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Content

Green marketing: A Comprehensive bibliometric analysis **7**
Jakub Michulek, Anna Krizanova

Evolutionary forms of business models and their impact on enterprises in the scientific community **24**
Robert von Böhlen

Intellectual Capital and Business Performance Management: Knowledge Management and the Value of Knowledge **41**
Peter Gallo, Jaroslav Kollmann, Romana Kušnirová, Erjona Deshati, Libuše Turinská

The influence of indebtedness on the profitability of sales in agriculture in the Czech Republic **58**
Jiří Kučera, Zuzana Kočířová, Jana Janíková

A bibliometric analysis of the issue of CSR activities and their non-financial reporting from the perspective of different generations of employees **74**
Renata Skýpalová, Maria Forlicz, Martin Šikýř, Renata Nováková

The effect of enterprise size on the profitability of sales: Evidence from the manufacturing industry in the Czech Republic **87**
Michaela Jannová, Marcela Padalíková, Veronika Šanderová

Corporate social responsibility and employer branding: challenges for the wine sector resulting from a bibliometric analysis **106**
Martin Šikýř, Renata Skýpalová, Janka Beresecká, Monika Hudáková

Green marketing: A Comprehensive bibliometric analysis

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Abstract

In recent decades, green marketing has been created and developed. This marketing concept can be simply understood as marketing activities aimed at satisfying the needs of customers in such a way as to reduce the negative impact on the environment.. That is why it is important to focus on green marketing if the company wants to succeed. The aim of the study is to perform a bibliometric analysis on the concept of green marketing. Vos Viewer and MS Excel programs were used to perform the analysis. The data were obtained from the Web of Science database. The most publications were published in the current year 2022. Countries such as China and the USA focus on the topic the most. Slovakia deals with the issue of green marketing the most among Central European countries. Green marketing, sustainability, behavior, consumption, consumers, green and green marketing mix are considered the most frequently used keywords in connection with the solved problem. The most recent processing of the bibliometric analysis, with a focus on publishing years, country of origin, classification according to WOS, publisher, language, type of document, or university to which the researchers belonged, is what we believe to be the study's practical contribution.

Keywords: Green marketing, ecological marketing, sustainable marketing, sustainability, CSR, bibliometric analysis.

Introduction

Traditional marketing is quickly being replaced by green marketing as a result of escalating environmental issues and concerns about sustainable development (Mehraj, Quereshi, 2020). When the American Marketing Association held a workshop on green marketing in 1975, interest in this subject was raised in the late 1970s. Since its inception, green marketing has been a significant area of academic study. However, one of the main issues with the topic of green marketing is the lack of academic studies that attempt to analyse environmental or green marketing (Bulsara et al., 2021).

Green marketing is becoming more and more popular, particularly in the business's plan for preserving its current competitive advantage. However, leveraging green innovations to achieve corporate sustainability was also impacted by green marketing (Nuryakin, Maryati, 2022). According to Nistoreanu, Aluculesei & Avram (2020), the practice of green marketing is constantly expanding since consumers' interest in sustainability is rising. Meanwhile, customers are pressuring companies to reconsider their business strategies in terms of sustainability and ecological. The mentality of the younger generation, which takes great care to project a green image, is highlighted by Sarkar, Sarkar & Yadav (2019). Few academic fields have included environmental issues in their literature, despite the fact that environmental challenges have an impact on all aspects of human activity, according to Bulsara et al. (2021).

As part of our study, we set a clear goal: to perform a bibliometric analysis of the issue of green marketing. To achieve this goal, we asked the following partial research questions:

1. What were the publication trends in the monitored issue of green marketing in the years 1991-2022?
2. Which countries are most devoted to the field of green marketing?
3. Which keywords are used most often in scientific publications on green marketing?
4. What types of documents are published the most about green marketing?
5. According to the Web of Science, under which categories do publications on green marketing fall?
6. Which universities focus on the issue of green marketing the most?
7. Which publishers publish most often about the field of green marketing?

Literature review

Towards the end of the 1980s, there was an increase in demand for sustainable products. As a result of the growing trend in society about the deterioration of the environment, new marketing strategies began to be used. Newly created strategies had an impact not only on product portfolios but also on the communication policies of companies (Da Silva, Razzolini Filho, 2021). The term "green marketing" itself has been popular since the early 1990s. Environmental aspects of business activity were discussed for the first time in ecological marketing (Nadanyiova, Kramarova, 2013). According to Majerova (2015), green marketing gained popularity in the 1990s due to the argument that going green can act as a source of competitive advantage. Geng, Maimaituerxun (2022) state that the United Nations proposed the Sustainable Development Goals. They also refer to sustainable consumption plans, which require that the efficiency of the use of resources be increased while at the same time promoting a sustainable lifestyle. Thanks to this, an ecological and low-carbon economy will be gradually achieved.

Definitions of green marketing vary, but the role remains the same. It is an approach to the environment that is integrated into various areas of society (Nadanyiova, Gajanova & Majerova, 2020). Green marketing consists of marketing activities that are designed and

implemented in such a way as to ensure the satisfaction of human needs in such a way as to reduce and eliminate the negative impact on the environment (Saleem et al., 2021). Luckyardi et al. (2022) identified green marketing as an environmental process. Green marketing, according to Geng, Maimaituerxun (2022), is defined as integrating marketing and supporting sustainable marketing activities that satisfy human needs while minimizing negative environmental impact. According to Nadanyiova, Kicova & Rypakova (2015), green marketing represents an environmentally oriented approach and a process of responsible management. It's about more than just building an image. It can therefore be understood as a modern way of enforcing current environmental trends in business activities.

The green marketing mix emphasizes the consideration of environmental and developmental aspects of sustainability (Luckyardi et al., 2022). According to Saleem et al. (2021), green marketing can also be referred to as ecological marketing, environmental marketing, eco marketing or sustainable marketing. Nadanyiova, Kramarova talk about green marketing and ecological marketing as full-fledged synonyms. Majerová (2015) points out that green marketing is not just about presenting ordinary products as ecological or "green." The goal should be for the consumer to perceive sustainable or "green" products as normal. This represents a way to achieve one of the CSR goals. Amoako, Doe, & Dzogbenuku (2021) dealt more closely with the relationship between green marketing and CSR; Huang et al. (2021); Shaukat, Ming (2022); Zhang et al. (2022), etc.

Kar, Harichandan (2022) point out the fact that for the long-term existence of the company, marketing innovations are a necessity in the field of fighting competition. According to Moravcikova et al. (2017), green marketing represents a competitive advantage in the process of economic globalization. For example, Roach, Ryman & White (2014) say that as a solution to the problems of sustainable development, innovations are focused on the field of green marketing. Geng, Maimaituerxun (2022) point out that green marketing can be looked at from two perspectives. From the point of view of the company, this term can be understood as an activity helping to change organizational behavior with the aim of more environmentally friendly behavior. From the consumer's point of view, this is a factor helping to strengthen awareness of sustainable consumption. Luckyardi et al. (2022) believe that the producing process must not have a negative environmental impact. The product does not consist of materials that could be toxic to the environment. The product can also be created from recycled materials and recycled waste. A product may be made specifically to be reused.

Indeed, the environmental aspect has recently been a hot concern in both governmental actions and judgments as well as in the world of science. The desire to promote a sustainable environment led to the development of new tactics for minimizing individual activities' contribution to climate change. In this situation, it may be said that the EU follows worldwide trends in its actions or, if not, that it is a driving force in this field. The European Commission introduced the European Green Deal in March 2019 in an effort to succeed in reaching the objective of a sustainable environment (EGD) (Bogoslov et al., 2022). It’s two main elements are the green transformation of European businesses and the query of how it might be structured in a just manner. The "European Green Deal "'s

and revisions are driven by both of these fundamental tenets, "green" and "fair" (Fleming, Mauger, 2021). The following areas saw implementation of the European Green Deal: Clean energy (expanding the use of alternate sources of energy); sustainable industry (ensuring more ecologically responsible and sustainable production processes); sustainable mobility (encouraging the creation of eco-friendly transportation); biodiversity (making sure that habitats are protected); climate action (European Union becoming a climate-neutral territory); “from field to table” (guaranteeing the safety and sustainability of food systems) (Skydan et al., 2022).

Bibliometric analysis focused on green marketing was carried out by authors such as Wang, Liu & Pérez (2022); Kar, Haichandan (2022); Luckyardi et al. (2022); Geng, Maimaituerxun (2022); da Silva, Razzolini (2021); Saleem et al. (2021). Furthermore, the authors dealt with the bibliometric analysis of other areas related to green marketing, such as greenwashing (Pends, Nerlekar & Darda, 2022), green product (Bhardwaj et al., 2020), green advertising (Agarwal, Kumar, 2020), green consumption (Yao et al., 2022), green building (Shi, Liu, 2019; Xiao et al. 2019; Darko et al., 2019), green finance (Cai, Guo, 2021; Wang, Li, 2021)

Methods and Data

Currently, interest in bibliometric research is gradually growing, which is caused by information and communication technologies. The subject of bibliometric research is publications, specifically their representations in the form of bibliographic records. From the record, it is possible to find out, for example, the name of the document, its authors, the year of publication, keywords, etc. (Gajdosikova, Valaskova, 2022; Hlawiczka et al., 2021). The validity of the bibliometric analysis is confirmed, for example, by Durana et al. (2020); Hlawiczka et al. (2021); Vagner et al. (2021), Saleem et al. (2021); Kar, Harichandan (2022); Gajdosikova, Valaskova (2022) and others.

In this scientific publication, we will perform a bibliometric analysis of the concept of green marketing. The data required for the analysis were obtained from the scientific database Web of Science, which we can currently consider the most recognized independent scientific database in the world. We obtained the data by searching for the term "green marketing.” This means that we only focused on searching for that connection. The WOS database provided us with a total of 1,210 publications from the period 1991–2022 (the year 2022 was not ended yet). The obtained and cleaned data were processed through two programs.

We graphically processed individual graphic displays in MS Excel. The VosViewer program was used to perform a bibliometric analysis of keywords and co-authorship by country of origin. For both analyses, clusters will be identified, which will be distinguished by colour. The bibliometric map consists of two main components. It’s about bubbles and links. The size of the node indicates the occurrence of the keyword, and the higher the occurrence, the bigger the bubble. The co-occurrence of terms is represented by the link between the bubbles (i.e., keywords that occur or occur

together). Link thickness represents the frequency of simultaneous or contiguous occurrences of terms, or the co-occurrences of keywords. It is true that common occurrences between Keywords tend to occur more frequently the thicker the link between bubbles. Each hue indicates a thematic cluster, and the nodes and connections within that cluster can be used to explain both the relationships (links) between subjects (bubbles) 11occurring inside a certain topic as well as the coverage of topics (bubbles) within a given topic (cluster). The co-occurrence of terms is represented by the link between the bubbles (i.e., keywords that occur or occur together). Link thickness represents the frequency of simultaneous or contiguous occurrences of terms, or the co-occurrences of keywords. It is true that common occurrences between Keywords tend to occur more frequently the thicker the link between bubbles. Each hue indicates a thematic cluster, and the nodes and connections within that cluster can be used to explain both the relationships (links) between subjects (bubbles) 11occurring inside a certain topic as well as the coverage of topics (bubbles) within a given topic (cluster). The main stages of the creation of this study are summarized in Tab 1.

Tab. 1: An overview of the steps in the article

Searched Used Terms	**Searched Used Terms**	**Searched Used Terms**	**Searched Used Terms**	**Searched Used Terms**
Green Marketing	1991 – 2022	Web of Science™	Bibliometric analysis	VosViewer

Source: Own processing.

