonstrate the effectiveness of sustainable management, the main objective of socio-economic impact is to assess how social and economic benefits to the local community are maximised and negative impacts are minimised, the main objective of cultural impact is to assess how the benefits of cultural heritage are increased and negative impacts are minimised, and the main objective of environmental impact is to assess how environmental benefits are maximised and negative impacts are minimised (Hamimah et al., 2022).

Criteria are minimum, not maximum. Companies, governments, and cities that apply them should achieve social, economic and environmental sustainability. Each tourism area has its own culture, environment, customs, and laws, so these criteria are intended to be specifically adapted to the local conditions of tourism areas and supplemented with additional criteria explicitly for a specific place and activity (GSTC, 2022).

The most favourable methodology for evaluating the methodology for tourism for business is the global sustainable tourism criteria, which cover all dimensions: environmental protection, economy, and social dimension. The GSTC provides an all-encompassing language and a common understanding of sustainable tourism and the implementation of the criteria can be adjusted to the local situation. The criteria are not aimed at approving sustainable tourist destinations, but rather to be used by existing tourist destinations, so that the destination could check whether it meets certification standards (Sharpley, 2022).

2. The level of sustainable tourism research

Interest in the topic of sustainable development has grown undeniably over more than 30 years. Today, sustainability can be the main goal across various types and sizes of tourism activities encompassing both environmental concerns and overall operations (Spenceley, 2018).

Sustainable tourism research makes more progressive ideas and discussions related to ecology policy, mobility, changing times, and changes in behaviour and system. In the field of research, the main entity is related to the ideas of the sustainable development sector in tourism programs. Sustainable tourism is constantly associated with the preservation of ecosystems, the promotion of human well-being, the equity capital of international and domestic generations, and public participation in decision-making (Rodriguez, Lopez & Caballero, 2017).

The highest and most common level of sustainable tourism research is the assessment of the impact of tourism, sustainability, development, behaviour and attitudes of visitors, and planning. The assessment of sustainability is related to sustainable tourism, but the 4 main areas most studied are aligned to study integrity with tourism as a whole. This leads to the conclusion that studies of sustainable tourism have mirror trends that make it possible to study tourism as a whole (Khan et al, 2021).

Font, & McCabe (2017) talk extensively about criteria, standards and certification in their study, arguing that the use of such methods in the study of sustainable tourism helps to achieve a reduction in the negative impact on the environment, increases social goodness and highlights the advantages, and also helps to increase the opportunities for economic benefits not only for companies but also for the communities around them. The researchers studying the application of the criteria also reveal the conclusions that the application of the criteria is a flexible and sufficiently easily applicable form of study of sustainability.

Analysis of the literature on sustainable tourism showed that the most suitable assessment methodologies are the GSTC criteria, which cover all theories and are based on the treatment of the destination of research. GSTC is universal and the most suitable for adaptation to the tourist

destination. Weaver (2014) explained that any tourism company or company providing tourism services can be a tourist destination. Therefore, the theoretical assumptions of sustainable tourism modelling are inseparable from the destination.

3. A study on the sustainable tourism assessment of adventure parks

Research methods

Aim of the research

To analyse the possibilities of sustainable development of tourism in the business of adventure parks.

Research methods

For the study of the sustainable tourism assessment of adventure parks, a qualitative study – interviews – was chosen. Qualitative research, such as interviews, is more suitable for studying complex structures and phenomena that are more difficult to extract using conventional methods. Qualitative writing is characterised by showing how a person is able to express his point of view on a certain topic. The semi-standardised interview with ready-made questions based on GSTC (2022) criteria for tourism operators and other tourism businesses was chosen. The GSTC criteria were selected as the most appropriate for the adventure park operation. A semi-standardised interview is conducted in advance following the order of the set questions and their formulation (Adams, 2015). However, each question is presented in such a way as to encourage the respondent to answer not in a single word or sentence, but in a story about a situation or experience, activities performed, emotions, etc., and examples illustrating the story. The standardisation of interviews helped to control the conditions of the survey, and the course and to compare the obtained results if there is more than one respondent (Adams, 2015). The research was conducted individually with each respondent. One of the respondents was interviewed directly, and the others by phone.

In the study of sustainable development assessment in adventure parks, the top managers of adventure parks were interviewed. Adventure park managers were chosen for the study because they shape adventure park policy and may or may not choose a coherent adventure park development strategy. By researching the top managers, it was possible to get the most accurate opinion about the activities of the adventure parks. When selecting interview participants, 3 managers of the most popular adventure parks in Lithuania (“UNO Parks”, “STIHL virvių parkas”, “Taurų parkas”) were chosen in different areas of Lithuania.

Interview questions were formulated using GSTC (2022) criteria. The GSTC criteria were chosen because they are the most developed, approved and applicable for the evaluation of tourism operators. The criteria can also be applied to any tourist object. The GSTC (2022) criteria are a flexible, easy assessment methodology with minimal assessment criteria. The GSTC (2022) criteria as an assessment methodology have only a few shortcomings: there is no unified assessment system and it is not defined how to present the assessment results. A table was also created for evaluating the criteria. This methodology was chosen based on Ramanauskas and Gargas’s (2011) sustainable development evaluation study. The methodology of Ramanauskas and Gargas (2011) is applied as it is most effective to combine the systematisation of interview results and follow the progress of coherence from them. Using the GSTC criteria, the interview questions were made according to all the aspects analysed in the literature sources, that is, all dimensions are covered: environmental, socio-cultural, and economic. Sustainable development management is also analysed. Interview questions according to GSTC are designed to be most suitable for evaluating adventure parks (Table 2) (GSTC 2022).

Survey sample

The given table (Table 2) shows the questions developed in the interview based on the GSTC criteria. The questions and explanations of what each of the questions gives to the research, why it is needed and how they connect with each other are presented. Interview questions cover all 3 dimensions and sustainable management.

Table 2

Explanation of interview questions and objectives

Question	Goals
How do you understand the concept of sustainable tourism?	To ascertain the extent of the sustainable tourism opportunities within the adventure park
Do you have a sustainable management system for your adventure park? If not, are you going to create one, why?	To find out if there is a management system, what it entails or if it is in the process of implementation
Do you have regular staff training at your adventure park? If not, are you about to start?	To learn how the harmonious management of personnel is evaluated, whether it is non-existent or is about to start
How do you think there is satisfaction with the services provided by your adventure park? If not, what are you going to do about it?	To find out how adventure park managers evaluate their adventure parks in the eyes of customers. What is their attitude towards the services provided
What methods of promotional material do you use to promote your tourism destination?	To find out advertising channels used to promote the tourism destination
How do you contribute to natural and cultural heritage?	To find out what kind of immersion the adventure park has in the natural and cultural heritage as a criterion of the sustainable development system
Are you using sustainable building elements in your adventure park? If not, are you about to start?	To find out whether the adventure park aims for coherence through construction elements
Do you apply sustainable development opportunities for individuals with disabilities? If not, are you about to start and which ones?	To find out whether the adventure park has aspirations to contribute to the promotion of disabled people's integration into society
What economic benefits does your adventure park bring to the local community?	To learn and evaluate the current situation of the economic dimension and to review how the sustainable development of tourism in an adventure park provides benefits according to the economic dimension in the GSTC criteria
How else could you improve the economic benefits for the local community?	To learn what else can be implemented in order to improve the existing criteria of the economic dimension
What is your attitude towards the employees as the manager of the adventure park?	To learn about employee guarantees and opportunities
What can an adventure park offer in terms of improving employee attitudes?	To learn about implementing improvement opportunities to enhance employee attitudes
How do you contribute to the development of local culture?	To clarify the situation in contributing to the preservation of local culture and how to achieve it
How could you contribute more to the preservation of the area's cultural resources?	To learn about the possibilities of improving the criteria of the socio-cultural dimension
What environmental and ecological promotion methods do you apply in the adventure park?	To learn what is the approach to environmental protection and what methods are used to preserve the environment
What would you suggest from the adventure park side to better protect the environment, wildlife and natural landscape?	To learn about the possibilities of improving the criteria and what methods could be used to improve them in the future

Source: GSTC (2022)

The research data analysis and the discussion of the results

The study aimed to prepare a sustainable tourism evaluation model and, after applying it, to assess the sustainability of adventure parks, and to find out the possibilities of increasing sustainable development. During the research, the sustainable tourism destination evaluation model based on GSTC (2022) was applied and the sustainability of tourism destinations – adventure parks, was assessed, and where sustainability should be increased was analysed.

According to the evaluations carried out during the research (Table 3), the strongest adventure parks are in sustainability management. The second adventure park is a little further behind them. Adventure parks are the most lagging behind the maximum evaluation in economic and environmental indicators.

Table 3

Comparison of empirical research results

	Indicator	Assessment	Maximum rating	The difference
1 adventure park	Sustainability management	0.857	1	0.143
	Economics	0.400	1	0.600
	Socio-cultural	0.333	1	0.667
	Environmental protection	0.429	1	0.571
2 adventure park	Sustainability management	0.571	1	0.429
	Economics	0.400	1	0.600
	Socio-cultural	0.833	1	0.167
	Environmental protection	0.429	1	0.571
3 adventure park	Sustainability management	0.857	1	0.143
	Economics	0.400	1	0.600
	Socio-cultural	0.500	1	0.500
	Environmental protection	0.429	1	0.571

Analysing the answers of the managers of the adventure parks about sustainability management, it was confirmed that the traditional management of tourism is applied in the adventure parks instead of sustainability. Adventure parks are still more about economic benefits than long-term preservation for future generations. Sustainable development in adventure parks also contributes to the employment of the local community by creating new jobs.

During the research, it became clear that adventure parks increase opportunities for the socialisation of the disabled, the aim is to serve and integrate them into society, and there is also a need to create services specifically for them.

All the answers of the managers of the adventure parks showed that the socio-cultural indicator is being developed. Also, the results of the evaluation of the socio-cultural indicator when calculating the coherence are better compared to other dimensions, except for the first adventure park. Adventure parks contribute the most to the preservation of public culture through the organisation of events and cooperation for publicity purposes in the organisation of events.

During the research, it was clarified that sustainable development through the environmental dimension aims to preserve the unique landscape without damaging the environment, that is, the elements of sustainable construction are applied, the aim is to preserve the environment, as well as to expand the fauna.

The study helped to reveal that cohesion is not a spontaneous phenomenon. Its development requires strategy and management, on which the effectiveness of cohesion depends. In order to effectively develop sustainability in the tourism destination – adventure park, it is necessary to create sustainability conditions.

The research did not confirm such data suggesting that entrepreneurs single out the economic indicator over others. Furthermore, it indicated that there is no definite requirement for a social indicator when assessing sustainability. The statement that sustainable development is a long-term process has been confirmed, as well as the statement that socialisation is an integral aspect of sustainable development.

Conclusions

1. Sustainable development is presented differently by each of the authors, but all convey the idea that it is a process that includes the economy, environmental protection, social dimensions and their management. By applying and distributing the economic, social and cultural dimensions equally, it is possible to achieve well-being for the environment and local people not only now, but also in the future. By applying the process of sustainable development in tourism facilities, it is possible to obtain economic benefits without harming the environment and considering the social and cultural well-being of local people.

2. The advantages of using the criteria of global sustainable tourism as sustainability assessment methodology are as follows: the assessment methodology is easy and flexible, and it could be modified and applied to different tourism destinations in companies and regions, assessment criteria are the smallest. The weakness: there is no defined united meaning of evaluating system and it is not defined how the results have to be presented.
3. With the help of literature analysis, the problem was revealed that sustainability research is primarily based on the results and assessment of developed countries.
4. By analysing answers from managers of adventure parks and evaluating the results, it was found that the most missing opportunities are in environmental protection and economic criteria. It confirms that there is no encouragement in adventure parks for renewable energy, also there is no encouragement in water use reduction and the preservation of animal species.