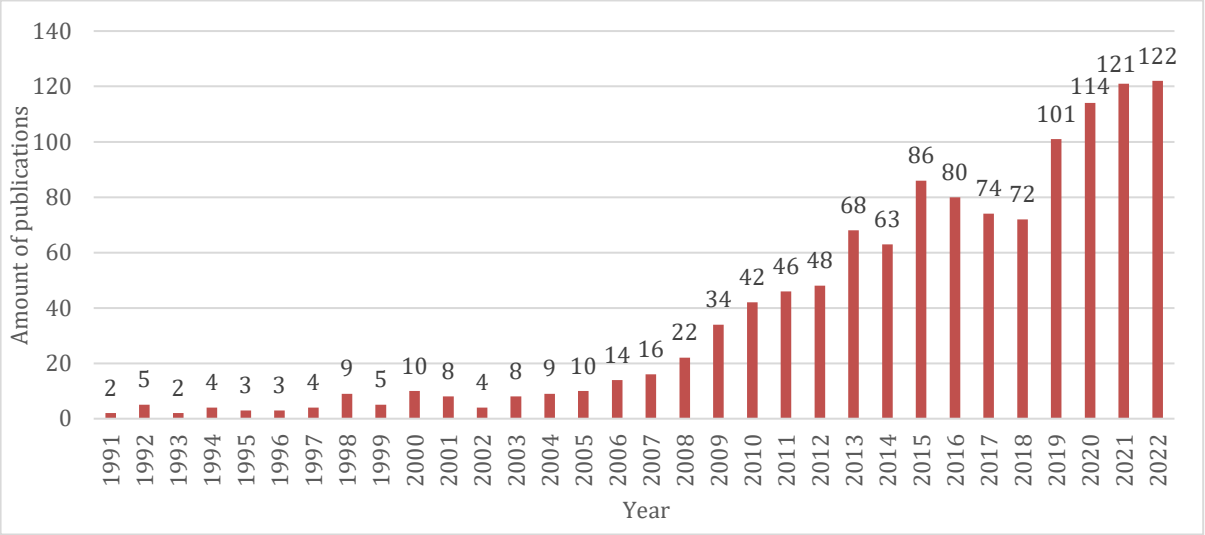
During graphic processing in VosViewer to perform the analysis, key words, and countries with a number of occurrences less than 5 were removed during clustering to ensure clarity and the removal of terms and possible countries that could make the analysis less accurate. At the same time, two clusters were eliminated in the co-authorship analysis, and their elements became part of larger clusters. The reason for this was that each of the two clusters mentioned contained only two elements.

Results

The data were obtained directly from the Web of Science website. Subsequently, they were processed using VosViewer and Microsoft Excel. Based on this, we were able to develop a detailed bibliometric analysis of the examined issue of green marketing.

Graph 1 shows the number of publications in individual years in the observed period 1991–2022. Since green marketing started to be talked about at the turn of the 80s and 90s, scientific articles were published for the first time in 1991. Only two documents were published that year, which, together with 1993, is the smallest number in 32 years. This is an understandable fact, since in the early 1990s it was a newly researched issue. Over time, more and more scientists began to deal with green marketing, which is reflected in the increasing number of publications in the WOS scientific database until 2013.

Graph 1: Annual growth of documents related to the green marketing in WOS during the period 1991-2022

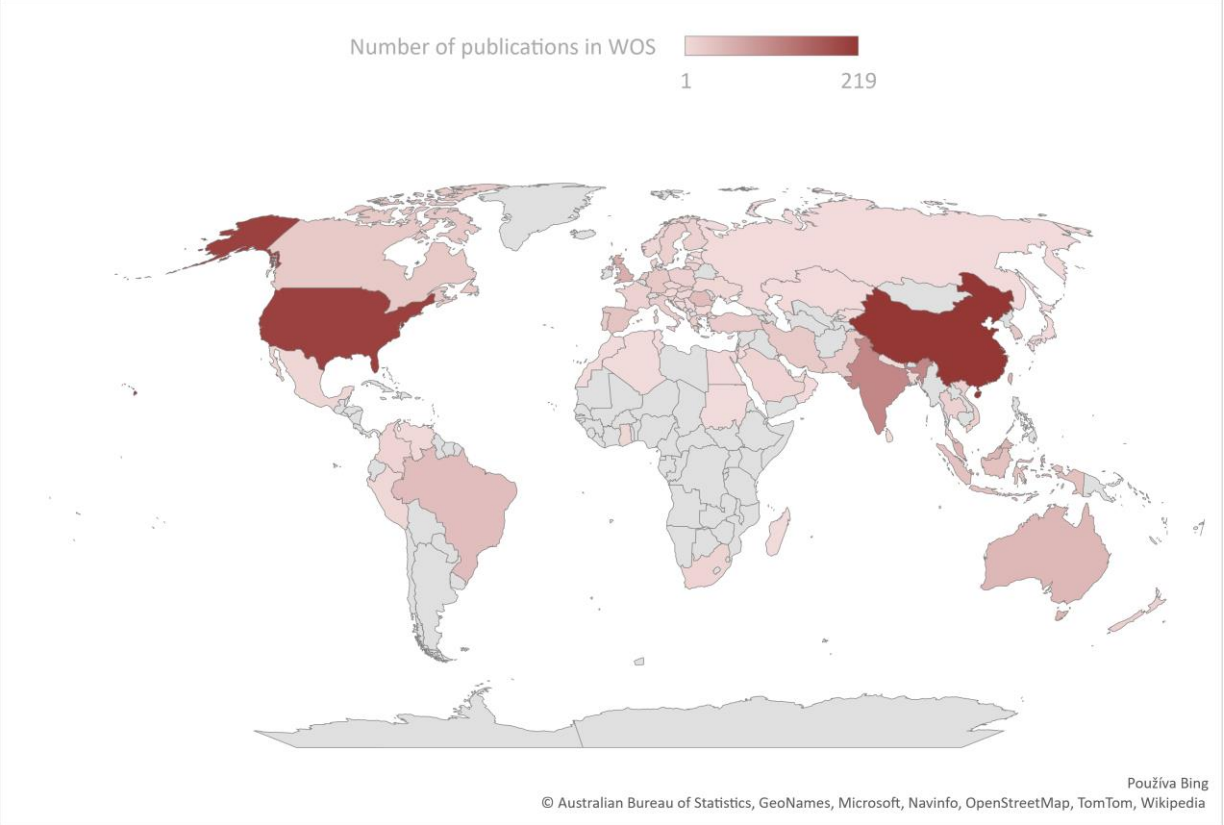


Source: Own processing.

There was a slight dip in 2014, but in 2015, the number of documents increased by 23 documents. In the years 2016–2018, the number of publications began to decrease, but in the years 2019–2022, it reached the highest number of publications, as in recent years there has been a lot of talk about the sustainability of products, reducing the impact on the environment, and the growing trend of interest in products with a low ecological burden. The most publications were published in the ongoing year 2022, where 122 scientific articles were published by November of this year. Growing interest in green marketing can be expected in the coming years.

It is interesting to look at the countries that devoted themselves to green marketing the most. The People's Republic of China took first place with 219 publications. The United States of America has the second-highest number of publications, as expected, with 206. The third highest number was achieved by India, with 113 scientific articles. The United Kingdom finished highest among European countries (61 articles). For the United Kingdom, we had to add publications for England (55), Wales (5), and Northern Ireland (1) as they were listed separately. The second country that is most devoted to green marketing is Romania (40). If we look at the countries of the Visegrad Group, the Slovak Republic (23) is the most researched issue, followed by Poland (15), and at the end are the Czech Republic and Hungary, which have 6 scientific articles each. If we look at the remaining two countries with which the Slovak Republic borders, Austrian scientists contributed 4 documents to the WOS scientific database, and Ukrainian scientists contributed 6. It is interesting to note the number of publications from Malaysia (52), Brazil (40), Indonesia (36), Iran (24), or Pakistan (21).

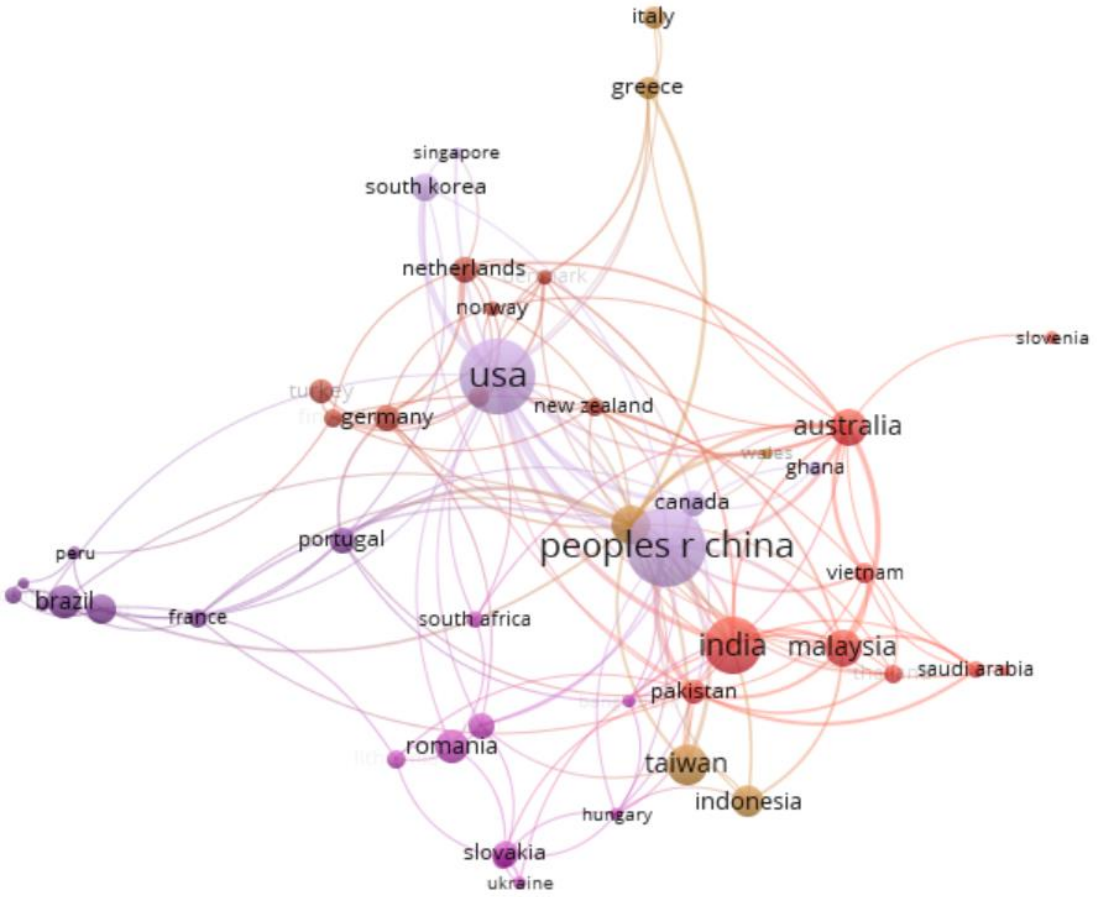
Graph 2: Number of documents related to the green marketing in WOS during the period 1991-2022 according to countries



Source: Own processing.

The minimum number of documents for one country was set at 5, which reduced the number from 87 countries to 49. The most numerous cluster is red, with 9 entries, where countries such as India, with 113 documents, 12 links, and a total link strength of 25, were included. Malaysia has 51 publications, Australia has 49, and Pakistan has 21 publications. The purple cluster also includes 9 countries, the majority of which are from Romania (40), with a total link strength of 4 and 4 links. This group also includes Iran (24) and Slovakia (23). The dark red colour represents countries such as the Netherlands, Germany, or Turkey, with the number of items being 8. The dark purple colour symbolizes the groups with 8 items, where Brazil, Spain, and Portugal are included. Although the dark purple cluster has the fewest items, together with the orange one, there are only 6 items. However, this cluster contains the two countries that published the most, namely the People's Republic of China and the United States of America. China has the 219 publications mentioned above, with a total link strength of 69 with 20 links. The USA has 200 publications and 23 links with a total strength of 73. The orange cluster symbolizes countries such as England, Taiwan, or Indonesia. It is most often published in English (1,153), Portuguese (21), Spanish (19), and Chinese (6). Two documents were written in Turkish and two in Lithuanian. After one occurrence, they had publications in, for example, Russian, Finnish, Korean, Turkish, Polish, Malay, or Croatian.

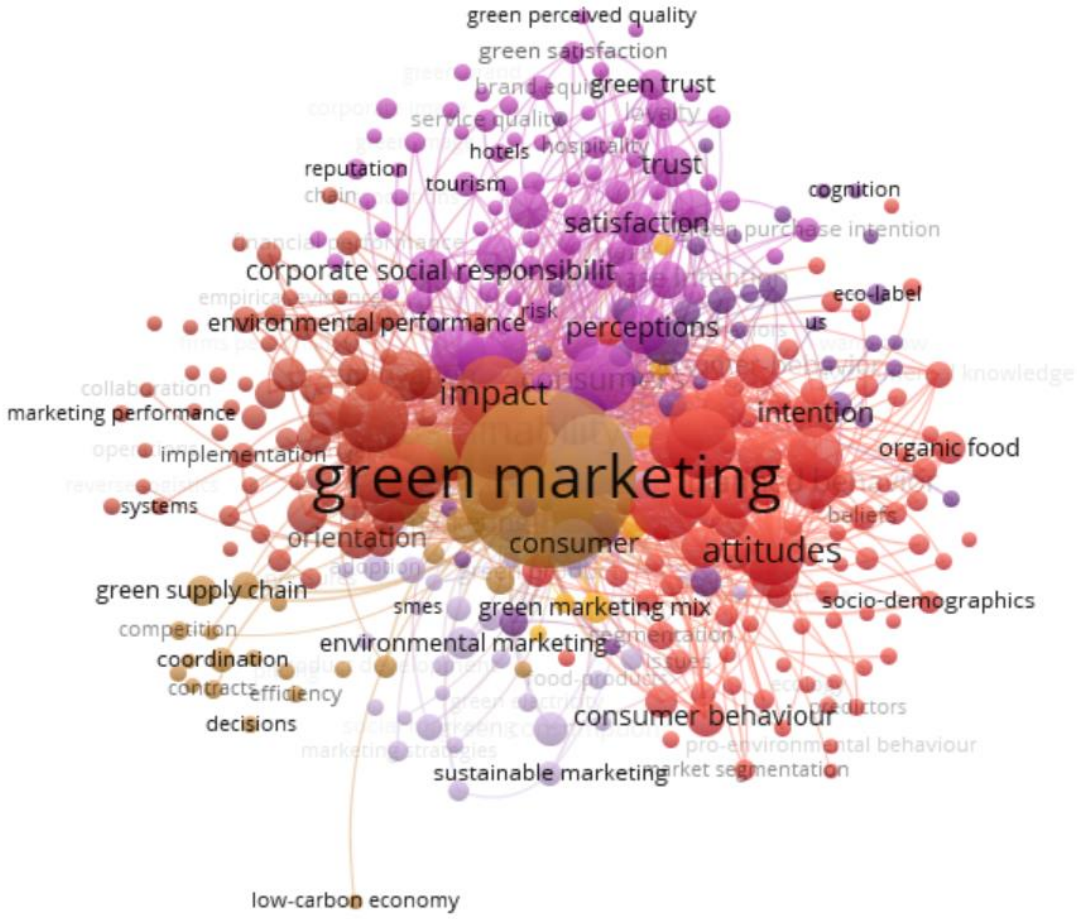
Figure 1: Bibliometric analysis of the co-authorship countries of green marketing during period 1991-2022



Source: Own processing.

By performing a bibliometric analysis, we created Figure 2. The minimum number of occurrences of keywords was set to 5. As a result, we obtained 350 of the totals of 3,623 keywords. The sorted keywords were divided into seven clusters. The most numerous cluster is shown in red. It contains a total of 94 items. The most numerous word in the red cluster is consumption, with an occurrence of 108, 238 links, and a total link strength of 865. The Links attribute and the Total link strength attribute are the two common weight attributes. The properties Links and Total link strength for a specific item show, respectively, the number of links an item has with other items and the overall strength of those links. The Total link strength characteristic shows the overall strength of the keyword linkages between the keywords of one article and the keywords of another. The second most numerous word is attitudes with an occurrence of 102, with 217 links and a total link strength of 831. Products were the third most common (100), had the most links (228), and had the highest total strength (770).

Figure 2: Bibliometric analysis of the keywords of green marketing during period 1991-2022



Source: Own processing

The second cluster is shown in purple and has 79 items. The term "consumers" appears the most frequently, with 93 occurrences and a total strength of 604 and 211 connections. Corporate social-responsibility has a total link strength of 516, with 211 links and an occurrence of 63. Quality had 157 links with a total strength of 398 and an occurrence of 48. The dark red cluster contains 70 items, while the most numerous is sustainability with a frequency of 193, a link strength of 1,273, and 296 connections. Impact had a link strength of 905, 261 links, and 114 occurrences. The third most numerous word with an occurrence of 102, a strength of 811, and 224 links was performance. The cluster shown in dark purple consists of 39 elements. The most frequently occurring keyword is green. The keyword frequency was 74, with 195 links and a total link strength of 499. The fifth cluster is shown in pale purple and contains 32 keywords. The word behaviour had the highest frequency: 135 with a strength of 966 and 261 links. The dark orange cluster contained 26 words. It contains the most common word of all, green marketing. The word occurred a total of 658 times with 347 links and a total strength of 3,384. The final and smallest cluster has only ten items and is represented by the colour orange. The keyword green marketing mix had the greatest strength of links, namely 130 with 79 links and a total occurrence of 19. The most frequently used keywords can be summarized as shown in Table 2.

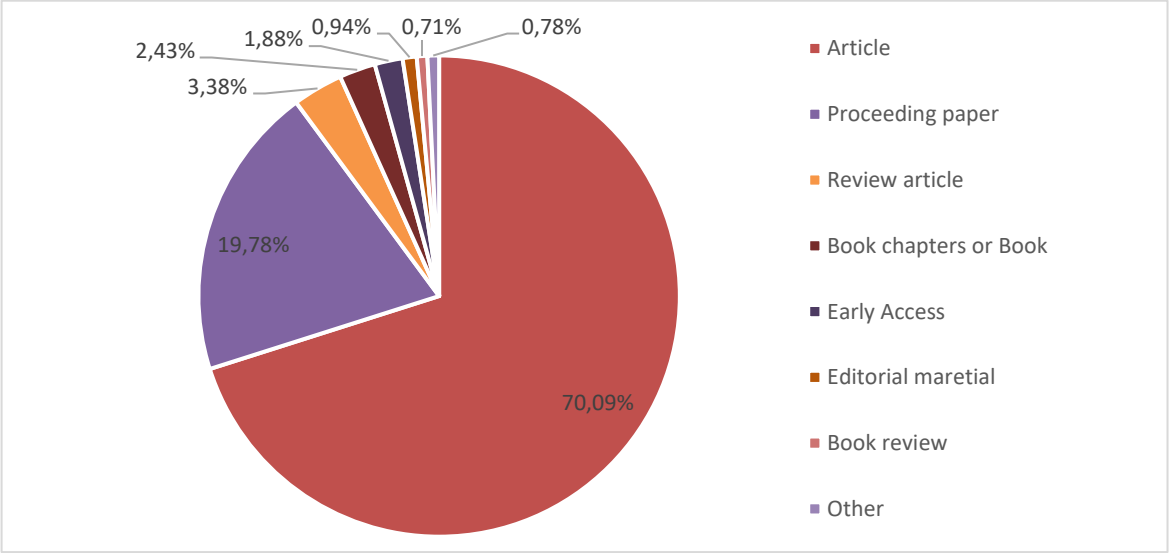
Tab. 2: The most used keywords of green marketing during period 1991-2022

Keyword	Occurrence	Links	Total link strength
Green marketing	658	347	3,384
Sustainability	193	296	1,273
Behaviour	135	261	966
Consumption	108	238	865
Consumers	93	211	604
Green	74	195	499
Green marketing mix	19	79	130

Source: Own processing.

In terms of type of document, scientific articles are the most represented in the WOS database. The number of articles is 893, which represents 70.09%. A proceeding paper comprised 19.78% (252) of the documents. The third most numerous group was review articles. Review articles had an increase of only 3.38%, which represented 43 documents. Books and book chapters accounted for 2.43% (31).

Graph 3: Type of documents related to the green marketing in WOS during the period 1991-2022

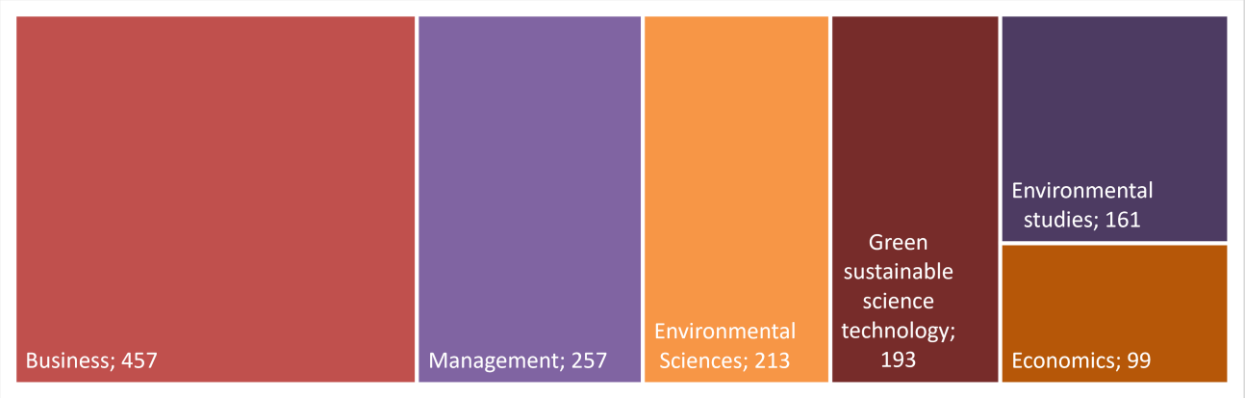


Source: Own processing.

The field of business was the most represented in the scientific database Web of Science, which is focused on a wide range of scientific disciplines with a total of 457 categories. Areas related to economic categories were also represented in addition to business, management (257), and economics (99). From the environmental field, it was environmental science (213) and environmental studies (161). A separate category was green sustainable science technology with a number of 193. The listed categories on graph 4 show the least-represented categories. Categories such as social science interdisciplinary, communications, business finance, ethics, and psychology multidisciplinary, for example, are worth mentioning because they demonstrate that

green marketing does not only concern the economic and marketing fields but also extends to ecology, psychology, sociology, and technology.

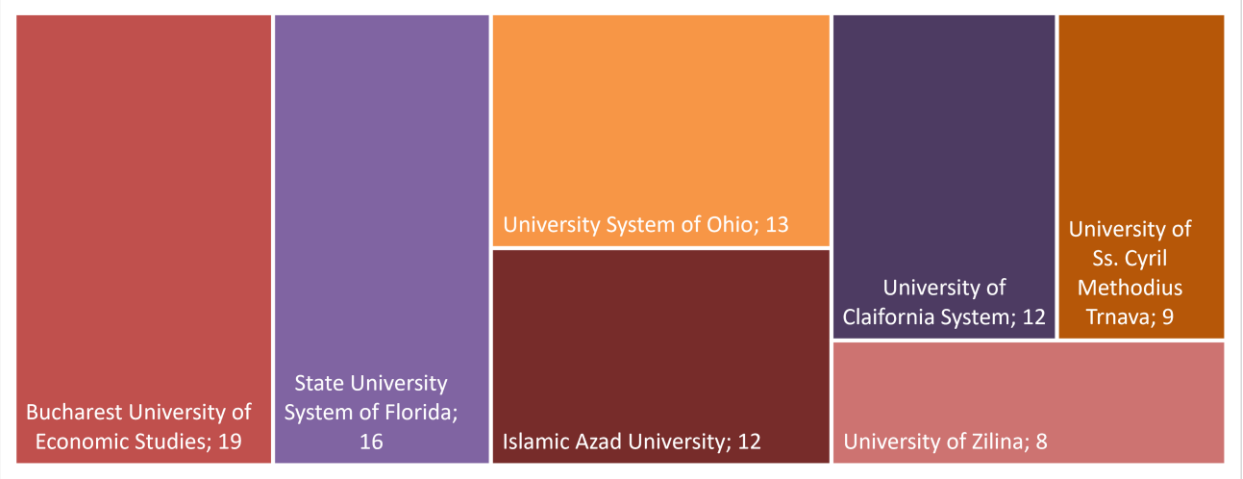
Graph 4: WOS categories of documents related to the green marketing during the period 1991-2022



Source: Own processing.

The university that is most devoted to the field of green marketing is the Bucharest University of Economic Studies, which is supported by Graph 2. Romania has the second-highest number of publications in the WOS database among European countries.

Graph 5: Universities with most documents in WOS related to the green marketing during the period 1991-2022



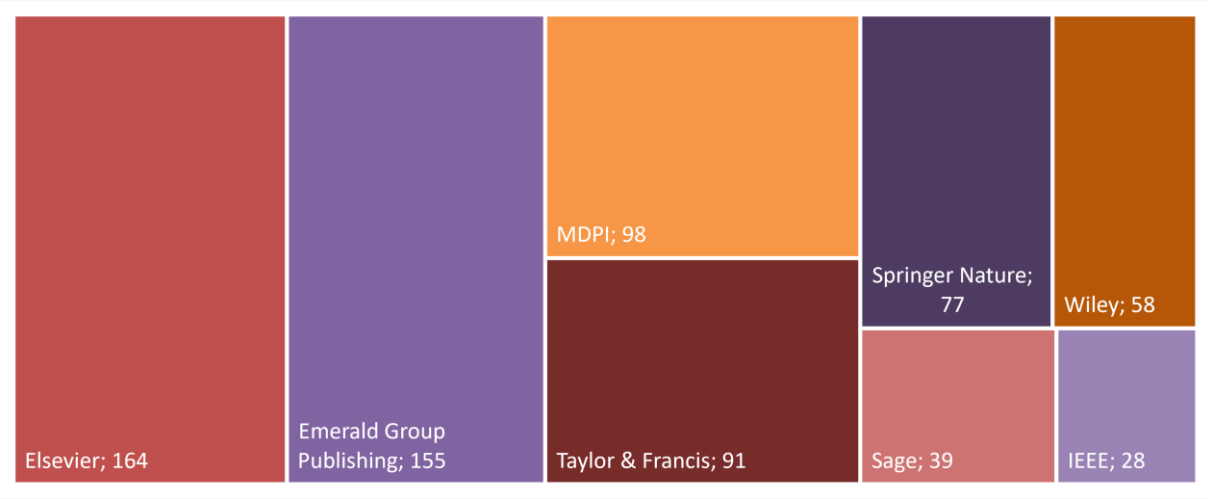
Source: Own processing

Subsequently, among the most published universities are four American ones: the State University of Economic Studies (19), the State University System of Florida (16), the State University System of Ohio (13), and the University of California System (12). The only non-American university in the top 5 ranked universities is Islamic Azad University, located in Tehran, Iran. From the Slovak universities, we selected the two with the highest number, namely the University of Ss. Cyril Methodius Trnava (9), and the University of Zilina (8).