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Links Between Leader Identity, Leadership Identity and Their Fusion

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Abstract. Growing body of research in leader and leadership identity exhibits the topic's importance in today's turbulent and uncertain global environment. Leader identity, which is related to the personal development of the leader, analysed at personal, relational and collective (group) levels. However, leader identity does not fully support leadership. Leaders operate and grow within the context of the people they lead – the group, the followers, who collectively possess social (group) identity. Researchers view this as a complex phenomenon involving shared values, perspectives and goals. There is no distinct line that separates leader identity from group identity, but there is an area where they clash. As a person evolves as a leader, leader identity is expected to incorporate more elements of group identity and develop towards it, although that is not inevitable. The current study emphasises leader-follower interactions and identity fusion, linking them to identity leadership development and suggesting possible outcomes.

Keywords: *leader identity, leader-follower interactions, identity fusion, identity leadership.*

Introduction

Relevance of the article

Up-to-date scientific research further explains complex and dynamic phenomena of leadership, making it one of the most broadly researched fields in management. This article theoretically analyses leader identity, leadership identity, identity leadership and identity fusion concepts as well as points out links between concepts and their outcomes. Dynamic organisational nature and constant need for good leadership are not able to justify leading positions only by hierarchical structure and official titles (DeRue & Ashford, 2010). On the other hand, the desire for leadership attracts individuals with egoistic and narcissistic, rather than altruistic, ambitions (Haslam et al., 2022). This article tends to draw ties and links from the individual concept of leader identity to identity leadership behaviour and its outcomes. As addressed in the recent theoretical dual-identity framework by Haslam et al. (2022), leader identity and identity leadership are two distinct constructs, that could be aligned to complement each other in leadership developmental path.

Level of problem investigation

Identity is researched in two streams – leader identity and identity leadership. Leader identity is understood as how a leader is perceived and accepted by others (Epitropaki et al., 2016; Lord & Hall, 2005) with the main research fields being personal attributes of the leader, traits, behaviours and antecedents analysed (Komives et al., 2005; Reicher et al., 2005; DeRue et al., 2009; Johnson et al., 2012; Zheng, & Muir, 2014; Hammond et al., 2017; Kragt, & Day, 2020; English, & Ehrich, 2020; Lanaj et al., 2021). Identity leadership concept built on the basis of the *Social Approach to Leadership* and *Self Categorization Theory* (Turner et al., 1987), refers to leaders' capacity to influence and mobilise others by having abilities to *represent, advance, create* and *embed* a sense of social identity that is shared with potential followers (Haslam et al., 2020). Identity leadership research tends to explain its impact on commitment related organisational and personal outcomes, health issues, well-being, and satisfaction of individuals, experiencing one or another combination of identity leadership (Steffens et al., 2014; Khumalo et al., 2022; Van Dick et al., 2021; Krug et al., 2021, Fransen et al., 2020).

Scientific problem: What is the link and connection between the leader identity and leader's ability to pursue identity leadership?

Object of the article – link between leader's identity and identity leadership concepts.

Aim of the article: to investigate the link between leader's identity, identity leadership and identity fusion process.

Objectives of the article:

1. To describe the concept of leader identity and its processes.

2. To describe the concept of identity leadership, its processes, and causal effects.
3. To analyse empirical research on leader identity and identity leadership.
4. To point out the links between leader identity and identity leadership.

Methods of the article

Main methods used in this article are critical literature review and analysis, synthesis, and generalisation.

1. Leader identity, leadership identity and identity leadership concepts in scientific literature

Leadership concept in scientific and practical literature has an overall positive image, and leadership by itself is viewed as a greeter good, which has a positive organisational impact (Haslam et al., 2020). First of all, historically leadership was understood as high hierarchical position within organisation, although official leadership does not explain why some individuals are seen as leaders and others do not (DeRue, & Ashford, 2010). More recent and modern view on leadership supports leadership definition as a complex of various impacts and influences over others by mobilising followers to act towards common goal (Haslam et al., 2020). Leadership is being seen as social influence process on thoughts, feelings and actions, identity is viewed as factor, explaining leadership itself (Ibarra et al., 2014; Yukl, 2010). Research on identity in leadership studies falls into two directions: 1) *leader identity* and 2) *identity leadership*.

Leader identity. Identity is seen as a multidimensional construct, where individuals may have several different identities and use them based on the situation, relations, and interactions they are in (Ashforth, & Johnson, 2001; Karp, & Helgø, 2009). Identity is defined in terms of relationship to others when individual behaviour changes depending on the context as different identities become salient (Reicher et al., 2005). As the leader grows, identity changes and is reformed, adapted, and created based on the context the leader is in. Leader identity in organisational context is how leader is perceived and accepted by others (Epitropaki et al., 2016; Lord, & Hall, 2005). Leader identity is less researched topic than follower identity, which later is analysed as result of leadership behaviour. At this level of analysis leader and follower self is a key variable (Komives et al., 2005; DeRue et al., 2009; Hammond, 2017; Kragt, & Day, 2020). Leader identity is analysed at three levels of self: *individual*, *relational* and *group/collective*. Individual's self-identification as a leader is seen as a starting point for leader identify formation when leader behaviour becomes active (DeRue et al., 2009). Identity is closely related to challenges and experiences that a person needs to overcome in order to stay or become a leader (English, & Ehrich, 2020). Strong self knowledge motivates leaders to seek new and more ambitious goals and practice leadership competences – *thinking motivates doing* (Kragt, & Day, 2020).

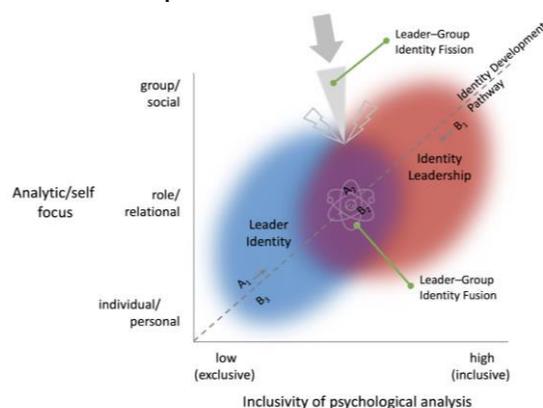
Leadership identity in this article is defined and understood as an overall leadership capacity, view of leadership, that happens at the organisational context, where leader develops during self-identification as a leader (personal identity) and later, while interacting and influencing also being influenced by the group, broadening of initial view of leadership and crafting leadership identity occurs (DeRue, & Ashford, 2010; Komives et al., 2005). Leadership identity is defined as an overall capacity of leadership at organisational context, **identity leadership** concept derived from *Social Identity Approach to Leadership* (Haslam et al., 2020) and is based on the core stones of *Self Categorization Theory* (SCT) (Turner et al., 1987). *Social approach to leadership*, formulated and argued as “new psychology of leadership”, refers to leaders' capacity to influence and mobilise others by having abilities to *represent*, *advance*, *create* and *embed* a sense of social identity that is shared with potential followers (Haslam et al., 2020). Shared social group identity is a base for effective communication, employee's motivation and organisational behaviour as well as management of stress (Zheng, & Muir, 2015). It drives individuals to behave for the benefit of the group rather than individual achievement. Social identity is an important basis of social power – especially for groups which otherwise lack resources or control institutions (Turner, 2005). Individuals at the group level are seen as the ones that form the groups, but are also formed by the group (Johnson, 2006). As already witnessed by some scholars, leadership literature “suffers” from large amount overlapping concepts

(Epitropaki et al., 2016). Further in this article, **identity leadership** concept will be analysed, investigated and viewed by the author as leader's leadership identity path – leader's style of leadership identity.

Identity leadership model consists of four dimensions: *identity prototypicality*, *identity entrepreneurship*, *identity advancement* and *identity impresarioship* (Steffens et al., 2014). *Identity prototypicality* (“being one of us”) is the level of leader representation of unique group features and qualities. *Identity Advancement* (“doing it for us”) is leader's engagement into advancing, promoting and defending core interests of the group (Milesi, 2022; Steffens et al., 2014). *Identity entrepreneurship* (“crafting a sense of us”) refers to a sense of ‘we’ and ‘us’ within the group, where leader's behaviour makes different people feel that they are part of the same group (Haslam et al., 2020). *Identity impresarioship* (“making us matter”) is leader's initiation of certain processes (structure, practices, activities) in order to point out the impact, importance and meaning of the group (Steffens et al., 2014).

Leader identity and identity leadership being separate concepts with different psychological pathways and analytical focus, has no clear and distinct line between both, and some attributes can be seen as unique for the leader and sometimes as group identity shared with others (Haslam et al., 2022). It is clear from the scientific literature that a space where both identities meet is *relational identity* (Fig. 1), where a leader's personal identity is grounded in their social identity as a member of a group. Relational identity is perceived to lead to further leadership dynamics by possibility to pursue energies from both leader identity and identity leadership (Haslam et al., 2022). According to *relational leadership theory*, identities form during dynamic interaction process of leaders and followers, where they are “claimed” and “granted” by the other side during social processes (DeRue, & Ashford, 2010). Based on their adopted identity, individuals are perceived by others. It is of great importance for the leader to be accepted by the followers not only by the official title of the position, but as a leader of people in that group.

Identity fusion is grounded in followers' perceptions of the leader as someone who contributes to the collective identity of the group that he or she leads (van Dick et al., 2019). Concept of identity fusion points out that both identities – personal and social – rather fulfils one another than conflicts (Gómez et al., 2011). As individuals become highly fused with the group, boundary between personal identity (“me”) and social identity (e.g. “me, a scholar”, “I, an European”) fades (van Dick et al., 2019). Fusion emphasises the tendency for people to develop feelings of connectedness and reciprocal strength with other group members, identification emphasises the tendency for group members to ally themselves with a common group identity (Gómez et al., 2011). Since groups and organisations are of dynamic nature, leadership and fusion processes do not happen without a context. As fusion is seen to positively affect leadership, it is also related to extreme behaviour and health issues, since it is associated with high levels of commitment, altruism and fanaticism (Gómez et al., 2019; Haslam et al., 2022; Swann et al., 2010). In such light, identity fission sometimes might be seen as a more positive outcome than fusion.



Source: Haslam, S. A., Gaffney, A. M., Hogg, M. A., Rast, D. E., & Steffens, N. K. (2022). Reconciling identity leadership and leader identity: A dual-identity framework. *The Leadership Quarterly*, 33(4) p. 34.