Elsevier, a Dutch publishing house, published the most publications (164), followed by

Emerald Group Publishing, a British publishing house (155). The Swiss publisher MDPI has published 98 publications, followed by the English publisher Taylor & Francis with 91 documents in the field of green marketing.

Graph 6: Publishers of documents in WOS related to the green marketing during the period 1991-2022



Source: Own processing.

The two years with the most publications each were 2021 and 2022, with 121 and 122 respectively. The People's Republic of China (219 publications), the United States of America (206 publications), and India (113) are the three nations most engaged in green marketing. With 23 documents, Slovakia has the most documents of any Central European nation. It is followed by Poland, the Czech Republic, Hungary, Ukraine, and Austria. Consumption, consumers, sustainability, green, behaviour, green marketing, and green marketing mix are the most often used terms in this field. The categories of business, management, environmental science, and green sustainable science and technology were those in which the documents were most frequently found. The university with the most publications is Bucharest University of Economic Studies. The University of Ss. Cyril and Methodius in Trnava and the University of Zilina were the top-ranked Slovak institutions, although American universities were well-represented. Elsevier, Emerald Group Publishing, MDPI, or Taylor & Francis were the publishers of choice for publications the most.

Discussion

Saleem et al. (2021) performed a bibliometric analysis, unlike our study, from 1977 to 2020. The authors simultaneously used data from WOS and Scopus. According to their findings, the United States of America is the most active in green marketing, followed by China, the United Kingdom, Romania, and India. Within the keywords, the authors revealed the most commonly used terms: green marketing, sustainability, sustainable development, sustainable marketing, environmental marketing, etc. The findings of the authors differ from ours, which is due to the difference in the investigated period or the

use of databases. The results of our research coincided only partially; the differences were, for example, in the countries that are most devoted to green marketing. In terms of keywords, we discovered a relative match. The differences were caused by the different periods examined and the scientific databases used.

Kar, Harichandan (2022) used data from the WOS and Scopus databases to conduct a bibliometric analysis from 1990 to 2021. The authors say that since 2015, the literature in the field of green marketing has been on the rise. The authors pointed out that the publication leader is China, followed by Spain and the USA. Among the most used keywords were green marketing, sustainability, sustainable consumption, green investment, etc. In addition to the use of the Scopus database or the investigated period, the difference is also in the investigated issue, since the authors also included innovations in the analysis. The authors found, just like us, that China is the most devoted to the researched issue, but the second place is Spain, which in our research was ranked 11th. Relative agreement was reached in the area of keywords. The differences were caused by the different periods examined and the scientific databases used.

Da Silva, Razzolini Filho (2021) performed a bibliometric analysis for the years 1991–2020. Data were obtained from Scopus. Authors pointed out that 1,149 documents were published during the monitored period. The most publications were published in the English language, and the USA was named the most productive country. We have reached an agreement with the authors on the country that is most dedicated to the researched issue or the language that is most commonly used. With this research, we achieved the highest degree of similarity, as the period covered was almost the same length, which also applies to the number of publications. However, the difference was in the scientific database used.

A study by Luckyardi et al. (2022) provides an analysis of data on the application of green marketing in the chemical industry in 2017–2021. The bibliometric analysis of the concept of green marketing was further addressed by Bhardwaj et al. (2020); Chyhryn et al. (2020); Agarwal, Kumar (2021); Bhattacharyya (2022); Chyhryn et al. (2022); Geng, Maimaituerxen (2022); Yao et al. (2022), etc. The main causes of differences can be considered different time periods and the number of used scientific databases. However, each of the research is unique as it examines different areas in detail.

Conclusions

In our publication, we demonstrated that green marketing is a topical issue that is still attractive to scientists. We consider the set goal fulfilled, as well as the set research questions. In the Web of Science scientific database, there were a total of 1,210 publications that dealt directly with green marketing. However, one of them has been removed, as its publication date refers to 2023. The most publications were published in the current year 2022, namely 122, and in the previous year 121. The three countries most involved in green marketing are the People's Republic of China (219 publications), the United States of

America (206 publications), and India (113 publications). Within the countries of Central Europe, Slovakia is the most devoted to the examined issue with 23 documents, followed by Poland, the Czech Republic, Hungary, Ukraine, and Austria. The most common keywords associated with green marketing are consumption, consumers, sustainability, green, behaviour, green marketing, and green marketing mix. The documents were most often included in the categories of business, management, environmental science, or green sustainable science technology. The most used language is English. The Bucharest University of Economic Studies has the most publications. American universities were well represented, while the University of Ss Cyril Methodius Trnava and the University of Zilina ranked highest among Slovak universities. Publications were most often published by Elsevier, Emerald Group Publishing, MDPI, or Taylor & Francis.

We consider the practical contribution of this study to be the most up-to-date processing of the bibliometric analysis, focused on the years of publication, country of origin, classification according to WOS, publisher, language, type of document, or university to which the researchers belonged.

One limitation of the study is that we limited the search to the term "green marketing" in order to avoid distorting the data. For that reason, only 1,210 publications were found, from which we also eliminated the publication with the year of publication in 2023. This also explains why the analysis was carried out in 1991. The limitation of the study is also due to the fact that only one scientific database was used. Therefore, in the future, it will be appropriate to perform the analysis again, but with the involvement of other databases, such as Scopus or Google Scholar. We also pointed out this fact in the discussions, as foreign scientists worked with different time periods and databases.

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Evolutionary forms of business models and their impact on enterprises in the scientific community

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Abstract

The goal of this paper is the evolution of the business model form and its impact on corporate strategy and its paradigm shift. The data source for the analysis of the article was the academic database Web of Science for the years 1952 to 2022, which formed the database for the bibliographic analysis using VoS Viewer. Using comparative keyword analysis and regression, the top five most frequent keywords in the WoS database over the last 20 years were determined, and the researchers looked back at both the prospective demand for the topic and its historical development, with the support of predictions for future years. The main result showed the use of the words "performance", "impact", "management" and performance, with the model gaining more emphasis in recent years, reflecting the current changing highly turbulent dynamic environment, which is influenced by globalization, digitalization, and automation in recent years the most significant potential subject of impact research on performance shows the deployment of AI technology in strategy formation and strategic modelling.

Keywords: Web of Science, Business model, corporate strategy, VoS Viewer, Model, Performance

Introduction

The Web of Science (WoS) database can be viewed as a comprehensive bibliographic database that provides access to high-quality literature in various disciplines (Singh et al., 2020). From a scientific perspective, the WoS database can be a valuable resource for researchers and scientists seeking to conduct literature reviews, identify important research trends, and assess the impact of their own research outputs (Liu, Huang & Wang, 2021). The database allows users to track citations between articles, identify highly cited

papers, and track the impact of research over time, providing a comprehensive view of the research landscape in a particular field (Budimir et al., 2021). In addition to research applications, the WoS database can also be used for research evaluation and assessment purposes (Krueger, Megits, 2021). However, as it is the case in today's world, the business model is adopted by all businesses, either explicitly or implicitly (Telnov et al., 2022). The business model is not an end in itself, but a means to make money. In essence, it must be the one through which profit is to be made (Montemari et al., 2022). In recent years, more and more companies have become aware of the importance of business model innovation (Muller, Buliga & Voigt, 2021). On the one hand, the phenomenon of business model homogenization is becoming more and more evident, resulting in the loss of firms' traditional competitive advantages and ultimately forcing firms to continuously innovate their business models (Kollmann, Dobrovič, 2022; Zapletalová, 2023; Straková et al. 2021). On the other hand, the rapid growth of personalized consumer demand is making it increasingly difficult for marketers to win customer orders (Correani et al., 2020). In order to grow, companies need to create new business models. The focus on business models is extensive in the literature and definitions vary. Businesses of all types and sizes are under constant pressure to improve business performance (Világi, Konečný & Ruschak, 2022). They strive for success, but some fail, and others experience periods of success, this eventually fades away, thus achieving sustained success and receiving well-deserved success (Titisari et al., 2022), which is also due to the impact of the COVID-19 pandemic (Žárská, Sochuľáková, 2022). Few businesses get the respect and admiration they were supposed to be worthy of. Thus, it can be used to assess and improve all aspects of the organization including leadership, strategy and planning, people, information, and knowledge (Domanižová, Milichovský & Kuba, 2020). The foundation of any successful business is the business model (Niewiadomski, 2020), it describes how the company plans to generate revenue and make a profit by providing value to customers (Elia, Lerro & Schiuma, 2022).

Literature review

The WoS database is one of the most prestigious resources in the field of scientific research (Caputo, Kargina, 2022). This database provides information on thousands of articles in various fields of science. Nowadays, WoS is an essential tool for all scientists who want to be informed about new discoveries and research in their field (Scheidt, Meier, 2022). One of the key factors that make WoS so valuable is its emphasis on quality. The database contains articles that have been published in reputable scientific journals (Singh et al., 2021), which are carefully selected and evaluated based on criteria such as originality, accuracy, and significance (Zaghloul, 2022). This approach ensures that the information contained in the database is reliable and relevant (Martin-Martin et al., 2021). Another important feature of WoS is its ability to provide a comprehensive overview of a given area of scientific research (Gaviria-Marin, Merigo & Baier-Fuentes, 2019). The database allows searching articles by keywords, authors, journals, citations, and many other criteria. This approach allows researchers to quickly and easily find relevant

information and compare research in different fields (Tuncay, 2022). Farrukh et al. (2020) in their research tried to point out, the visualization of VoS viewer mapping by collecting bibliometric data from the WoS database.

A business model in corporate strategy involves understanding the role that the model plays in achieving the strategic objectives of the firm (Freudenreich, Luedeke-Freund & Schaltegger, 2020). However, according to Váchal, Talíř (2020) a large number of businesses do not have defined core strategic documents such as corporate strategy, vision and mission statements. And this is the case for small and medium-sized enterprises (Straková, Talíř, 2020). It includes the realization that the model is not simply a description of how the company operates (Cardoni, Kiseleva & Lombardi, 2020), but a critical tool for aligning resources (Bereznoy, 2019), optimizing operations and achieving long-term success (St-Hilaire, Boisselier, 2019). There are many ways to view the business model. One way to view it is as a framework for decision-making. Ferasso et al. (2020) sought to highlight in their research an understanding of the company's value proposition, target market, distribution channels, and revenue sources that can help decision-makers develop a strategy, in line with the company's objectives and resources. Another way to view the model in corporate strategy is to view it as a tool for managing risk and uncertainty (Brilinger et al., 2020). By anticipating changes in the market or industry, companies can adjust their strategies and mitigate potential risks (Istiak, Serletis, 2020).

The corporate strategy and business model, over time, must come up with some innovation, especially digitalization brings an increase in corporate margins and sales (Talíř, Straková, 2023). For the enterprise, this thus implies a process of creating new or improved ways of delivering value to customers (Jin et al., 2022; Cheng, Wang, 2022). Innovation itself can take many forms, from creating new products or services to exploring new distribution channels or sources of revenue (Bocken, Geradts, 2020). It can involve changing the way a company interacts with customers, suppliers, or other stakeholders, or finding new ways to use technology and data to create value (Keiningham et al., 2020). Innovation is important for several reasons. Sjodin et al. (2020) and Straková et al. (2021) in their research pointed out how to help companies remain competitive in rapidly changing markets as new technologies, internal sources and changing consumer preferences can disrupt traditional business models. Paiola, Gebauer (2020) in their research wanted to point out where to create new sources of revenue and find new markets for their products or services. Last but not least, Miroshnychenko et al. (2021) in their work pointed out how to increase customer satisfaction and loyalty by providing better products, services, and experiences. Among the business model innovations, we can include the subscription model. Huotari, Ritala (2021); Chaudhuri et al. (2022) used this model in their study, thus, they investigated the value of this model, how much it is based on the continuous provision of service or product to the customer, for a regular fee. Panda (2020); Layrisse, Reficco & Barrios (2021) in their research examined freemium models, how a basic service or product is offered for free, and charges for premium features or services. There are also sharing economy models (Geissinger, Laurell & Oberg, 2021; Reischl et al., 2022), value-based pricing models (Classen, Friedli, 2021) or platform-based models (Tian et al., 2022). Overall, business model innovation is a key driver of growth

and success in today's business environment as companies strive to find new ways to create value for their customers and stakeholders (Filser et al., 2021).

The business model also displays its performance, how well the company implements its corporate strategy and achieves its financial and operational goals (Nunes, Pereira, 2021). Performance is an important aspect of any model, helping companies measure their success, so it is necessary to create a functional organizational and management structure (Pang et al., 2019; Váchal, Talíř, 2020) and identify areas in which they need to improve (Chereau, Meschi, 2019; Rask, Gunzel-Jensen, 2020). There are several key business performance indicators that companies can use to evaluate their success, including profitability itself. According to Desyllas, Salter & Alexy (2022), there are other performance indicators such as return on investment, and employee and customer satisfaction. According to Kmecová et al. (2019) is unemployment the main macro indicator of the state. By tracking these key performance indicators, companies can identify trends, monitor progress, and adjust their business model as needed (Wang, Zhou, 2021). They can also use performance data to set goals, measure their success, communicate their success to stakeholders, outstanding professional standards and efficiency (Ali, 2023; Vlachý, 2019), ultimately performance is critical to the success of any business model as it provides a way for companies to measure their impact, identify areas for improvement and remain competitive in their market (Verhagen, de Reuver & Bouwman, 2023).

As tends to be the case, the model can also have a significant impact on corporate strategy as it outlines the company's approach to creating, delivering, and capturing value, and the development of international strategic alliances is increasingly important (Langley et al., 2021; Kasych, 2019). A strong business model can provide the basis for an effective corporate strategy by aligning the company's objectives with its capabilities and resources (Llopis-Albert, Rubio & Valaro, 2021). A model can influence corporate strategy in several ways, one of which is prioritization (Dembek et al., 2022). This can help companies identify their key priorities and focus on their core competencies. It can also help companies identify new opportunities for growth and innovation (Menter, Gocke & Zeeb, 2022). By understanding the needs and preferences of their customers, companies can explore new markets, products, and slaves that align with their existing strengths. As Junqueira, Pinochet, Magalhaes (2021) mentioned in their study that the business model overall plays a vital role in shaping corporate strategy because it provides a framework for understanding a company's strengths and weaknesses, identifying opportunities for growth and innovation, and aligning resources and investments with strategic objectives. By creating a strong model, companies can create a roadmap for success and achieve long-term growth and profitability (Rajnak, Puschmann, 2021).

Digital technologies have changed the way firms operate in business markets in terms of what they sell and how they sell it (Ritter, Pedersen, 2020). Digitalization in the business model means using digital technologies to transform and optimize business operations (Menchini et al., 2022), processes, and customer engagement (Linde et al., 2020), which also has a negative impact on the company and employees (Kuba, Milichovsky, 2019). In today's rapidly changing business environment, digitization has become essential for businesses of

all sizes (Reim et al., 2022). Digitization can help businesses improve their agility and responsiveness to market changes and increase value added as digital tools enable real-time tracking and analysis of business performance indicators (Caputo et al, 2021; Nagy, Zabojnik & Valaskova, 2022). It can be said that digitalization is essential in today's business environment to increase efficiency (Chen, Liu & Chen, 2022; Straková, Talíř & Váchal, 2022), improve customer experience, increase flexibility (Sehlin, Truedsson & Cronemyr, 2019), improve data analysis (Hallikas, Immonen & Brax, 2021) and increase competitiveness (Sergushina et al., 2021).

Based on the information identified in the literature search, the following research questions were identified:

- *RQ1: Which keywords are associated with the word business model?*
- *RQ2: What are the top five most used keywords?*
- *RQ3: What growth can be expected in the coming years?*

Based on the research questions, the following hypothesis was formulated:

- *H1: With the advent of new technologies and the focus of businesses on innovation, there is an expectation that the attention of academics to business model research has increased.*

Methods and Data

The source of data for the analysis of the article was the academic database Web of Science. Business model (All Fields), Business or Management or Economics (Web of Science Categories), and Article (Document Types) were selected. From the Web of Science database, 155 862 publications were extracted for the period 1952-2022, which form the database for bibliographic analysis using VoS Viewer.

After identifying the top 5 strongest keywords, data was collected on the increase in the occurrence of each keyword in the WoS database. For the WoS database, keyword searches were chosen for the categories of Business, Management, and Economics. These searches served as the database for the regression analysis.

Bibliographic analysis

Bibliometric analysis using Vos Viewer was used to determine research directions for the topic "business model". Based on this database, a bibliographic map was created to identify the strongest keywords (number of occurrences and frequent occurrences). Before creating the bibliographic map, it was necessary to select the type of analysis. The minimum number of occurrences of keywords is made in the form of bubbles and arranged according to colour in so-called clusters, which symbolize each category. The position of each bubble is also important for the subsequent analysis: the distance between each bubble symbolizes the common frequency of occurrence and the size of the bubble the number of occurrences in the articles studied (Robertson, Pitt & Ferreira, 2020).

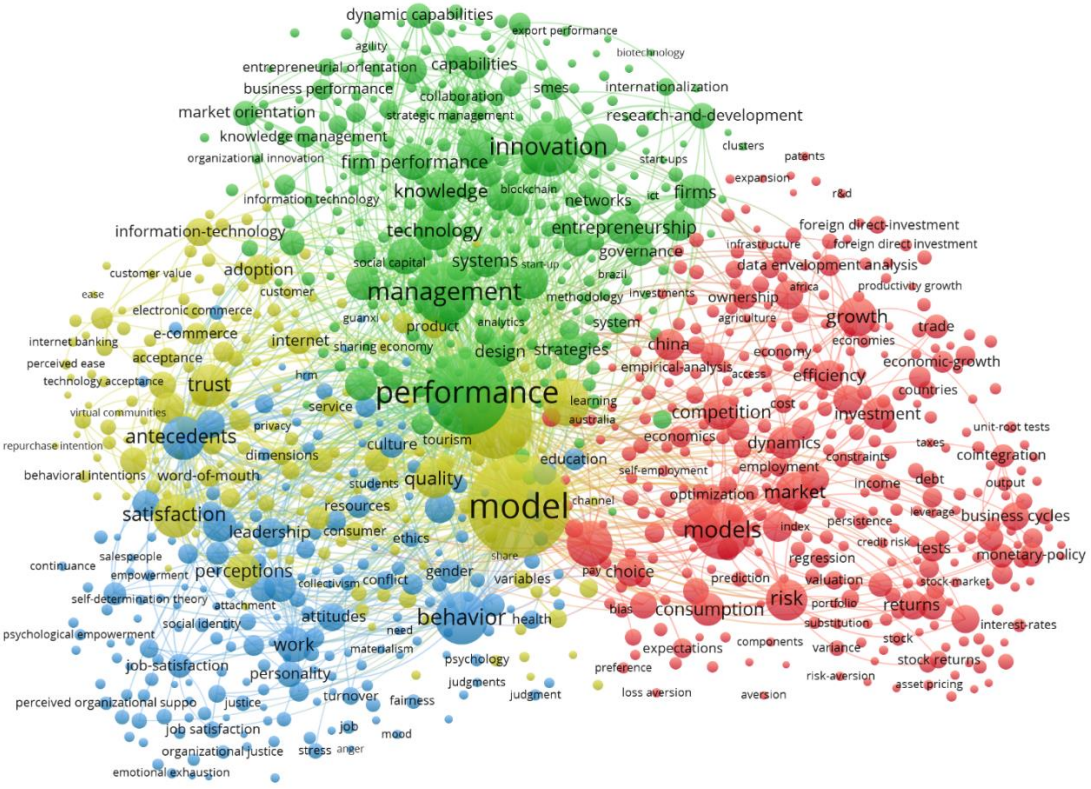
Keyword analysis

After the bibliometric analysis, the annual growth rate and the total number of the five strongest keywords were analysed. This analysis was done in order to better understand the Web of Science database. The second part of this analysis was the selection of four keywords for which it was possible to find the transcription of a linear function with a polynomial superstructure element using regression analysis. This type of regression analysis helped to determine the relationship between the variables under study and subsequently to determine the possible future direction of individual keywords. The result was a 3rd degree quadratic equation, which is used to determine the aforementioned future development (Mazandarani, Royo-Vela, 2022, Pisica et al., 2022).

Results

Based on the information found in the literature search, this paper will focus on the Web of Science database in the application of the business model in a corporate environment. A search of the Web of Science database with the parameters Business model (All Fields), Business or Management or Economics (Web of Science Categories) and Article (Document Types) resulted in 155 862 publications.

Figure 1: VoS analysis WoS



Source: Authors (2023)

For each of the searches described in the previous section, data on 155 862 articles published between 1952 and 2022 were exported. From this data, bibliographic maps

were then created to help illustrate the most frequently used keywords. The results showed that the strongest keyword associated with the search parameters was "Model". It can be seen that most of the keywords are different, but at the same time, the distances (keyword linkage) are different in most cases. For this reason, it is recommended to use articles from several databases to find out more.

Keyword comparison

Tab. 1: Comparison of 20 keywords using VoS Viewer

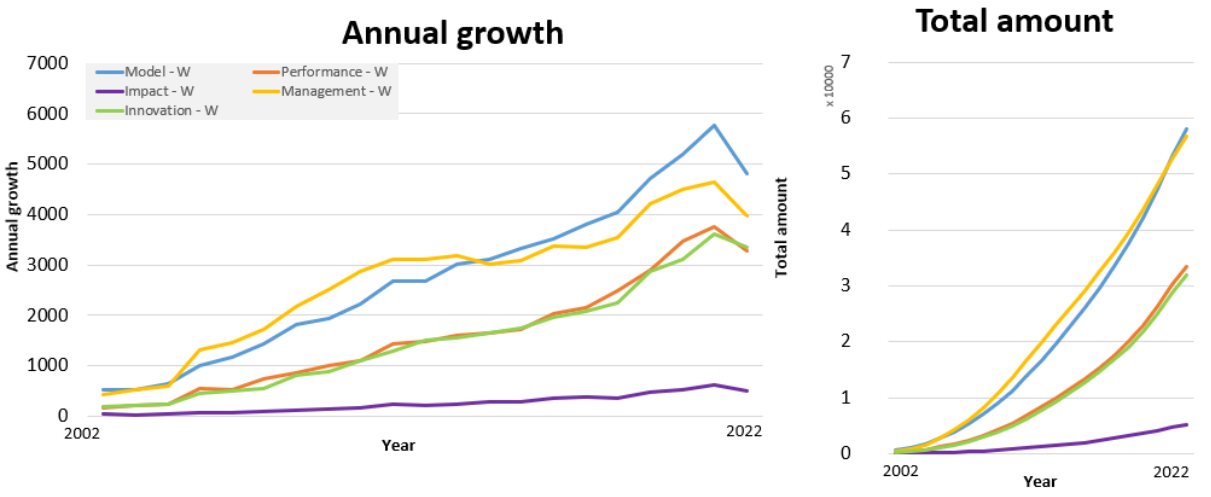
Web of Science					
Keyword	**Occurrences**	**Link strength**	**Keyword**	**Occurrences**	**Link strength**
Model	29664	167887	Trust	5109	38473
Performance	19421	132782	Information	6029	34808
Impact	14401	96579	Knowledge	4647	32615
Management	10916	71106	Strategy	4456	30902
Innovation	9627	65542	Technology	4352	29725
Behavior	7896	49891	Firm performance	3816	29269
Determinants	6391	43420	Quality	4541	28892
Models	9279	43195	Business	3967	26110
Antecedents	5302	42605	Perceptions	3626	25999
Satisfactions	5359	39430	Framework	3792	25066

Source: Authors (2023)

The assumption that it is desirable to use publications from multiple databases to investigate a search topic in more detail is confirmed by the previous table, which lists the 20 strongest keywords according to the Link Strength parameter, which indicates how often a keyword appears in combination with other keywords. Using this parameter, it can be seen that the strongest keyword is "Model". The VoS Viewer analysis also shows that the next most frequently used keyword is "Performance" in combination with Business Model.