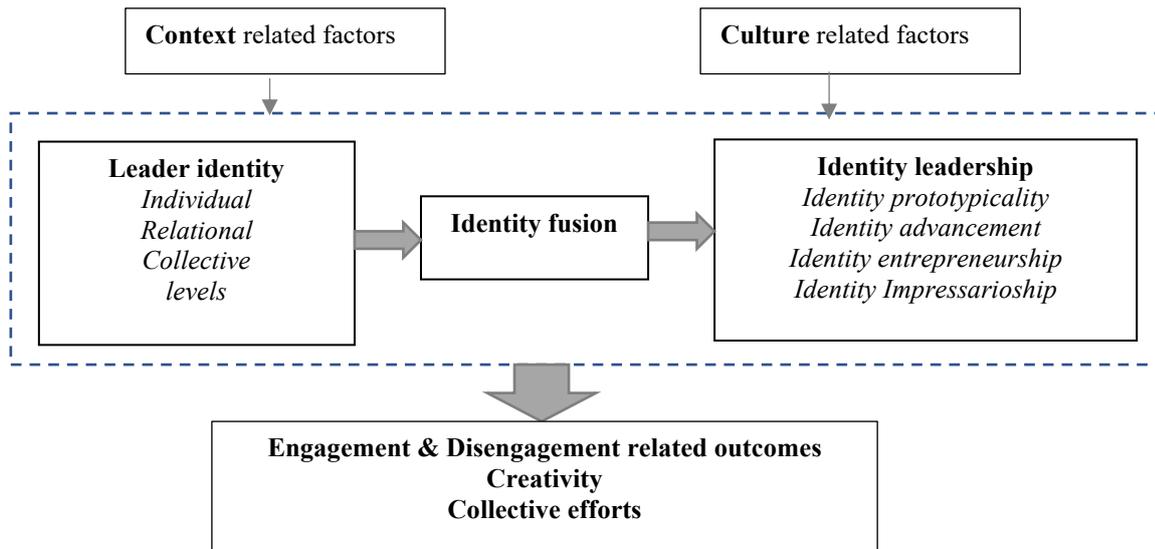
Fig. 1 Leader–group identity fusion and leader–group identity fission

2. Leader identity, identity fusion and identity leadership links in scientific literature

Effective leadership is about leaders and followers seeing themselves as bound together through their joint membership of the same group, and working together to satisfy group needs and realise group ambitions. (Haslam, & Reicher, 2016). The phenomenon of the successful leader, as a cause of effective leadership, has long been focus of the leadership research, where personality, knowledge, competences and other personal attributes have been analysed in order to define a good leader. (DeRue, & Ashford, 2010; Haslam, & Reicher, 2016). Following more recent leadership research on identity, it is clear that research from personal features moved towards more complex variables, that include social psychology, psychology, and group psychology elements. Studies of identity leadership are concentrated on processes of group social identity, where followers and leaders are members of the same group and shares collective group identity (Haslam et al., 2020, 2022; Haslam, & Platow, 2001; Hogg, 2001; Johnson, & Chang, 2006; Steffens et al., 2014; Zheng, & Muir, 2015).

Leader identity is found to be an antecedent for abusive, consideration and transformational leadership behaviours, which predicts leadership effectiveness: strong individual identity paired with a weak collective identity leads to abusive leader behaviour while collective level of identity is related to transformational behaviour (Johnson et al., 2012). High quality interactions between leaders and followers have an impact on organisational commitment (Lapointe et al., 2020). High leader identity is found to increase daily level of self-sacrifices, which helps at work, while harms at home (negative effect on family & personal life) (Lanaj et al., 2021). Acquiring a leader's identity is seen as a complicated process, that does not happen by single behaviour, but requires numerous social interactions over a period of time. Even when incorporating leader identity is a self-schema, leaders-to-be, have to acquire leader identity via claiming and granting process (DeRue, & Ashford, 2010; Marchiondo et al., 2015; Savani, & Zou, 2019). Complex identities (such as leader identity), can also be demotivating in engaging in related behaviour (e.g. Leadership behaviour) since invoking them appears to be too difficult to achieve. Thus, identity is a double-edged sword that can either motivate or demotivate behaviour or an individual (Savani, & Zou, 2019). Leader identity developmental trajectories differ based on leadership experience and level (for example student leaders, middle leaders or executives) and is positively related to developmental trajectories of three leadership competencies: challenging the status quo, valuing diversity, and creating commitment (Kragt, & Day, 2020)

Recent empirical evidence proves, that leaders' influence through social identity depends on the group context in which the relationship between leader and followers is embedded – group context matters for collective action evoked by ingroup identification due to identity leadership but not for collective action evoked by group efficacy due to identity leadership (Khumalo et al., 2022). Results suggest that leaders who act on the principles of identity leadership cannot mobilise followers for any kind of act – it needs to be within norms and values of the social group they lead. Recent findings of Khumalo et al. (2022) supports earlier implications of Haslam et Al. (2020) work on “New psychology of leadership” – content, not only process matters. Shared social identity of a team becomes even more important during periods of crisis, like recently experienced the COVID-19 pandemic (remote work, absence of the face-to-face contact in work environment). Work-related social identity continuity was proven to increase job satisfaction and reduce loneliness among employees during (Krug et al., 2021). Leader's engagement in identity leadership does not increase employee burnout, but on the contrary – lowers it (Dick et al., 2021; Fransen et al., 2020). Such results suggest that leadership, which fosters team members' sense of “we” and “us”, is beneficial for their well-being (Dick et al., 2021). These findings are in line with other study of Fransen et al. (2020), that identity leadership in sports teams fostered athletes identification with the team and their psychological safety (Fransen et al., 2020). Importance of informal leaders engagement in identity leadership and contributing to healthier and more engaged team was also proven to be important and worth additional scholar attention (Fransen et al., 2020; Krug et al., 2021).



Source: created by the author.

Fig. 2 Links between leader identity and identity leadership

Leader identity and identity leadership are different concepts but within the similar context both concepts are connected at several dimensions – leaders do not act alone but within other individuals, they together form a group and work towards common group goals. Based on previous empirical research and conceptual models (Haslam et al., 2022; Johnson et al., 2012; Lord, & Hall, 2005), this article suggests, that leader identity and its composition could be seen as an antecedent for leader’s ability to pursue identity leadership, while undergoing identity fusion process. Such conceptual model is presented in Figure 2. Leader identity evolves from individual level and shifts towards incorporating more collective level aspects, while at some point fusions with identity leadership, that is related to deeper psychological elements of the group. Such a process would be unique to a given organisational and cultural context where it takes place. Combination of leader identity dimensions (which consists of three levels: individual, relational, and collective) is suggested to have various impacts on leader’s ability to do identity leadership (*identity prototypicality*, *identity entrepreneurship*, *identity advancement* and *identity impresarioship*) that results into commitment and collectiveness related outcomes.

Conclusions

1. Leader identity is widely explained and understood as “how a leader is perceived and accepted by the team (people) they lead”. Leader identity consists of three levels: individual, relational, and collective. The concept is mostly related to a person’s self-perception, understanding, and growth as leader. The identity of a leader serves a starting point for an individual’s pursuit of leadership behaviour.
2. Identity leadership refers to leaders’ capacity to influence and mobilise others by having abilities to *represent*, *advance*, *create*, and *embed* a sense of social identity shared with potential followers (Haslam et al., 2020). Identity leadership is seen as a process during which a shared social group identity is cultivated and maintained within the group.
3. Leader identity is analysed as a set of personal attributes of the leader, including traits, behaviours, and antecedents, while identity leadership research aims to explain its impact on commitment related organisational and personal outcomes, health issues, well-being, and satisfaction of individuals experiencing one or another combination of identity leadership. Both concepts are connected by the fact that leaders do not act in vacuum; they all undergo a fusion process and are also affected by unique social, cultural, and psychological factors.

4. Leader identity and its composition are suggested to be one of the antecedents for a leader's ability to pursue identity leadership, resulting in commitment, creativity, and collectiveness related outcomes. The developmental and psychological path of leader identity in certain contextual environment is believed to have an impact and serve as an antecedent of pursuing identity leadership.

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Big Data Application for Traffic Estimation on a Website: Big Daddy Case

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Abstract. While living under rapidly changing conditions innovation, flexibility and readiness to change are grounding prosperity of the firm. But any changes for companies should be reasoned and made on the basis of analytical approach. Big data usually could help in this situation without spending time and money on expensive research activities. Therefore, this paper is focused on big data application on customers' behavior switching from one product to new its look. Modeling is based on few months' daily data with application of regression analysis and the least squares method. The major finding comes up with the estimation output that the new webpage is more popular among IOS and WEB users, although Android systems showing negative impact on switching to new website.

Keywords: *big data, customers' behavior, new product.*

Introduction

While living under rapidly changing conditions innovation, flexibility and readiness to change are grounding prosperity of the firm. But any changes for companies should be reasoned and made on the basis of analytical approach. Big data usually could help in this situation without spending time and money on expensive research activities. By the definition, big data could be described as datasets whose size is beyond the ability of typical database software tools to capture, store, manage and analyze (Manyika et al., 2014; Gentsch, 2019). Companies such as Google, Apple, Facebook, Amazon and others invested their knowledge, time and money for creation of such big databases and their application on particular situations analysis (Dash et al., 2019). Other companies realize the benefits of big database creation and usage for particular purpose inside of company for identification and solving many current internal and external problems, launching their products, improving communication with customers, sales volume prediction and for many other purposes whose, at final stage, are focused on profit and prosperity of firm.

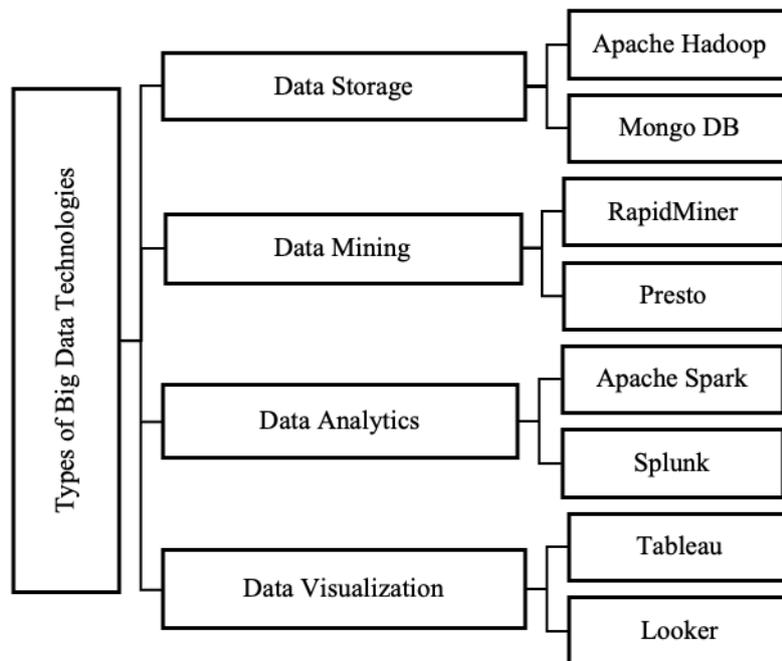
In addition, COVID-19 pandemic situation in globe enhanced e-commerce opportunities to serve customers skipping few chains in supply chain or organize them in much smarter way by using big data.

This paper is focused on big data application on customers' behavior switching from one product to new its look. The aim of this research is to investigate traffic on moving users to new website by using different devices. Our objectives are to evaluate the impact of switching users from old to new product – new website by focusing attention on users' devices – IOS, Android and WEB. Theoretical approach and empirical background overview options on usage of big data for chosen company, methodology uncovers model and data for particular case analysis, modeling output is presented in part of results, and part of conclusions and discussion outlines the research insights.

1. Theoretical approach

Big data could be integrated into the firm' activities via their connection to firm strategy, organizational activities and decisions making. Although big data without qualified interpretation could be just an additional virtual space for which firms pay.

Big Data is a pool of massive information which is structured, unstructured and semi-structured gathered by organizations to classify and identify patters of the audience in order to make effective decisions of an organization's future (Laney, 2001). Big Data is effectively monitored by organizations by choosing the type of Big Data Technologies that exists based on the necessities, requirements and industry demands of the respective organization.



Source: based on Osadchuk (2022).

Fig. 1. Big Data Technologies

The Big Data of all the organization is segregated into any one of the data categories as shown in Fig. 1. and covers data storage, data mining, data analytics and data visualization. Banking and health care sector majorly relies on data storage as it consists of highly confidential information and needs the collected reports and documents to be stored and required with high level of monitoring to avoid security breaches and documentation theft (RapidMiner, 2022). E-commerce organizations highly rely on data mining as it repetitively advertises any new sale; discount offers, frequently searched items and reminds the customer with the help of search engine data.

There is a wide range of software's in the market to process and model the data available in the organization servers, search engines storage cloud. The software's used differ from organization to organization based on the industry type, needs, targets and goals. Few examples of big data analyzing software's Apache Hadoop and MongoDB are provided. Apache Hadoop is an open platform source which is highly scalable and reliable for processing large data sets using basic programming models (Ahmed et al., 2020). Hadoop is a cost-effective solution for processing huge amounts of unstructured data and does not have any format requirements (Hadoop, 2018). MongoDB is a horizontal scale out software that is used for data storing. MongoDB which is found in the year 2007 is an open-source document database system which is very flexible and allows variations in data gathered (Kinsta, 2023). MongoDB allows developers and analysts to analyze data very quickly in a scalable way (MongoDB, 2017).

2. Empirical background and data analysis

The organization chosen for the research paper is a Danish multinational banking and financial services corporation. The organization is a retail bank that operates in Northern European region and has more than 5 million retail customers and 22,376 employees as of the year 2020 (Danske bank, 2022). The organization chosen has a history of 150 years and is the largest bank in Denmark with a net worth of 4.589 trillion DKK.

Danica pension in daily activities uses these types of Big Data technologies for data storage: Apache Hadoop and Mongo DB; for data mining: RapidMiner, Presto; for data analytics: Apache Spark, Splunk; and for data visualization: Tableau, Looker.

The structured data used for the research paper is quantitative which has the numerical data of number of people who visited the Danica pension website through various operating devices like

IOS, Android and Webpage. Among the huge data stored in the dedicated databases system of the organization, the “Health Insurance” tab has been chosen for research and modeling purposes, as it has the higher range of numerical data compared to other tabs in the organizations website. The Big Data gathered by using Apache Hadoop for the storage, Presto for data mining and Splunk for data analytics, and is a collection of facts such as words, measurements, observations that provides more information about a customer observation.

BIG DADDY daily data was chosen for particular case study for July-September 2022. During the mentioned period of time BIG DADDY webpage has been visited for 156 156 times: 96 048 (61.5%) – the ‘new’ webpage version and 60 108 (38.5%) – the ‘old’ webpage version. Particular 651 340 clicks by devices in numbers: IOS 404 775, ANDROID 57 691, WEB 188 874 (see Fig. 2).



Fig. 2. Usage of the ‘new’ webpage by devices: accumulated data for July–September 2022

As per the BIG DATA collected from the chosen organization, it can be observed that the amount of Android users is very small compared to other IOS devices and web users (see Fig. 2 and Fig. 3).

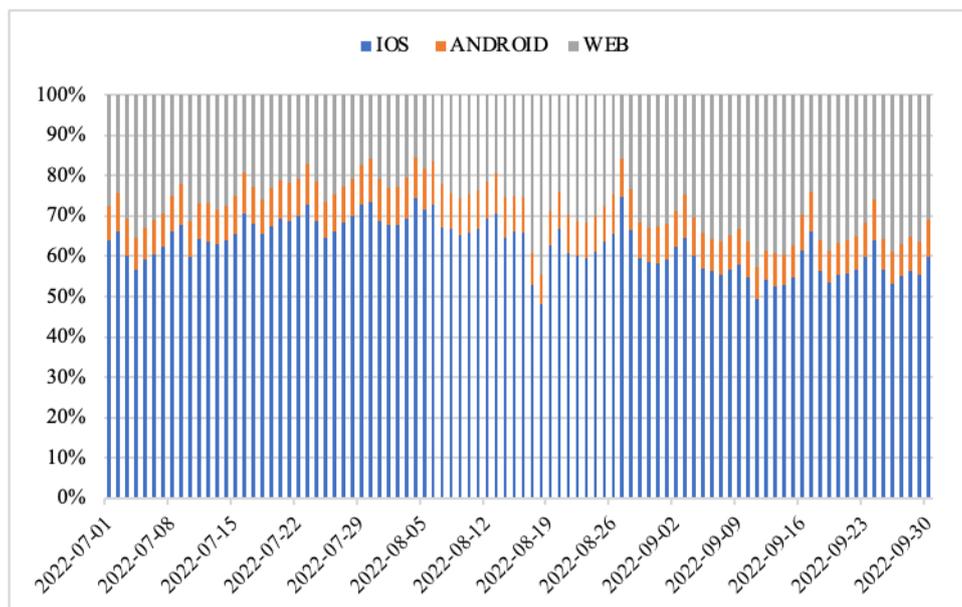


Fig. 3. Usage of the ‘new’ webpage by devices: daily data for July-September 2022

Also, we have focused on the number of errors that occurred to various customers due to different reasons while they were on the webpage. We have divided these errors into two different segments, Front end/Midrange errors and Backend Errors. The main reason for collecting this data is to avoid these scenarios for the best customer performance and also, the Development team can fix the bugs before they release the next version of this webpage.

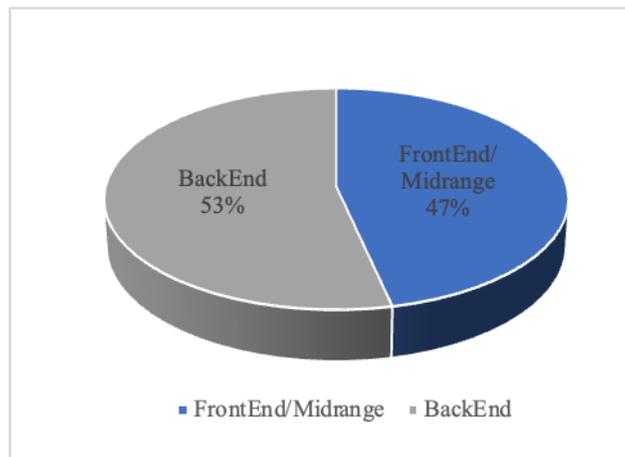


Fig. 4. Reasons of 'Oops' pages

There might be a possibility that organization may decide to switch completely from Android devices to WEB and IOS devices due to the number of errors (Front end, Backend and Midrange) that are occurring due to various reasons on Android devices. So, to increase the traffic on the website, the organizations can choose better customer performance and better customer service if they want to continue with the Android devices. In other words, there might be a possibility that as the complexity of the webpage increases the performance of the Android operating system starts decreasing significantly so if the organizations want to keep the Android users they have to start focusing on the back end and front end development of those websites and have to monitor where the errors are occurring. They should find the root cause of these error messages and fix them permanently.

BIG DADDY data defines the situation where data sets have grown to such enormous sizes that a traditional information technology cannot effectively handle the size of the data set, the volume and growth of the data set. Even if the data was somehow handled without the use of BIG DADDY data, but the amount of time it will take to produce the results it will be not an appropriate choice for multinational companies and it will be extremely hard to determine the accuracy of the data.

3. Methodology: model and data

Seeking to understand better the customers' behavior on launching marketing innovation – new BIG DADDY webpage, two steps model has been developed. First step was focused on the ways by which webpage was reached (see Fig. 5).

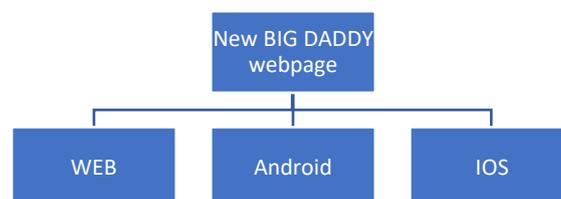


Fig. 5. Model on customers' behaviour switching from 'old' to 'new'

On the second step, regression analysis has been chosen for modeling where dependable variable is number of webpage visits and independent variables are the ways to open webpage:

$$BIG\ DADDY = c + IOS + ANDROID + WEB + \varepsilon \quad (1)$$

The data that we have collected for this research is quantitative and consists of number of people in Denmark visiting to the Danica Pension website using different ways – for example IOS, Android and WEB. It can be either PC, Laptop Mobile or any IOS devices. There are different segments on this webpage and we focused on the segments where the traffic was a more as

compared to others. In other words, we focused on collecting the data where customers have mostly clicked on Health & Insurances tab which is also known as BIG DADDY in technical terms.

According to statistical data which shows IOS users share 62%, WEB users 29% and Android users 9% shares of total clicks on new web page (see Fig. 2), we raised few related hypotheses which could help company to identify further steps related to new webpage traffic and development.

Hp1: Danica Pension website should be focused on IOS and WEB users due to their positive impact on clientele formation.

Hp2: Danica Pension website should be less focused on Android users due to their low impact on clientele formation.

The data for the months of July, August and September 2022 has been collected for studying and modeling. We have organized this data on the basis on number of logins on a daily basis for 3 months using different devices: 7/01/2022 – 9/30/2022 period data sample with 92 observations (see Annex 1). We have used EViews software for our modeling and its statistical representation. For modeling, the least squares method has been applied.

4. Results

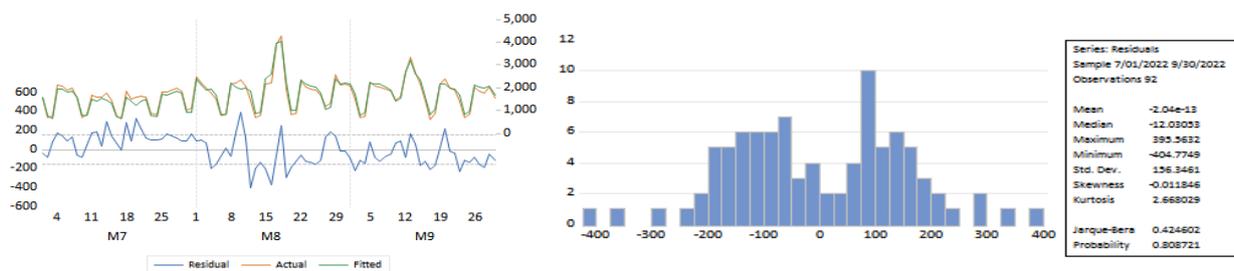
The estimation output by Equation 1 shows that the new webpage is more popular among IOS and WEB users, although Android systems showing negative impact on switching to new website (see Equation 2 and Table 1).

$$BIG\ DADDY = 218.30 + 0.27*IOS - 1.24*ANDROID + 0.51*WEB \quad (2)$$

Table 1

Estimation output

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	218.2985	50.25410	4.343895	0.0000
IOS	0.272161	0.070245	3.874458	0.0002
ANDROID	-1.241797	0.554260	-2.240459	0.0276
WEB	0.516477	0.025324	20.39470	0.0000
R-squared	0.947579	Mean dependent var		1697.348
Adjusted R-squared	0.945792	S.D. dependent var		682.8663
S.E. of regression	158.9887	Akaike info criterion		13.01805
Sum squared resid	2224412.	Schwarz criterion		13.12769
Log-likelihood	-594.8302	Hannan-Quinn criterion		13.06230
F-statistic	530.2424	Durbin-Watson stat		0.985519
Prob(F-statistic)	0.000000			



a) Residual, actual, fitted

b) Normality test

Fig. 6. Modelling data analysis

The biggest negative impact on using new BIG DADDY web page was shown by Android users: one click on the new web page decreasing further intention to visit web site by 1.24 clicks.

Although positive impact on switching to the new web page was shown by IOS and, especially, by WEB users which have the highest impact on traffic extension of the new website.