Keyword occurrence analysis

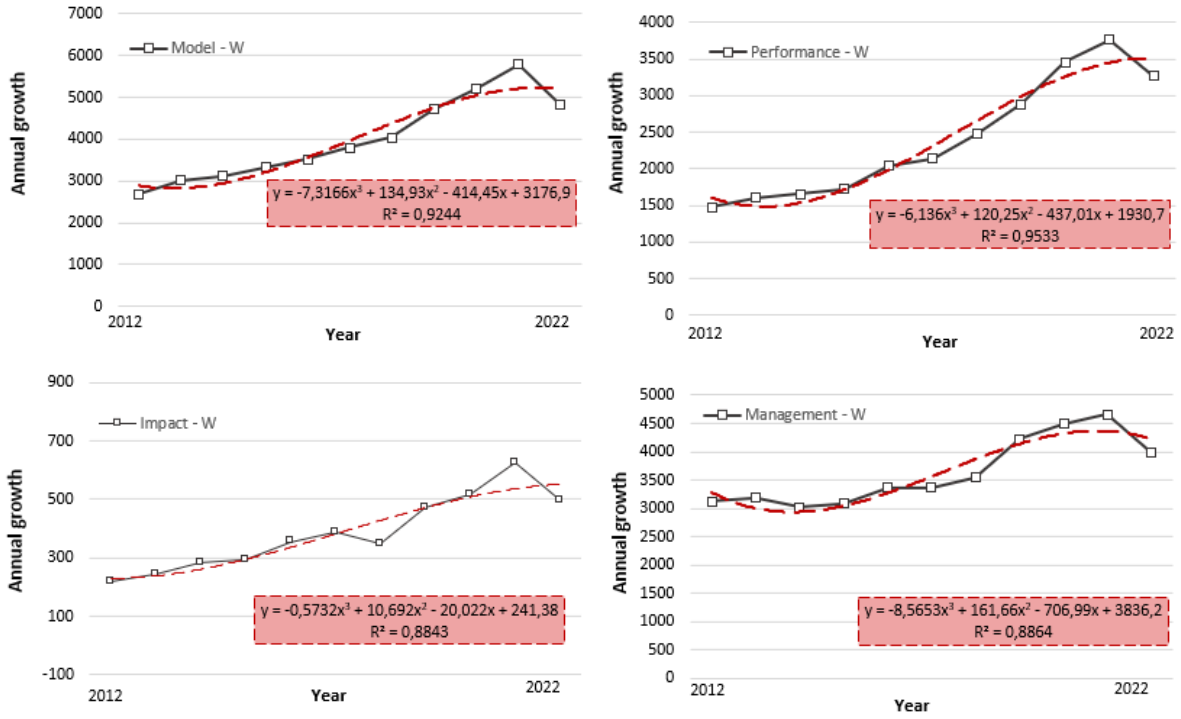
Graph 1: Evolution of keywords over the last 10 years



Source: Authors (2023)

Keyword occurrence analysis was performed on the keywords Model, Performance, Impact, Management and Innovation in the WoS database for the last 20 years. The results showed that the keyword "Model" became the overall strongest keyword in the WoS database. The least strong keyword was "Impact". This suggests that the Impact keyword in the context of business model publications is the least published keyword. The word "Performance" was the second most used word in the bibliometric analysis, while the word "Management" was the second most used word in the keyword occurrence analysis.

Graph. 2: Regression analysis of selected keywords



Source: Authors (2023)

The graph compares the growth of the four strongest keyword-enriched rewrite functions, which consist of polynomials of degree 3. The strongest keyword identified with respect to the search parameters was the keyword Model, with 43,993 articles published over the last 10 years. The second strongest keyword related to business models was keyword Management with 40025 articles in the WoS database.

The WoS database shows an increase in the number of articles in all cases yet shows a significant decrease in 2022 for all keywords tested. This means that a larger selection of articles on the topic "Business model" can be more easily found using the keyword "Model".

Following the results of the regression analysis, it was decided to present function prescriptions for each keyword with a prediction for 2023 to 2025. The first term analysed was the keyword "model", for which a regression function prescription was obtained:

$$y = -7{,}3166x3 + 134{,}93x2 - 414{,}45x + 3176{,}9 \quad (1)$$

where 5206 publications were published after the year 2023. Further calculations for the following years were made in the same way. The results are shown in the following table.

Tab. 2: Expected development of selected keywords

Keyword	WoS prediction 2023	WoS prediction 2024	WoS prediction 2025	WoS r
Model	5206	4991	4518	0,9244
Performance	3507	3400	3091	0,9533
Impact	552	551	529	0,8843
Management	4220	3831	3148	0,8864

Source: Authors (2023)

Discussion

The analysis method for this study was adopted from the Vos Viewer from an article on corporate strategy and the environment published by Farrukh et al. (2020). Compared to this publication, we provide a superstructure in the form of keyword analysis using regression analysis methods. Within this statement, we answered RQ1: Which keywords are associated with the word business model?

The 20 strongest keywords for the search term "business model" in the WoS database were determined. When comparing the keywords in the WoS program and the literature search, the literature search showed that the literature search matches the focus of the actual articles in the WoS database. The results of the bibliographic mapping showed that the keywords "Model" (29664 occurrences) and "Performance" (19421 occurrences) were the top-ranked keywords. Although the total number of publications in this area is high, it can be said that further research on this topic is needed. However, keyword analysis refutes this result, showing us the resulting feature graph, which is affected by the drop in publications that occurred in 2022.

The next line of research was to find the answer to our second chosen question RQ2: What are the top five most used keywords?

From the 20 keywords, the four most used keywords were selected, and the occurrence of Model, Performance, Impact, and Management was analysed. The results showed that the keyword "Model" was the most used keyword, while "Performance" was the least used keyword analysed in the VoS browser. "Impact" was the least used keyword. For this reason, it is likely that the keyword "Model" would have been more appropriate for articles and searches on this topic. The results showed that more publications containing the word "Model" than the word "Performance" were found for this search. At the same time, for selected parameters, the study also found a decline in the number of publications across WoS searches in 2022. This may be due to the effects of the COVID-19 pandemic, which had a significant impact on research and may have slowed down the peer review process for individual journals. Another possible reason may be the development of open-access publishing and preprint servers this may have led some researchers to publish

their research outputs outside of traditional publication routes, and this may have affected the length of time it takes for these publications to be included in the WoS database. A final possible reason may be an overall change in the focus of research and its funding, this may lead to fewer publications due to a shift to other disciplines. Overall, it should be considered that a number of factors could have contributed to the lack of publications in the WoS database in 2022.

The final avenue of research was to find an answer to our third chosen question RQ3: What growth can be expected in the coming years?

From the available keyword analysis, a transcript function was created to help us determine the possible future trend of growth in publications containing the four keywords we studied. It was found that there will be a significant decline in the WoS database in 2022 for all keywords tested. Following the results of the regression analysis, it was found that there could be a significant decrease in search terms in 2024 for the keywords "Model, Performance, Impact and Management". This may be due to a change in research focus or the impact of the COVID-19 pandemic itself, which has had a significant impact on scientific research and is thus a new term that was previously unknown.

After answering all the research questions, the hypothesis can be tested. *H1: With the advent of new technologies and the focus of businesses on innovation, there is an expectation that the attention of academics to business model research has increased .*

The results section of this research demonstrates the validity of hypothesis H1. By looking at peer-reviewed publications that deal with model research (keyword model), it can be confirmed that the rate of increase in research publications has accelerated in recent years. By confirming this hypothesis, it can be seen that research on business models is and will be an academically important topic in the coming years and thus changes in this area can be expected to accelerate. For these reasons, it can be argued that H1 has been confirmed.

Conclusion

The research focused on the analysis of keywords related to the business model and their occurrence in the WoS database. An analysis method based on Vos Viewer and regression analysis was used. The results showed that the keywords "Model" and "Performance" were the top-ranked and most used keywords in relation to the searches on business models. While the keyword "Impact" was the least used. Based on these results, it seems more appropriate to focus on the keyword "Model" for further research and searches. Further shows that the number of publications in the study area has seen a slight decrease in 2022. The results of the regression analysis suggest that there may be a decrease in searches for terms related to the "business model" in the coming years as well. It is predicted that the keywords "Model, Performance, Impact and Management" could see a significant decline in searches in 2024. This decline may be due to changes in research

focus or the overall impact of the COVID-19 pandemic and could have been aided by the development of open-access publishing and preprint servers, or by an overall change in research focus and funding. These factors may have led to a reduction in publishing in the WoS database and may have had an impact on the timing of the inclusion of publications in this database. It is important to consider that the lack of publications in the WoS database in 2022 may also be influenced by various factors and thus requires further investigation. However, depending on the development of individual keywords in the past years, it is possible to assume that the number of publications containing the monitored keywords will stabilize and return to the state of increase observed earlier. For this reason, it is necessary to monitor developments in the field of business models in order to correctly determine the focus of future research. Overall, the study provides useful insights into keywords and publication trends in the field and suggests the need for further research on this topic.

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Intellectual Capital and Business Performance Management: Knowledge Management and the Value of Knowledge

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Abstract

Human, structural, and relational intellectual capital and its impact on service sector commercial viability in modern corporate competitiveness are the focus of our research. This study uses questionnaires, surveys, and analytical, deductive, and comparative scientific research methodologies to assess intellectual capital's computational and strategic capacities through recruitment, employee development, evaluation, and engagement. A structured 20-question survey with 490 respondents was done in 2021 and 2022. Chi-square tests and Pearson's coefficient validated hypotheses and identified relationships. Despite industry underutilization of intellectual capital, our findings show a crucial but frequently overlooked link between intellectual capital and organisational learning and advancement. The results reveal that many service industry companies are uninformed of intellectual capital's benefits, which could hinder their innovation, adaptation, and growth in changing market conditions. This research shows linkages between training, employee satisfaction, and engagement, urging an organisational shift towards learning to advance society and survive the market. Discover compelling facts and practical consequences that show the need of prioritising and strategically employing intellectual capital to impact organisational trajectories towards sustained economic success.

Keywords: intellectual capital, strategic management, performance management, knowledge management

Introduction

In the current global landscape, operators across various industries and regions encounter a significant obstacle in their pursuit of consistent performance enhancement. Historically, entities have utilized key performance indicators (KPIs) as essential instruments to steer strategic orientation and evaluate the course of progress in their unwavering quest for superiority. Numerous studies have consistently shown that numerical indicators are effective in providing both quantitative and qualitative insights. This allows organizations to systematically assess their performance in relation to predetermined strategic objectives. As the knowledge economy continues to evolve, there has been a notable shift in the way businesses perceive their most critical assets. The notion of intellectual capital has gained substantial traction within contemporary educational institutions, with growing recognition of its status as a crucial asset category. The concept of intellectual capital has become a crucial factor in promoting long-term competitive advantage and facilitating continuous organizational success. This is due to its encompassment of an organization's combined knowledge, expertise, innovative capacity, and relational networks. The integration of intellectual capital and key performance indicators (KPIs) has emerged as a potent combination in modern organizational management. Currently, they are acknowledged as indispensable constituents in the formulation of an enterprise's tactics, their execution, and its assessment of effectiveness. According to Huang, He & Ren (2021), key performance indicators (KPIs) have transcended their conventional roles and have become crucial instruments that furnish organizations with vital, dependable, and significant data. The data serve as a valuable resource for making informed decisions, conducting comprehensive performance evaluations, and formulating precise strategic plans.

The contemporary commercial landscape is distinguished by instability and a dearth of leniency. Proficient management and in-depth comprehension of intellectual capital and key performance indicators can serve as potent instruments in a company's arsenal. The proficient and optimal utilization of said resources has the potential to distinguish enterprises that are merely enduring from those that are prospering, thereby establishing a distinctive stance within their respective sectors.