Modeling results show high reliability of our model due to 0.95 R-squared and p-values which are below 0.01 with one exemption for ANDROID users – $p < 0.05$. Graphical view of our model's reliability is shown in Fig. 6 (a) where the actual data are sufficiently reflected by fitted data – calculated by our model. Normality tests of estimation (Fig. 6 (b)) supports the validity of our modeling results by showing a nonrejection hypothesis on the data used for our modeling normal distribution.

Conclusions

As per the Big Data collected from the chosen organization, it can be observed that the amount of Android users is very less compared to other IOS devices and web users. In addition, estimation based on big data proved hypothesis that company should be focused on IOS and web users and pay less attention to Android due to its negative impact on clientele formation. There might be a possibility that organization may decide to switch completely from Android devices to WEB and IOS devices due to the number of errors (Front end, Backend and Midrange) that are occurring due to various reasons on Android devices. So, to increase the traffic on the website, better customer performance and better customer service the organizations can choose if they want to continue with the Android devices.

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Data used for modeling: numbers of clicks by devices and logins to web

Date	Devices			Logins to web		
	IOS	ANDROID	WEB	BIG DADDY DATA	NEMID LOGINS	OLD SOLUTION
2022-07-01	4091	535	1762	1538	889	649
2022-07-02	1890	268	699	684	367	317
2022-07-03	1245	190	637	731	332	399
2022-07-04	4110	589	2567	2111	1351	760
2022-07-05	4379	591	2419	2074	1301	773
2022-07-06	4349	604	2223	1889	1188	701
2022-07-07	4674	612	2205	2004	1292	712
2022-07-08	4500	599	1702	1524	933	591
2022-07-09	2272	339	737	711	380	331
2022-07-10	1511	222	787	804	419	385
2022-07-11	4039	549	1689	1681	897	784
2022-07-12	3888	585	1632	1577	865	712
2022-07-13	3936	531	1776	1580	985	595
2022-07-14	3734	488	1605	1750	857	893
2022-07-15	3730	537	1423	1450	741	709
2022-07-16	2142	312	585	782	286	496
2022-07-17	1621	219	544	664	285	379
2022-07-18	4364	584	1724	1850	949	901
2022-07-19	4220	582	1448	1486	746	740
2022-07-20	3937	538	1208	1574	628	946
2022-07-21	4508	623	1421	1629	770	859
2022-07-22	4868	646	1447	1607	672	935
2022-07-23	2548	356	591	874	309	565
2022-07-24	1960	279	613	825	330	495
2022-07-25	4737	655	1942	1811	967	844
2022-07-26	4898	668	1824	1826	925	901
2022-07-27	5298	669	1772	1888	896	992
2022-07-28	6212	825	1860	1965	950	1015
2022-07-29	6871	932	1638	1864	785	1079
2022-07-30	3408	497	728	1000	360	640
2022-07-31	2870	434	874	1074	445	629
2022-08-01	7599	1006	2600	2471	1341	1130
2022-08-02	6942	951	2335	2231	1218	1013
2022-08-03	6836	984	2028	1969	1046	923
2022-08-04	8261	1120	1704	1759	780	979
2022-08-05	6320	886	1610	1513	784	729
2022-08-06	3005	445	677	764	309	455
2022-08-07	2456	396	805	831	358	473
2022-08-08	6707	880	2449	2149	1207	942
2022-08-09	6055	839	2374	2224	1312	912
2022-08-10	6000	857	2239	2339	1157	1182
2022-08-11	6316	899	2231	2096	1184	912
2022-08-12	6127	807	1886	1453	955	498
2022-08-13	2847	412	782	686	370	316
2022-08-14	2415	375	951	769	452	317
2022-08-15	7212	970	2721	2183	1417	766
2022-08-16	7679	1003	2957	2222	1502	720
2022-08-17	7924	1163	5878	3904	2939	965
2022-08-18	6750	1011	6262	4284	3152	1132
2022-08-19	6064	844	2771	1953	1394	559
2022-08-20	2765	386	989	813	525	288
2022-08-21	2418	377	1179	892	572	320
2022-08-22	5934	869	3082	2292	1604	688
2022-08-23	5347	790	2845	2035	1449	586
2022-08-24	5390	794	2656	1939	1420	519
2022-08-25	5632	786	2428	1878	1291	587
2022-08-26	5532	828	2075	1655	1086	569
2022-08-27	3719	473	789	1182	396	786
2022-08-28	3519	540	1232	1327	630	697
2022-08-29	6076	906	3216	2548	1594	954
2022-08-30	5145	766	2880	2142	1452	690
2022-08-31	5338	821	2982	2174	1489	685
2022-09-01	5250	767	2835	2068	1415	653
2022-09-02	4394	618	2039	1479	1033	446
2022-09-03	2193	358	836	690	412	278
2022-09-04	2006	313	1012	755	490	265
2022-09-05	5063	789	3051	2275	1577	698
2022-09-06	4598	662	2912	2069	1474	595
2022-09-07	4510	655	2957	2035	1502	533
2022-09-08	4533	693	2783	1964	1453	511
2022-09-09	4494	692	2570	1857	1335	522
2022-09-10	2890	482	1917	1467	972	495
2022-09-11	2469	381	2134	1609	1071	538
2022-09-12	5255	700	3760	2643	1929	714
2022-09-13	6425	1019	4782	3333	2375	958
2022-09-14	4991	725	3717	2651	1925	726
2022-09-15	4701	667	3200	2156	1631	525
2022-09-16	4069	609	1963	1463	1031	432
2022-09-17	2091	302	760	598	365	233
2022-09-18	1930	268	1234	884	597	287
2022-09-19	4136	593	2980	2162	1549	613
2022-09-20	4480	648	2970	2386	1523	863
2022-09-21	4195	631	2720	1970	1371	599
2022-09-22	4206	606	2589	1913	1296	617
2022-09-23	3911	553	2056	1426	959	467
2022-09-24	2104	338	853	700	387	313
2022-09-25	1777	243	1117	842	528	314
2022-09-26	4074	616	2989	2030	1432	598
2022-09-27	4131	609	2778	1864	1292	572
2022-09-28	4254	626	2656	1782	1212	570
2022-09-29	4337	638	2855	2034	1396	638
2022-09-30	4168	648	2154	1547	1031	516

Source: Danica Pension data (2022).

Assessment of Financial Condition in Companies Applying Circular Economy Principles

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Abstract. Extraction and use of raw materials have a significant impact on the environment by increasing energy consumption and CO₂ emissions. Because of it, every year humans generate 2.5 billion tons of waste. In recent years, EU has been working on laws on waste management. In March 2020, the European Commission presented the circular economy plan, which involves more eco-friendly production and waste recycling. Special attention is paid towards sectors that require a lot of raw materials usage, e.g. electronics, plastic, textile and construction. Being a great solution, the application of the circular economy principle still raises an essential question whether and how much it is effective. In order to achieve the set goals it's necessary to constantly monitor the processes, therefore the evaluation of the efficiency of the circular economy and its impact on the company's financial indicators is still a problem. The aim of this research is to develop a model for assessing the financial condition of companies applying circular economy principles. These are the main objectives that have been set: 1) describe the concept, theory and principles of circular economy after analysing the scientific literature; 2) summarise empirical studies after analysing the circular economy principles and the assessment of the financial conditions of companies. It was found that in order to evaluate how the implementation of the circular economy principles changes the financial condition of companies, different authors use different methods. It is emphasised that the financial condition of companies applying circular economy principles can be assessed using a composite indicator.

Keywords: *circular economy, principles, financial conditions, company.*

Introduction

Relevance of the article

Along with the growth of the world population, the demand for raw materials and the amount of waste is growing. However, the supply of basic raw materials is limited, and some EU countries are dependent on resources supplied by other countries. In addition, their extraction and use have a significant impact on the environment and increases energy consumption and CO₂ emissions. For this reason, billion tons of waste are generated every year. In recent years, the EU has been actively working on updating legislation on waste management. In March 2020, the European Commission presented a new circular economy action plan, which includes proposals for more sustainable product design, waste reduction and recycling. Special attention is paid to resource-intensive sectors related to electronics, plastics, textiles and construction. In 2021 February, the European Parliament approved a new circular economy action plan and called for the establishment of mandatory 2030 purposes of use and consumption of materials in 2022 March. The Commission has announced the first package of measures to accelerate the transition to a circular economy. The proposals include the promotion of sustainable products, a review of the Construction Products Regulation and a strategy for sustainable textiles. In such case, the application of the circular economy principles is a great solution, but the key issue in applying them is its effectiveness. In order to achieve the set goals, it is necessary to constantly monitor the progress of the process and evaluate the effectiveness of the circular economy. Therefore, the need to evaluate the efficiency of the circular economy is relevant and debatable.

Level of problem investigation

In recent years, the concept of the circular economy has received increasing attention. Souza et al. (2022) claimed that the linear flow of production causes several problems, mainly concerning the environmental pillar of sustainability. To find out more, scientists Aboulamer et al., (2020), Dewick (2020) and others discussed the origins of the circular economy, the concept, identify the differences between the linear economy and the circular economy, presented the methods based on which the connections between the financial condition of companies and the application of circular economy principles are evaluated. In the scientific literature, the topic is little studied, only few articles by foreign authors are written, and no research on the topic has been conducted

in Lithuania. Aboulamer et al. (2020) wrote about the impact of the implementation of CE principles on the financial condition of companies and sought to find out what influence the application of circular economy principles has on the increase in the value of other types of assets of the company and how to assess the value of such assets. as well as that, Aboulamer's (2017) study, which was done in 2017, found that applying the principles of a circular economy increases the market equity value of companies. Using a cost-benefit analysis, Ramos et al. (2022) successfully assessed the financial health of a company applying circular economy principles. Bartolacci et al. (2018) found that companies which apply circular economy principles more actively have a higher ROA than those that do not. However, Charlo et al. (2015) and Lee's et al. (2009) studies showed that there were no significant differences in the evaluation of the financial condition between companies that apply the circular economy principles and those that do not. Bakan et al. (2022) claimed that our responsibility today is not to think about what we could do for a better world but think of what should we do to make our ever-changing world better and more sustainable.

Scientific problem – how to assess the financial condition of companies applying the circular economy principles?

Object of the article – an assessment of the financial condition of companies applying the circular economy principles.

Aim of the article – to develop a model for assessing the financial condition of companies applying circular economy principles.

Objectives of the article:

1. After analysing the scientific literature describe the concept, theory and principles of the circular economy.
2. To summarise empirical studies after analysing circular economy principles and the assessment of the financial conditions of companies.

Methods of the article

The theoretical concept of the circular economy, its origin and the application of its principles in relation to the financial condition of companies were analysed using the general scientific research method – comparative analysis and synthesis of scientific literature.

1. Theoretical framework for the circular economy and company financial conditions assessment

1.1. Origin, development and principles of the circular economy

Despite the fact that the theory of the circular economy and its use in practice is rapidly gaining popularity, certain difficulties arise in order to define the concept of the circular economy. Different authors tend to understand this concept and the main principle of it differently (Blomsma, 2017). The conducted literature research revealed that 16 different combinations are used to identify the main principles of the circular economy. The majority, 35–40% of the definitions consisted of three main R's – reduce, reuse, recycle. For example, Jiao, & Boons (2014) argue that the concept of circular economy covers holistic activities that include efforts to reduce, reuse, recycle in recycling, circulation and consumption processes. 23% of concepts included the definitions of reuse, recycle, but did not include the concept of reduction. No other 3R combination was used more than 10% of definitions. Only 3–4% of definitions found in the literature were similar to the official definition of the EU 4R circular economy principles (European Commission, 2011). Based on this data, it can be observed that a large part of the respondents, when talking about the basic, most important principles of the circular economy, do not mention one of the main principles, which is reduction. It is believed that this is due to the reluctance of the respondents to reduce production and consumption, as it is likely that this would have a negative impact on the economy and profits (George, Lin, & Chen, 2015). Not only the main principles of the circular economy but also the goals are interpreted differently. The largest part of the literature identifies the improvement of the quality of the environment as the main goal of the circular economy (Sauve, 2016; Lieder, & Rashid, 2016; European Commission, 2011; Geissdoerfer et al., 2017). Some researchers claim that the social

aspect is missing when defining the main goals of the circular economy and say that the goals of the circular economy should include concepts such as creating welfare for society, and caring for people (Murray, Skene, and Haynes, 2013; Moreau et al., 2017). The goals of the circular economy are also very rarely associated with concern of the well-being of future generations, and their quality of life (Geissdoerfer et al., 2017). Typically, the circular economy is perceived differently in different sources.

It is clearly observed that the 3R combination is the most frequently found in the literature and consists of the concepts of reduce, reuse and recycle. It is also noticeable that since the beginning of the examination of circular economy (CE), this combination has been used most often. To summarise, the circular economy theory is becoming more and more popular and attracts the attention of various authors, therefore it is likely that the concept of the circular economy will gain integrity in the future.

The concept of the circular economy has gained momentum since the 1970s. Table 1 provides definitions of the circular economy.

Table 1

Circular economy definitions

Author	Description
Yuan (2003)	“It is an economy at its core with a circular, closed flow of materials and the use of raw materials and energy in several stages.”
Bocken et al. (2006)	“It is an economy whose principles are design and business model strategies that slow down, narrow and close resource loops.”
Geng, & Dobrstein (2008)	“It is the implementation of a closed cycle of materials throughout the economic system.”
MacArthur (2013)	“It is an industrial economy whose purpose and design is to restore, re-engineer and reuse.”
Weber (2016)	“It is an economy that is regenerative by design and aims to keep products and materials useful and valuable throughout their lifetime.”
General (2022)	“It is an economy built from societal production and consumption systems that maximize the service provided by the linear nature-society-nature flow of materials and energy.”

Source: created by the authors.

Several authors, such as Andersen (2007), Ghisellini et al. (2016), and Su et al. (2013) attribute the emergence of the concept of the circular economy to scholars Pearce and Turner, who have studied the influence of natural resources on the economy, on the acquisition and consumption of raw materials for production. They sought to find out how the cycle of obtaining raw materials, production, consumption and waste takes place in the context of the modern economy. Pearce and Turner were inspired and greatly influenced by Boulding’s (1966) work, who described the Earth as a unified, closed-loop system with limited assimilative potential and based on this idea came to the conclusion that the environment and the economy must work in balance because they are directly one dependent on the other. Stahel (2013) emphasised the resale of used goods for recovery as the most appropriate model in a loop economy, allowing industries to make a profit without spending on waste recycling processes. The modern understanding of the circular economy and its practical application to economic systems and industrial processes has evolved to include different features and contributions from various concepts that share the idea of a closed loop. The most popular concept of the circular economy theory that has received the most attention has been presented by MacArthur (2013), who introduced the circular economy as an industrial economy whose purpose and design is to restore, re-engineer and reuse. Scholars Geng, and Dobrstein (2008) stated similarly and defined the circular economy as the implementation of a closed cycle of materials throughout the economic system. Webster (2016) declared that a circular economy is one that is restorative in design and aims to keep products and materials useful and valuable throughout their lifetime. Mendoza et al. (2022) stated that the circular business models, aimed at narrowing, slowing, and closing resource loops, can potentially generate significant economic and social benefits, promote resource security and improve environmental performance. Accordingly, Yuan et al. (2006) argued that the core of a circular economy is the circular, closed flow of materials and the use of raw materials and energy in

multiple stages. Bocken et al. (2016) categorised circular economy principles as design and business model strategies that slow, narrow and close resource loops. General (2022) presented the circular economy as an economy that is created from societal production and consumption systems that maximise the service provided by the linear production-society-flow of natural materials and energy.

Summarising the definitions of the circular economy presented by different authors in Table 1, it can be said that in one way or another, all the definitions of the circular economy include the aspect of a closed system and resource conservation. Based on these definitions, a summarising definition of the circular economy can be formed by stating that the circular economy is an economy whose main goal is to create a closed system in which raw materials and waste are reused, and the created products are characterised by a long existence and the possibility of reuse.

1.2. Methodologies for assessing the financial condition of companies

After analysing and summarising the scientific literature on financial analysis, it can be stated that financial analysis is a means of knowing economic processes, the purpose of which is to objectively assess the company's financial condition in order to make appropriate management decisions and project business development opportunities (Janovič, 2012). Janovič (2012) distinguished many different types of financial analysis. One of the most popular is the retrospective financial analysis, otherwise known as the evaluation of financial results obtained in the past. Another popular type of analysis is the ratio analysis. It is an analysis of financial statements that helps interpret the financial conditions of a company. Janovič (2012) offered prospective financial analysis for those seeking to forecast the company's financial condition. This type of analysis is performed when the factors of the indicator to be calculated are not defined by points but by probability distributions of their possible values. Data for analysis are taken from the companies' forecast financial statements. First, financial indicators are selected, then factors influencing the final value of selected financial indicators are identified and factors, probability distributions of possible values and averages and standard deviations are selected.

In order to assess the financial condition of companies, an innovative methodology for calculating KPIs (key performance indicators) is also presented (Sedaravičiūtė, 2020). In contrast to traditional indicators, KPIs allow companies to assess whether previously set long-term goals have been achieved. It is recommended that the main KPIs analysed be annual sales per employee, cost-related KPIs, operational efficiency ratios, EBITDA (earnings before interest, taxes, depreciation and amortization) and EBITDA margin. Labonaitė, and Subačienė (2014) present the net profitability assessment methodology. Regardless of the type of company or sector, each of them strives for the best possible results. Usually, these results are associated with generating and increasing profits. Net profitability defines not only the efficiency of the company's operations but also the efficiency of financial management. This methodology for assessing the company's financial condition includes three stages. First of all, the companies' research sources that will be compared are selected, the factors influencing the net profitability are evaluated and lastly, the results are analysed. According to Mackevičius, & Valkauskas (2012), in order to assess the company's financial condition and its operational prospects more objectively, it is appropriate to use the composite indicators analysis methodology. In order to carry out a detailed assessment of the company's financial condition, an assessment system consisting of partial, integrated and composite indicators is proposed.

The methodology of complex analysis of general sales profitability is based on a similar principle (Mackevičius et al., 2008). This methodology includes the analysis of the factors of gross sales profitability, the analysis of the relationship between gross and net sales profitability, the analysis of the relationship between gross and net sales profitability and solvency indicators, and the evaluation of gross and net sales profitability indicators. In order to assess the uneconomical nature of company managers, also it is appropriate to calculate the difference between net sales profitability and gross sales profitability.

In order to evaluate how the implementation of the circular economy principles changes the financial condition of companies, different authors used different methods. For example, Aboulamer et al. (2020) used a financial indicator that measured cash flows and the risks associated with cash flows, in other words, the cost of capital, in order to assess the financial health of a company. The author claimed that a successful business applying circular economy principles must correctly assess the financial value and risks associated with CE investments. It is also emphasised that if real investors pay attention to companies that properly allocate their finances and invest in the implementation of CE, more and more companies will want to increase the amount of money allocated to CE funds. Another example is Bartolacci et al. (2018) work, where using the ROA (Return on Assets) indicator, the researchers demonstrated a positive correlation between the ROA indicator and the amount of recycled waste. Dheskali et al. (2020) evaluated the FCI (investment in fixed capital) indicator by applying quantitative modelling and based on it created a three-equation model, which evaluated the financial status of different biotechnological companies taking into account the implementation of CE principles in their activities.

2. Summarisation of the conducted studies regarding the assessment of the financial condition in companies applying the principles of the circular economy

In order to assess the impact of the application of the principles of the circular economy on the financial condition of companies, more and more authors are starting research that seeks to find appropriate ways to assess this dependence. Table 2 presents some of the results of research conducted on the importance of the circular economy for companies.

Table 2

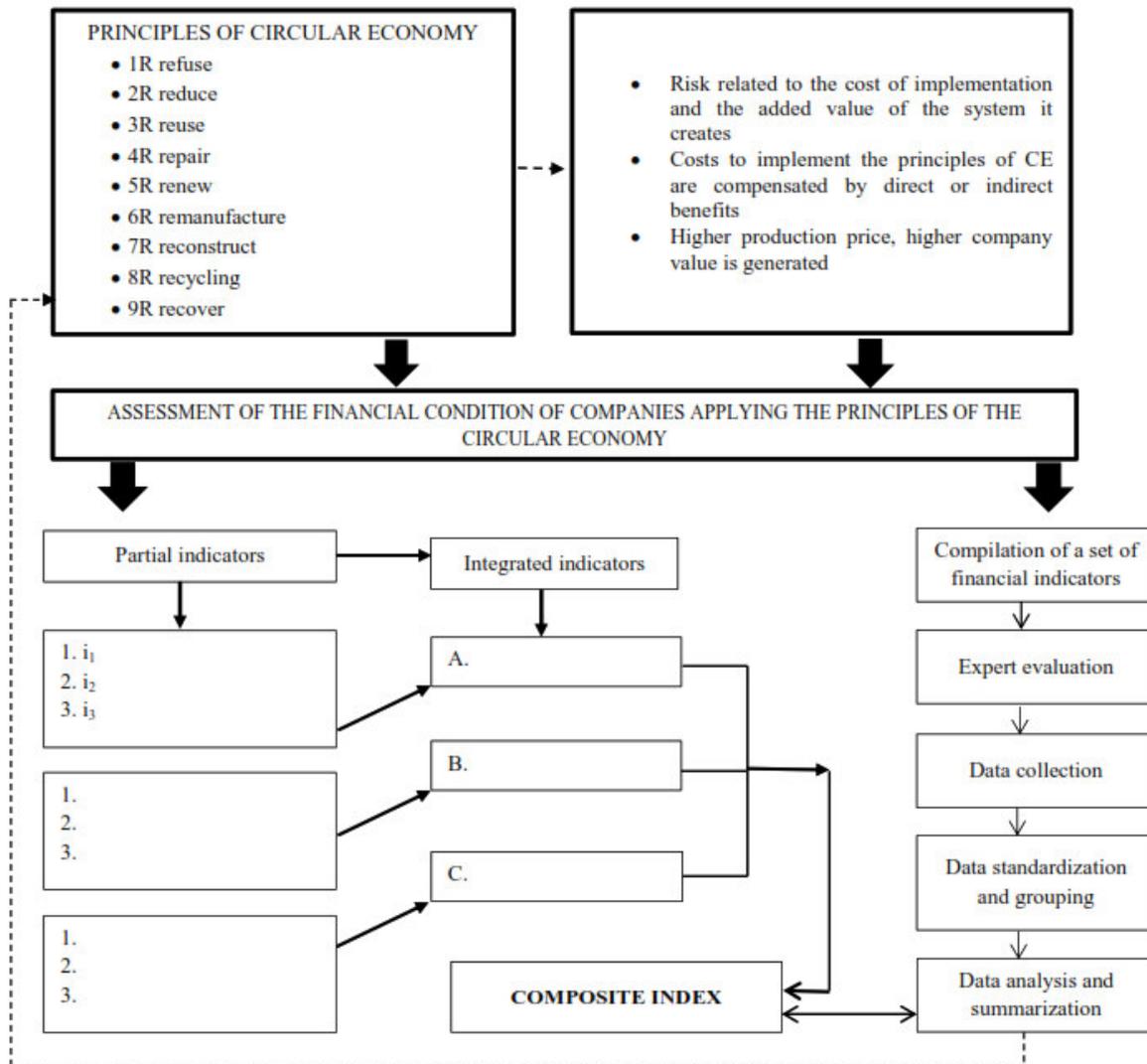
Results of research on the importance of the circular economy for companies

Author	The aim of the research	Method
Aboulamer (2017)	To explain the magnitude of the potential increase in the market equity value of companies when this new, CE, economic paradigm is adopted.	Quantitative analysis
Aboulamer, Soufani, & Esposito (2020)	To explore the impact of the ability to value other types of assets on investments in the circular economy.	Qualitative conceptual
Delfina Ramos, Luis Fonseca et al. (2022)	To assess the impact of the application of circular economy principles on the company's finances. It has been established that the quantitative analysis of costs and benefits is a suitable method in order to assess the influence of the application of CE principles on the company's finances.	Quantitative analysis
Bartolacci, Paolini, Quaranta, & Soverchia (2018)	To assess how environmental protection and the financial condition of companies that handle waste are correlated. The results showed a positive correlation between ROA and volume of waste treatment and between ROA and the percentage of garbage cleared.	Quantitative analysis
Lee et al. (2009)	To find out whether the financial indicators of leading companies in the field of social responsibility and irresponsible companies differ.	Quantitative analysis

Source: created by the authors.