The management of firm performance can be significantly influenced by intellectual capital, as it facilitates a deeper comprehension of a firm's strengths and weaknesses (Martinidis et al., 2021). The term pertains to the entirety of the non-physical undertakings of an enterprise, encompassing knowledge, expertise, patents, databases, and customer connections (Vo, Tran, 2022). The performance of a firm is influenced by various factors, which in turn contribute to the firm's competitive advantage (Zeidan, 2021). Salehi et al. (2021) assert that enterprise performance management encompasses a range of procedures and tactics aimed at assessing, overseeing, and enhancing the performance of an enterprise. This may encompass the assessment of performance, the establishment of objectives, the formulation and execution of tactics to enhance performance, and the tracking of advancement. The variability of the outcome is contingent upon a multitude of factors, including but not limited to financial resources, human resources, processes, technology, and other relevant factors (Haldorai, Kim

& Garcia, 2022). The achievement of successful enterprise performance management necessitates the contemplation of all the pertinent factors and the efficient synchronization of these factors, as posited by Kusi-Sarpong et al. (2022). Effective management of intellectual capital necessitates the establishment of systems, processes, and a culture that facilitate the dissemination and utilization of knowledge and information within the organization (Faria et al., 2022). Possible academic rewrite: This may encompass various strategies such as establishing communication channels, providing employee training and development, forming innovation teams, and fostering external collaboration. Zhang, Wang (2022) posit that effective management of intellectual capital can facilitate a company's attainment of a competitive edge and sustained success. According to Astuti, Chariri & Rohman (2021), the configuration of intellectual capital is contingent upon the unique characteristics of the organization and the sector in which it operates. According to Jardon, Martinez-Cobas (2021), the term "human capital" pertains to the competencies and expertise possessed by workers, encompassing their educational background, work-related experience, and interpersonal connections. The term "structural capital" primarily pertains to intangible assets such as information, systems, processes, and intellectual property, including patents, trademarks, and know-how. Finally, social capital pertains to the connections established with external stakeholders, including customers, suppliers, and other entities (Puzynya et al., 2022). Mačerinskienė, Survilaitė (2019), along with Xu, Haris & Liu (2022), have deliberated on the concept of intellectual capital, which they have defined as a collection of non-physical assets that an organization possesses, and which have the potential to enhance the growth and prosperity of the organization. The utilization of this approach is frequently observed in business organizations as a means to attain a competitive edge and foster innovation (Dharni, Jameel, 2021). Organizations can benefit significantly from employees who possess a high level of intellectual capital, as they possess the ability to introduce novel concepts, tackle intricate issues, and foster innovation within their respective domains (Radonić, Milosavljević & Knežević, 2021). Organizations that acknowledge the significance of intellectual capital may allocate resources towards the enhancement of their workforce's competencies and expertise through training and development initiatives. This approach can facilitate the cultivation of a culture of innovation and creativity (Pratama, Innayah, 2021). Nkambule et al. (2022) assert that the practical utilization of intellectual capital may encompass the establishment of a center of excellence that concentrates on the exploration and innovation of novel products and services or the deployment of research teams to enhance internal processes and systems. Obeidat, Al-Tamimi & Hajjat (2021), Sheikh (2022), and Kaliyeva, Baisalova & Nathan (2022) have posited that an instance of value provision could be through the utilization of corporate social responsibility (CSR) in the domains of environmental, social, and ethical issues. By implementing this approach, an organization can cultivate a base of dedicated patrons and staff members while enhancing its reputation. Performance management encompasses a series of activities, including but not limited to periodic performance evaluation, retrieval of objectives, planning, monitoring, and compilation of feedback. According to Bayo-Moriones, De la Torre (2022), performance management is crucial for businesses as it facilitates the enhancement of employee and organizational performance. Furthermore, it facilitates the capacity of the organization to

strategize effectively, synchronize its operations, and prioritize critical goals (Huang, He & Ren, 2021). According to Maake, Harmse & Schultz (2021), the outcome of this phenomenon is an increase in efficiency and effectiveness, which can have a favourable effect on the performance of the organization. According to Đonlagić Alibegović, Mešanović (2022), performance management facilitates the establishment of a work environment that encourages employee participation in goal setting and work planning, thereby enhancing employee motivation and work quality. According to Christensen-Salem et al. (2022), the system also assesses the competencies of employees and adjusts their job responsibilities to optimize their contributions to the organization. According to Fuzi et al. (2022), a proficiently structured and executed management process can facilitate an organization's recognition of issues and inadequacies, thereby empowering them to intervene and rectify them promptly. The implementation of this measure has the potential to mitigate expenses related to inaccuracies and erroneous judgments. According to Samimi et al. (2022), strategic management is a multifaceted process that involves the planning, coordination, and execution of an organization's activities and resources with the aim of attaining long-term objectives and strategic priorities. Pasaribu et al. (2021) and Hoglund, Martensson & Thompson (2021) posit that strategic management pertains to decisions that significantly influence the overarching vision and trajectory of the organization. Contemporary perspectives on strategic management prioritize the importance of being adaptable and flexible in response to a dynamic and rapidly evolving business landscape. It is imperative for an organization to possess the capability to effectively address emerging challenges and modify its approach in accordance with evolving circumstances. According to Kulinich et al. (2022), it is imperative that strategic management be viewed as a continuous process rather than a singular plan. According to Tasgit et al. (2023), key performance indicators (KPIs) are quantifiable metrics that enable organizations to track and assess their progress in attaining their objectives. Key performance indicators (KPIs) play a crucial role in strategic management as they enable organizations to gauge their performance and evaluate the efficacy of their strategies. According to Ullah, Mirza & Jamil (2021), individuals play a crucial role in the establishment and maintenance of an organization's intellectual capital. The majority of an organization's intellectual capital is generated by the collective knowledge, expertise, and ingenuity of its workforce. According to Saad (2020), individuals are the custodians of intellectual capital and are accountable for its origination, conservation, and advancement. According to Torre, Tommasetti & Maione (2021), the optimal utilization of an organization's intellectual capital is contingent upon the efficient management and cultivation of its employees' knowledge. It is imperative for an organization to identify the fundamental competencies possessed by its workforce and ensure their effective utilization and dissemination across the organization, as suggested by Afshari, Hadian Nasab (2020). In order to achieve this objective, the organization may employ a range of tools and practices, including but not limited to training, mentoring, information and knowledge sharing among employees, and teamwork (Liao, Hsu & Chiang, 2021). The interdependence between individuals and the intellectual capital of an organization is significant. An organization that can proficiently manage and enhance the knowledge of its workforce is also capable of establishing and preserving its intellectual potential, thereby sustaining its competitive edge

in the market (Buallay, Abuhommous & Kukreja, 2021). The significance of an organization's intellectual capital cannot be overstated in terms of its effective operation and expansion (Sartawi, 2020). The expertise and skills of employees constitute a priceless asset that contributes to an organization's innovation, productivity, and competitiveness (Nazir, Tan & Nazir, 2021). Alrowwad, Aboulaoush & Masa´deh (2020) and Khalique et al. (2014) have posited that knowledge systems can manifest in various forms, including but not limited to databases, information and knowledge sharing systems, expert systems, tools for creating and sharing project documentation, and other similar systems. Baydar, Cetin (2021) and Hatamizadeh et al. (2020) assert that the implementation of such systems can facilitate an organization's utilization of its knowledge and expertise, resulting in enhanced management and decision-making capabilities, superior product and service quality, heightened productivity, and other advantages. According to Wang et al. (2020), the process of capturing an organization's intellectual capital can be achieved through various means, such as the development of know-how catalogues, expert databases, inventories of projects and project deliverables, the establishment of knowledge communities, and other similar approaches. Chatterji, Kiran (2021) have observed that these resources are subsequently utilized for the purpose of developing and revising knowledge systems that organizations employ to acquire and disseminate their knowledge and expertise.

Methods and Data

As a basic method of studying the state of the phenomenon, we chose the method of questionnaires and surveys. In doing so, we used the basic methods of scientific research, namely the methods of analysis, deduction, and comparison. In assessing the truth of the research hypotheses, we relied on the data obtained from the survey questionnaires. We verified the results of our hypotheses using the Chi-square test. We examined the strength of the association using Pearson's coefficient. In the evaluation, we tested the assumed statistically significant relationship between two variables. The structure of the questionnaire consists of 20 questions, and its stylization is based on the theoretical elaboration of selected strategic management practices in terms of intellectual capital, namely recruitment, training, and development of employees, their evaluation and motivation, and employee engagement. Responses were mostly single- or multiple-choice. The questionnaire, as a basic research and diagnostic tool, helped us reach and obtain the opinions of a relatively wide sample of respondents out of a total of 490. The survey was conducted in 2021 and 2022. We sought a regression model that would best describe the sample under study, but through research, we found that such a model had minimal reliability in terms of the companies surveyed in this sample. At the linear regression model level, we looked for a regression model that would best describe the pattern of dependence between the variables. After evaluating the data examined, we concluded that in neither case was the regression model appropriately chosen. For this reason, we chose the chi-square method and examined the relationships between the actual and expected dependencies.

Chi-square Test (Greenwood, Nikulin, 1996):

$$x^2 = \sum \frac{(O-E)^2}{E}$$

Pearson's Correlation Coefficient (Hoben, 2012):

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2]\left[n\sum y^2 - (\sum x)^2\right]}}$$

In the present study, the chosen significance level (α) was established at 0.05. If the p-value obtained from the chi-square test is less than 0.05, it would lead to the rejection of the null hypothesis, suggesting a statistically significant disparity between the observed and predicted frequencies. On the other hand, if the p-value is equal to or larger than 0.05, it would be inappropriate to reject the null hypothesis. This implies that there is insufficient evidence to support the existence of a significant difference between the frequencies that were observed and those that were expected.

Research objective

The objective of the study was to examine the utilization of business performance assessment frameworks and associated performance metrics in the context of intellectual and intellectual capital, with the aim of comprehending the necessity of introducing a strategic management system. The present study aimed to investigate the matter of intellectual capital development strategies while considering contemporary management trends. The study proposed novel recommendations that could enhance the management of intellectual property and intellectual capital in enterprises, thereby improving their effectiveness. The objectives established were to assess the adequacy of employee qualifications for their respective job roles, investigate the frequency and nature of employee training, evaluate the employee appraisal process and its purpose, determine the extent of opportunities for employee self-development, and assess the level of employee commitment to their work. Additionally, the satisfaction of entity management with their employees was also examined as part of the research. The present study involved an analysis of the questionnaire's formatting to determine the degree to which the following scientific and research issues were validated: The identified issues include ambiguously defined applicant requirements, inadequate employee selection, unresponsive employee attitudes towards work, unconfirmed availability of training opportunities, apathetic attitudes towards employee training, irregular and unsystematic employee evaluations, limited knowledge of innovative evaluation techniques, inadequate management support for employees, and suboptimal working conditions and expectations.

Research hypotheses

Based on the research objective, the following hypotheses were formulated:

H1: We expect a statistically significant relationship between employee qualifications and recruitment period.

H2: We assume a statistically significant relationship between employee training and manager satisfaction.

H3: We hypothesize a statistically significant relationship between employee self-development and self-education.

H4: We hypothesize a statistically significant relationship between employee satisfaction and employee engagement.

Results

A linear regression model was constructed in an attempt to explain the selected variables, as per the research hypotheses. The coefficient of determination (R-squared) was examined, with emphasis on the estimated error of the model as the significant variable. It is desirable for the estimated error to be minimized. A correlation exists between the assessment of error and the fluctuation of the dependent variable. The fundamental structure of the linear regression model is expressed as follows: the dependent variable, y_i, is a function of the intercept, the coefficient of the independent variable, 1, multiplied by the predictor variable, $x1_i$, and the error term, u_i. The linear regression model for the qualification factor is expressed as qualification = 1.0419 + 0.1166 recruitment per employee + $\hat{u}_i$. The coefficient of determination for the linear relationship between the variable X, representing employee qualifications, and the variable Y, representing the recruitment period, was determined to be 0.0930. This indicates that a mere 9.3% of the variability in the recruitment period can be accounted for by the linear relationship with employee qualifications. This suggests that a linear correlation with variable X only accounts for 9.3% of the variability in recruitment, leaving 90.7% unexplained. Comparable findings were obtained through the observation of the remaining three hypotheses. It can be inferred that the utilization of linear models is not appropriate for conducting analogous analyses. Instead, they are appropriate for conducting trend analysis.

Regarding education, the equation can be expressed as follows: $education_i$ = 1.8782 + 0.0463 satisfaction + $\hat{u}_i$, where $\hat{u}_i$ represents the error term. The R-squared value was 0.0207. The regression model's constant term indicates a 2.7% degree of variation in managers' contentment with their subordinates, which can be accounted for by a linear association with the education factor. The linear relationship between the variables of employees' education and managers' satisfaction with employees' accounts for less than 3% of the variance in the latter variable.

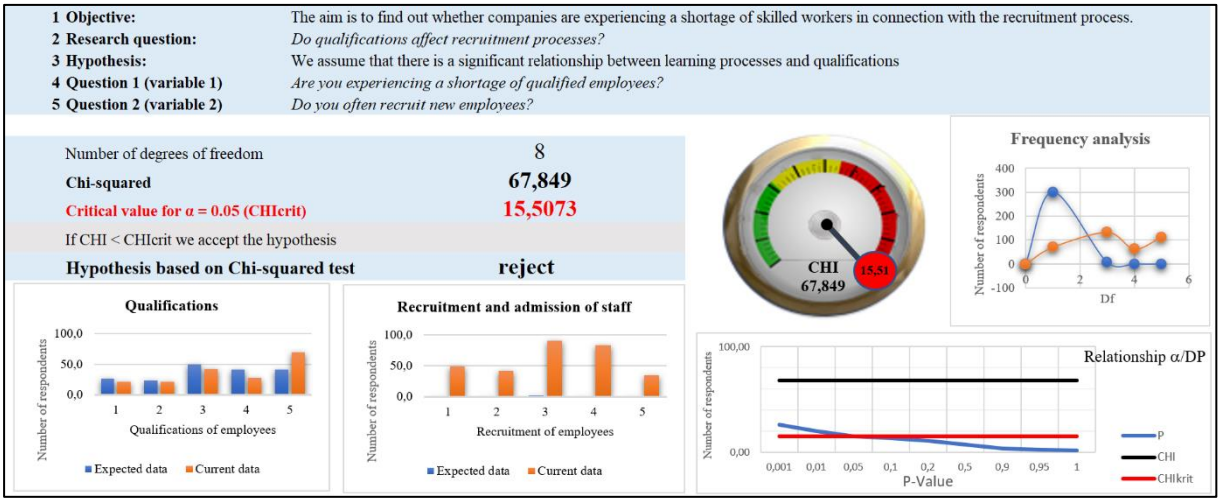
Regarding the assessment of employees based on their level of engagement, the model's formula was expressed as follows: evaluation = 3.7223 - 0.4547 exposures + $\hat{u}_i$. The coefficient of determination ascertained in the regression model was 0.0164, indicating that

only 1.64% of the variance in the employee engagement variable can be accounted for by a linear association with the employee evaluation variable. The model chosen for examining the relationship between employee engagement and the employee evaluation variable is deemed inappropriate, as it fails to account for 98.36% of the variability in employee engagement that cannot be explained by a linear relationship with the said variable.