Aboulamer (2017) argues that the application of the circular economy principles in business is a measurable process that creates added financial value. However, not all companies can benefit from the application of CE principles and be valued equally. Aboulamer et al. (2020) claimed that from a financial value perspective, potential circular economy models must be credible. In any traditional valuation, appraisers rely on two components: cash flows and the risk involved in turning those cash flows into a cost of capital. Anticipation and stability of cash flows are the main contributions of a business based on the principles of a circular economy. Ramos et al. (2022) presented a benefit-cost financial analysis (CBA), which is an analytical tool that helps assess the appropriateness and effectiveness of economic investments. The research conducted by these authors demonstrates that investments in the field of environmental management in companies are important for the entire company's activities. Bartolacci et al. (2018) conducted a study, during which they sought to determine the impact of investments in the application of CE principles in the company's activities on the company's ROA indicator.

In Figure 1 the theoretical model of financial condition assessment in companies applying circular economy principles is presented.



Source: created by the authors.

Fig. 1. Theoretical model of financial condition assessment in companies applying circular economy principles

Figure 1 illustrates the initial step of identifying the circular economy principles employed by the selected companies under examination. As has already been mentioned, the application of CE principles to companies is usually associated with certain risks and higher costs, growing liabilities, and at the same time it generates greater added value for the company in the future. Therefore, the possible consequences of the application of CE principles for the company are represented by a dotted line.

After summarising both the theoretical provisions and the conducted scientific research, it was found that the researchers pay attention to the connections between the application of circular economy principles and the financial condition of companies. It is emphasised that the impact of applying CE principles on the financial condition of these companies can be analysed based on the trends of certain financial indicators. Among these indicators, profitability measures such as ROA (Return on Assets) and ROE (Return on Equity) hold particular importance. Thus, this study aims to validate the arguments put forth by scientists. The main defended statement is made: Companies that actively apply circular economy principles in their activities have better financial results.

Conclusions

1. Following a thorough analysis of the scientific literature, this study presents an overview of the circular economy, its theoretical origins, and its core principles. The circular economy is defined as an economic model aiming to establish a closed-loop system, wherein raw materials and waste are continually reused, and products are designed for prolonged use and reutilisation. Additionally, the key principles of the 9R circular economy are identified.
2. This study investigates the methods employed to assess the financial condition of companies. It was discovered that such assessments typically involve the calculation of both absolute and relative financial indicators. Additionally, the evaluation of net profitability, the determination of KPI (Key Performance Indicators) metrics, and the computation of a composite indicator are commonly utilised approaches to gauge a company's financial health.
3. Summarised empirical research has examined how the implementation of the circular economy principles affects companies' financial condition. The studies have explored the impact in various ways, including evaluating how the application of the circular economy principles contributes to the growth of the company's other types of assets and their corresponding value. Furthermore, these studies have analysed changes in the market equity value for companies that adopt circular economy principles. Additionally, a cost-benefit analysis was conducted to assess the financial condition of companies embracing the circular economy approach, along with determining differences in the ROA indicators among these companies.

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Intergenerational Divide: Can One Motivational Approach Drive Them All?

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Abstract. In the past decade, Human Resource professionals have faced an increasing challenge in dealing with issues related to intergenerational divide in the workplace, as four different cohorts coexist. This divide is influenced by a variety of factors such as increased life expectancy, rapidly evolving technologies, the era of social networks, declining demographics, and many others. Moreover, the turbulences in the world over the last few years, such as the Global pandemic, have only highlighted existing problems and presented additional challenges. Motivating employees is inherently a complex issue, and dealing with generational differences becomes even more so. Due to that, organizations, their HR professionals, and managers are confronted with the question of whether it is possible to create a single motivational system for employees of all generations, or whether a tailor-made approach is needed. Even though it is nearly impossible to answer the mentioned question unequivocally, the goal, while writing this article, was at least to move towards the point of better understanding. After analysing multiple studies carried out by various scholars, as well as research papers, not only generational differences were touched upon, but also similarities in the context of motivation. Moreover, four motivation drives were characterized, which, as it turned out, correlate quite closely with the main similarities of cohorts in the context of motivation.

Keywords: *generations, motivation, differences, similarities.*

Introduction

Relevance of the article

Organizations and companies have never been more diverse than they currently are, due to the fact that there are members of four different generation cohorts in the labour market at the moment. Although working with a multigenerational workforce can be enriching and fulfilling, it also brings its own challenges, especially for HR professionals or company managers, as they have to find a common ground and meet the needs of their employees by using appropriate incentive measures. For this reason, it is particularly important for them to understand the differences among the generations and also be aware of similarities in needs in the context of motivation. From the perspective of management as well as psychology, human resource's motivation is a key factor that can ensure the success of an individual's work performance and consequently contribute to the success of the whole organization (Iosifescu & Popescu, 2022).

Level of problem investigation

Generational differences and their impact in the workplace, when all four cohorts have to coexist together, are crucial for the successful functioning of organisations since their outcomes significantly depend on it. These aspects have been extensively studied by various scholars, although less focus has been placed on the context of motivation. Moreover, the main focus is usually on the differences, while it is equally important to understand the similarities.

Scientific problem

Existing research related to generations in the context of workplace motivation mostly concentrate on the differences among the cohorts and not enough on where they are similar.

Object of the article. Generational cohorts and workplace motivation.

Aim of the article. To move towards understanding whether a single motivational approach can work for all generations.

Objectives of the article:

1. To describe generations and aspects relevant to their identity formation.
2. To define motivation, the factors influencing it, and identify motivational drives.
3. To analyse generational similarities in terms of motivation.
4. To explore other factors that have an impact on an individual's motivation.

Methods of the article: comparative analysis of scientific literature and synthesis.

1. Generational cohorts

According to various different scholars, Karl Mannheim was the first sociologist and modern academic to introduce the notion of *generation* and described it as a group of people who belong to the same age and are linked by important historic events (Valickas, & Jakštaitė, 2017). In 1991 sociologists Strauss, & Howe published a book about generations, where they referred to the term generation as “a group of people who have birth years in common, and therefore presumably experience significant public events at about the same point in their development” (Deal, Stawiski, Gentry, Graves, & Weber, 2013). Based on age, people fall into different generation groups or cohorts, typically one generation is 15–20 years apart from another (Doherty, Kiley, Tyson, & Jameson, 2015).

At this very moment, there are seven living generations on planet Earth, though in the labour market we can currently meet four of them, with rare exceptions, five. It is important to address the fact that researchers may present slightly different birthdate periods of generations, for instance in multiple studies it is stated that Gen Y was born in the period of 1982–2000, though according to others, the start of this generation is 1980, moreover, the later generation (Gen Z) is considered to be born between 1995 and 2010, sometimes up until 2012.

The first of them is the Silent generation a.k.a. Traditionalists (born in the period of 1928–1945). It is mostly not included in the recent studies, as it is quite an aged generation. However, there are long-established family businesses, especially in countries like Italy or France, where we can still find members of the Silent generation still involved in business activities. They were also called “the Lucky Few” because they did not have to serve in World War II, being too young, and the youngest members made it to adulthood without having to face economic troubles (Mason, 2011).

Baby Boomers (1945–1964). This is the largest cohort and got its name based on the fact that this generation caused an 18-year exception to the pattern of birth rate dropping in Western World (Fingerman, Pillemer, Silverstein, & Sutor, 2012) as after World War II the spike of births was the largest in history (Mason, 2011).

Gen X (1965–1981). The X-ers grew up in a period of technology and information revolution that made a huge impact on both their professional and personal lives (Elkins, McRitchie, & Scoones, 2007). The members of this generation are considered to be exceptionally autonomous and independent due to the fact that a lot of children grew up in a home where both parents worked long hours, and they had to be self-reliant as they stayed at home alone (Bejtkovy, 2016) or with even younger siblings that they had to take care of. Also, quite often they grew up in a single-parent home (Elkins, McRitchie, & Scoones, 2007) as the divorce rate was quite high at the time, and “they were the first generation to witness significant numbers of divorces (Hughes, 2005).”

Millennials (a.k.a. Gen Y), born between 1982–2000, being the “product” of baby-boomers (Elkins, McRitchie, Scoones, 2007) are considered to be the technology generation or the computer age (Mason, 2011), as “they are more technologically savvy, educated, and more ethnically diverse than any previous generation” (Bannon, Ford, & Meltzer, 2011). Though even more tech-savvy is the next generation.

Gen Z (1995–2010) grew up in the age of social media and the very peak of technology, for example by the time the first iPhone (2007) was launched, the oldest members of this generation were only 10 years old. By the time they reached their adolescence, the whole world became used to constant connectivity, with life influenced by social media trends (Dimock, 2019). Generation Z is also called by different names related to technology, such as Generation C (connected, communicating, content-centric, computerized, community-oriented, clicking) (Kirchmayer, & Fratričová, 2020). They are often referred to as the Digital Generation or Children of the Internet (Berkup, 2014) since technology was accessible to them from a very young age. This cohort was born into a rapidly changing and globally connected world (Berkup, 2014; Kirchmayer, & Fratričová, 2020).

The last cohort is Alpha Generation, which consists of members born after 2010, and all children born before the end of December 2024 will belong to this generation (McCrindle, Feel, & Buckerfield, 2021). Alpha is a very different generation from all the previous ones because their reality is shaped

by enormous innovation of technology, global connectivity, impact of social media (McCrinkle, Feel, & Buckerfield, 2021; Ziatdinov, & Cilliers, 2021). The oldest representatives of this generation, who are only 22–23 years old at the moment, could be at university still or just at the start of joining the qualified workforce.

Motivation and its drives

The concept of *motivation* is not foreign to most, as the understanding that it is one of the greatest driving forces in any achievement made. According to D. McInerney “Motivation, the psychological construct ‘invented’ to describe the mechanism by which individuals and groups choose particular behaviour and persist with it”. (McInerney, 2019) Other scholars define motivation as a factor that determines our choices and that it could be either internal or external. (Bielińska-Dusza, 2022)

What drives human motivation is an issue that has always been of concern to many, widely studied by psychologists, sociologists, scientists, business executives, and many others. Due to that, there were quite a few motivation theories retrieved. One of the earliest, according to most scholars, even the very first one, and known for the vast majority of civilisation is Maslow’s hierarchy of needs, which is based on the principal of a pyramid, where the human needs that are at the very bottom of the pyramid have to be met so that a person can move up to another level (Fisher, 2009). There were many other theories developed such as Herzberg’s motivator-hygiene (or two-factor) theory, Existence theory by Alderfer, McClelland’s theory of Need, Relatedness and Growth theory (Badubi, (2017), among more contemporary motivation theories that are often met in recent papers, articles, and books, especially those dealing with workplace motivation are the following: Expectancy-Value theory, Achievement Motivation Theory, Self-Efficacy Theory, Attribution Theory, Self-Worth Theory, Goal Setting Theory, Goal-Oriented Theory, Self-Determination Theory (Öztürk, 2012). Though in this paper, we will not go into detail of different motivation theories as they “..may be categorized according to their definitions and purpose but critical analysis reveals that they are all linked, they lead to serving satisfaction in employees” (Badubi, 2017). In order to come a little closer to answering the main question raised in this paper, it is essential to understand what motivates people at work, in other words, what brings them job satisfaction. According to Haprock, in order for an individual to be content with one’s job there has to be a combination of psychological, physiological and environmental conditions and this combination can be called job satisfaction (Brikend, 2011). The mentioned combination as consequently job contentment can be achieved by stimulating motivational drivers. Scholars referred to *motivational drivers* as factors that energise, guide, and help maintain the direction of behaviour in the individual (Wong, Gardiner, Lang & Coulon, 2008). According to Nitin Nohria et al. (Nohria, Groysberg, & Eling, 2008) there are four drives that are naturally integral in our brain and our emotions, and ultimately our behaviours, depending on the degree those drives are satisfied: the drive to acquire (accession of objects, goods, experiences, social status), the drive to bond (the sense of belonging, building relationships and connections), the drive to comprehend (challenges perceived by the mind, a sense of meaning, satisfied curiosity) and the drive to defend (feeling of trust and security). The same scholars conducted two major studies in order to define and measure employee motivation, which strikingly revealed that an organization’s ability to meet all four drives is critical to overall motivation. Furthermore, building a *motivation system*, which is intentionally selected incentive measures applied under the principle of cooperation and working in alignment with the organisational strategy (Bielińska-Dusza, 2022), based on addressing all the four drives could lead to satisfied employees and consequently to successfully operating organisation.

Generational features linked workplace motivation

Studies concentrating on the generational differences in the workplace have become more frequent in the past decade, as the age diversity in the workforce is increasing dramatically, and up until now, companies know little about the potential impact it might have if the issue is unaddressed. Understanding the differences between different groups is important, but in order to help organisations better to comprehend what they need to take into account when designing their motivational strategy, it is perhaps even more important to also understand what unites all

generations in regards to motivation at work. However, the contrary is often found while analysing works by other researchers as the focus is always mainly on the differences.

In this part, we will mainly concentrate on the four generations, i.e. Baby Boomers, Generation X, Generation Y (a.k.a. Millennials), and Generation Z, because those are the cohorts that make up the majority of the current workforce in the world.

According to scholars, *Baby Boomers* are perceived as a cohort of workaholics (Bejtkovy, 2016; Heyns, & Kerr, 2018; Elkins, McRitchie, & Scoones, 2007; Mason, 2011; Mahmoud, Fuxman, Mohr, Reisel, & Grigoriou, 2021) and its members are status conscious, relate their identity to career achievements (Marita et al, 2018; Heyns, & Kerr, 2018), seek common ground with other members of the organisation (Wong, Gardiner, Lang & Coulon, 2008), value relationships with colleagues (Wong, Gardiner, Lang & Coulon, 2008), prioritise face-to-face communication, and are motivated by salary increase and promotion (Heyns, & Kerr, 2018; Fero, & Dokoupilová, 2019). They also value job security and stability (Valickas, Jakštaitė, 2017; Heyns, & Kerr, 2018).

Analysis of the existing literature proposes that *Gen X* do not value authority in the workplace as Baby boomers (Al-Asfour, & Lettau, 2014; Bielińska-Dusza, 2022; Fero, & Dokoupilová, 2019), care for personal development and education (Bielińska-Dusza, 2022; Berkup, 2014); appreciate challenges (Wong, Gardiner, Lang, & Coulon, 2008) and opportunities for growth (Wong, Gardiner, Lang, & Coulon, 2008; Heyns, & Kerr, 2018; Fero & Dokoupilová, 2019), perceived as self-sufficient and independent (Bielińska-Dusza, 2022; Wong, Gardiner, Lang, & Coulon, 2008; Bejtkovy, 2016; Heyns, & Kerr, 2018;20), tech savvy (Bielińska-Dusza, 2022; Mason, 2011; Fuxman, Mohr, Reisel, & Grigoriou, 2021; Elkins, McRitchie, & Scoones, 2007; Berkup, 2014) posing strong entrepreneurial skills (Elkins, McRitchie, & Scoones, 2007; Bejtkovy, 2016). X-ers value positive work relationships (Bielińska-Dusza, 2022; Bejtkovy, 2016); Valickas, & Jakštaitė, 2017), work-life balance (Bielińska-Dusza, 2022; Bejtkovy, 2016; Valickas, & Jakštaitė, 2017; Mason, 2011; Fuxman, Mohr, Reisel, & Grigoriou, 2021) and as a result, they are likely to refuse promotion at work if it interferes with their personal life (Heyns, & Kerr, 2018; Valickas, & Jakštaitė, 2017).

Members of *Gen Y (a.k.a. Millennials)* are characterised as the most confident comparing to the previous cohorts, enjoy challenging opportunities (Heyns, & Kerr, 2018; Wong, Gardiner, Lang, & Coulon, 2008; Bejtkovy, 2016; Toblize, 2008); “a desire to have an interesting and meaningful job is an outstanding feature of Gen Y” (Valickas, & Jakštaitė, 2017), and education is of high importance. They value flexibility (Bielińska-Dusza, 2022), expect to be recognised, with rewards being important to them (Heyns, & Kerr, 2018). They are even more technologically savvy (Bielińska-Dusza, 2022; Wong, Gardiner, Lang, & Coulon, 2008) as they grew up in the age of technology development peak, express the need for a positive social environment, and are considered to be very active in terms of socialisation (Wong, Gardiner, Lang, & Coulon, 2008; Fero & Dokoupilová, 2019; Berkup, 2014; Bejtkovy, 2016), similar to representatives from generation X in the way they value work-life balance (Bielińska-Dusza, 2022; Elkins, McRitchie, Scoones, 2007; Fero, & Dokoupilová, 2019; Toblize, 2008). Millennials want respectful managers, who would be able to create relationships based on trust, communication, as well as empathy, someone that is able to become a role model (Valickas, & Jakštaitė, 2017; Elkins, McRitchie, & Scoones, 2007).

Gen Z is a little less studied by researchers compared to previous generations, especially in the context of workplace motivation, as it is the youngest and, so far, the last generation in the labour market. As mentioned earlier, Gen Z is the generation of the internet, global connectedness, and integrates technology into their everyday life seamlessly (Kirchmayer, & Fratričová, 2020). However, this generation, like Gen Y, comprehends the importance of in-person communication (Bejtkovy, 2016; Dorina, & Irini, 2021), values the relationship with the manager (Bejtkovy, 2016; Dorina, & Irini, 2021), and prefers “consensus and collaboration rather than structure and hierarchy” (McCrinkle, Feel, & Buckerfield, 2021). They are considered to be interested in socialisation more than all generations before them (Bejtkovy, 2016), and recognition is important to this generation (Heyns, & Kerr, 2018). “They were observed to have a permanent need for

development, alongside the expectation to be mentored by superiors, the desire to develop good working relationships” (Dorina, & Irini, 2021).

As evident from the above-provided literature analysis, there are significant differences between the generations in terms of their priorities in the working environment and their needs for motivation. However, we can observe that there are motivators that unite them and are relevant to all generations.

The following *similarities* emerged clearly from the analysis of other researchers’ studies:

- Positive work relationships
- Professional and personal development
- Recognition, promotion, and salary
- Work-life balance

From here, we can revisit the motivational drives outlined by Nitin Nohria et.al. (Nohria, Groysberg, & Eling, 2008) earlier in the article, and note that the similarities in motivation between generations that emerged in the work environment correlate quite closely with them. Therefore, the model proposed by Harvard researchers, on how to fulfil all four drives of employees, can serve as a valuable aid for HR professionals in the development of an organisational motivational strategy.

Drive	Primary level	Actions
Acquire	Reward system	- Sharply differentiate good performers from average and poor performers - Tie rewards clearly to performance - Pay as well as your competitors
Bond	Culture	- Foster mutual reliance and friendship among coworkers - Value collaboration and teamwork - Encourage the sharing of best practices
Comprehend	Job Design	- Design jobs that have distinct and important roles in the organisation - Design jobs that are meaningful and foster a sense of contribution to the organisation
Defend	Performance-Management and Resource-Allocation Processes	- Increase the transparency of all processes - Emphasize their fairness - Build trust by being just and transparent in granting rewards, assignments, and other forms of recognition

Source: Nohria, N. et al. (2008) Employee Motivation. A Powerful New Model, *Harvard Business Review*, 86 (7/8), p.4.

Other factors influencing individual’s motivation

However, despite the fact that the peculiarities of the period leave their imprint on the formation of personality, which consequently leads to human differences, it is important to take into account that *personality* is a complex organism, and there are many factors that have an effect on an individual’s motivation. One of them is age, which is the main factor dividing different generations and consequently grouping them into cohorts. A study completed by three researchers from Antwerp Management School and SHL group London, regarding work motivation differences related to age, revealed that the changes in motivational variables (such as gender, experience, education level, intrinsic and extrinsic motivation, etc.), which are age-related, determines more than a person’s chronological age (Inceoglu1, Segers, & Bartram, 2012). Moreover, demanding jobs that require a lot of personal effort and resources, such as competition and power, and those that are mainly rewarding extrinsically, such as career development and financial reward, are considered to be less motivating in older age groups than extrinsic motivators such as personal principles or self-governance (Inceoglu1, Segers & Bartram, 2012). In general, intrinsic motivation becomes more dominant with age (Heyns, & Kerr, 2018; Inceoglu1, Segers, & Bartram, 2012). A study carried out by researchers from Comillas Ponticifical University in Madrid analysed psychological empowerment and flexibility of different generation groups and found that there are clearly visible contrasts between older and younger employees in regards to flexibility, and concluded that younger people, i.e. Millennials and Gen Z are more

flexible from Baby Boomers or Gen X (Sobrino-De Toro, Labrador-Fernández, & De Nicolás, 2019).

Another important factor defining motivation is personality and the circumstances that shaped it apart from the events specific to the period of a particular generation, such as the country of residence, culture, family, and environment in which the person grew up and formed, as well as the environment that surrounds the individual at different points in life, significant events that are important and have an impact, genetics, and other factors.

Conclusions

The exploration of literature and various studies carried out by researchers suggest that, in regards to motivation at work, members of all generations are characterised by dissimilarities that were determined by the period in which they grew up and their personalities were shaped. However, there are strong similarities that are common across generations as well. To answer the question of whether one motivational approach can be appropriate for all generations unequivocally is difficult, but the assumption can be made that while creating a motivation system or strategy, Human Resource professionals or managers of organisations could build on the similarities in generational motivational needs and use this as a common basis. At certain points, they should also bear in mind the fundamental differences, which are not only due to generational traits, but also to the personality of the individual, to cultural peculiarities in the case of a multinational organisation, to a person's age, and even to current employee's life circumstances, which consequently require application of a tailor-made approach. It is probably safe to say that the synergy between a common motivational framework and a personalised approach could be one of the ways forward.

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