The hypothesis being tested is H1, which posits that there exists a statistically significant correlation between the qualifications of employees and the duration of the recruitment process. Specifically, H1 proposes that the probability of this correlation being non-zero is significant (H1: $p \neq 0$). The null hypothesis posits that there is no statistically significant correlation between the qualifications of employees and the duration of the recruitment process (H0: $p = 0$).

The following figure presents a synopsis of the hypothesis H1 values, which were utilized to examine the potential impact of employee qualifications on the duration of the recruitment process. The study investigated a bivariate model of recruitment, with (1) denoting a monthly time interval, (2) denoting a quarterly time interval, (3) denoting an annual time interval, (4) denoting another annual time interval, and (5) denoting a recruitment process that is predominantly permanent. In contrast, the rows of the table depict data pertaining to the qualifications of the staff, with category (1) indicating a perceived inadequacy of qualified personnel, category (2) indicating a satisfactory level of qualified personnel, and category (3) indicating a lack of significance attached by respondents to the qualifications of their staff. Figure 1 displays the outcomes of our experimentation.

Figure 3: Dashboard for Hypothesis Testing H1



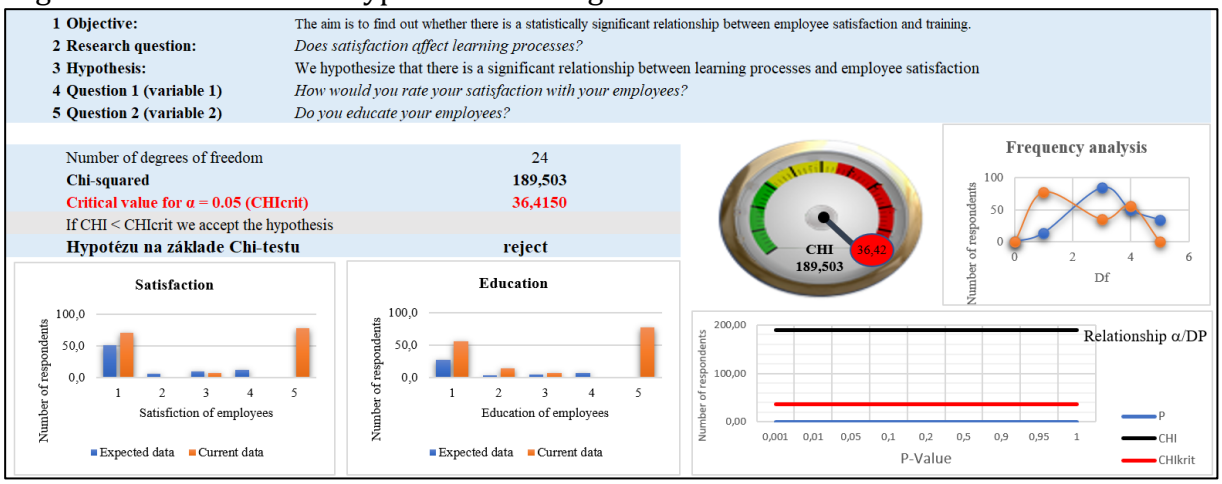
Source: Own.

The findings of Hypothesis 1, which examined the relationship between recruitment and qualifications, indicated a modest correlation (r=0.3), suggesting that the alignment between hiring processes and industry skill development patterns may be inadequate.

The hypothesis being tested is H2, which posits that there exists a statistically significant correlation between employee training and the level of satisfaction experienced by managerial employees. This is in line with the alternative hypothesis H1, which states that

the probability of this correlation being non-zero is high. The null hypothesis posits that there is no statistically significant correlation between the level of education of employees and the degree of satisfaction experienced by managerial employees (H0: p = 0). In relation to employee training, our study analysed the frequency of training sessions based on the following responses: (1) annual training; (2) training based on current trends; (3) no training provided; (4) consideration of training; and (5) lack of importance placed on training. To assess satisfaction levels, our inquiry centred around the following queries: extremely satisfied, satisfied, moderately satisfied, satisfied, neutral, uncertain, dissatisfied, moderately dissatisfied, dissatisfied, and extremely dissatisfied. Figure 2 displays the outcomes of our experimentation.

Figure 4: Dashboard for Hypothesis Testing H2

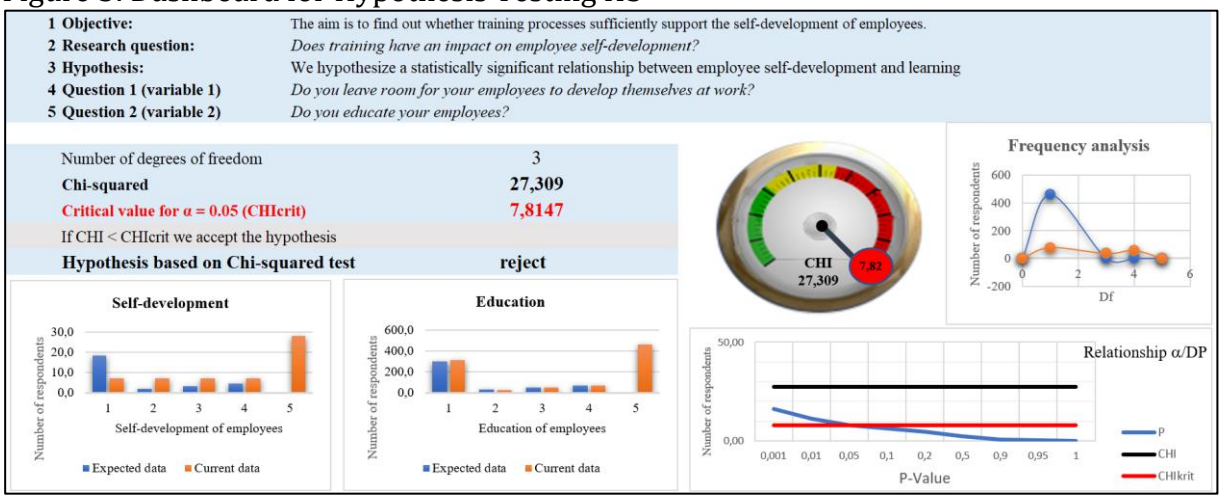


Source: Own.

Hypothesis 2 revealed a weak correlation coefficient (r=0.14) between employee satisfaction and education, suggesting the need for further investigation and strengthening of the relationship between employee contentment and continuous professional growth.

The hypothesis being tested is H3, which posits that there exists a statistically significant correlation between employee self-development and education. Specifically, H1 is being tested, which states that the probability of this correlation being non-zero is not equal to zero. The null hypothesis under consideration pertains to the investigation of employee training. Specifically, we analysed the responses to the frequency of employee training, which were categorized as follows: (1) annual training; (2) training in accordance with current trends; (3) no training; (4) contemplation of training; and (5) lack of importance placed on training. With respect to self-development, our inquiry centred on the following queries: Do we provide opportunities for employees to engage in self-development? Is self-development deemed a significant aspect of our organization? Figure 3 displays the outcomes of our experimental evaluations.

Figure 5: Dashboard for Hypothesis Testing H3

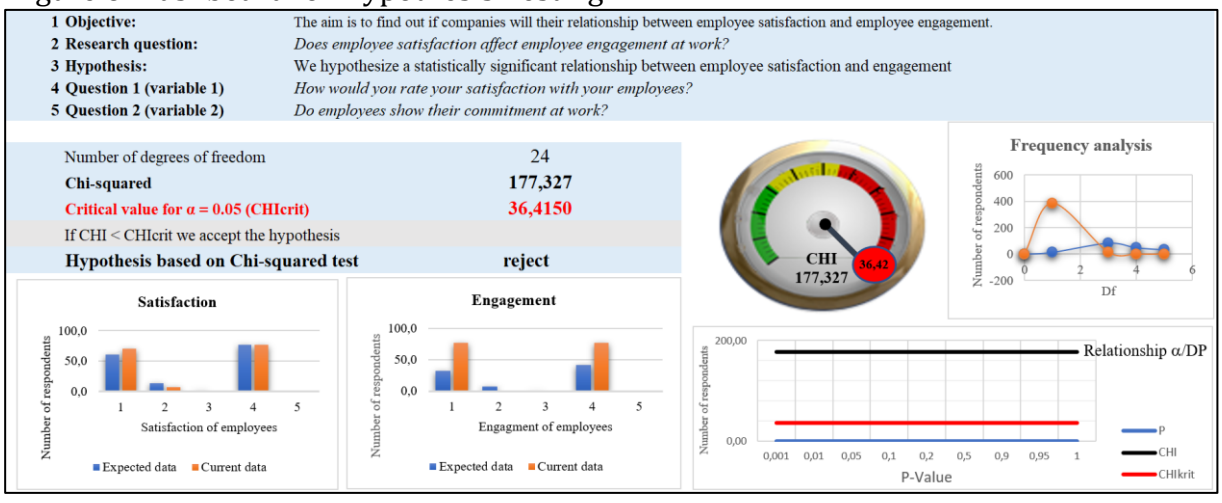


Source: Own.

Hypothesis 3, which examines the effectiveness of self-improvement and training activities, revealed a significantly low correlation coefficient of 0.1. This finding highlights a potential disparity between employees' ambitions for professional growth and the available training possibilities.

The hypothesis being tested is H4, which posits that there exists a statistically significant correlation between employee satisfaction and engagement. This is in line with the initial hypothesis H1, which states that the probability of this correlation being non-zero is high. The null hypothesis under consideration pertains to the issue of satisfaction. Specifically, we analysed the responses received for the following set of questions: very satisfied, somewhat satisfied, moderately satisfied, satisfied, neutral, don't know, dissatisfied, somewhat dissatisfied, somewhat dissatisfied, and very dissatisfied. With regards to engagement, our focus was on the various manifestations of engagement, namely: affirmative manifestation, lack of knowledge, absence of observation, negative manifestation, and non-manifestation. Figure 4 displays the outcomes of our experimentation.

Figure 6: Dashboard for Hypothesis Testing H4



Source: Own.

Hypothesis 4, which examined the relationship between employee engagement and contentment, did not show a significant association (r=−0.16). This finding suggests a disparity in the levels of employee involvement and satisfaction within organisations.
These findings suggest that although intellectual capital is inherently important, its management and integration within organisations, particularly in relation to factors such as recruitment, training, engagement, and employee satisfaction, are not easily understood or firmly established in real-world situations.
By using a comprehensive and well-planned approach to managing intellectual capital, organisations can effectively improve their internal operations and strengthen their external market position. This strategic management approach enables organisations to achieve sustainable growth and enhance their competitiveness in the long term. The cultivation of intellectual capital is not only a strategic decision, but also a necessary requirement inside the modern business environment.

Discussion

Based on the test results, it was determined that the anticipated correlation is absent, leading to the rejection of hypothesis 1. This association lacks substantial relevance in the context of intellectual capital endeavours. Hence, it is imperative to contemplate enhancing the recruitment process by aligning it with the requisite qualifications to cater to the evolving trends in the domain. This pertains to the overall development of the organization as a learning entity that is constantly evolving and expanding its skill set. The Pearson correlation coefficient yielded a value of 0.3, indicating a relatively weak strength of the relationship. The extant body of research indicates that firms operating within the industry sector under investigation ought to devise a comprehensive plan for enhancing their workforce's competencies and organizational expansion with respect to the acquisition of skilled labour (Fuzi et al., 2022). Furthermore, it is imperative that appropriate actions be taken in this regard.
Subsequent analysis revealed that the anticipated correlation was not present, leading to the rejection of Hypothesis 2. Like the initial instance, it was determined that this association lacks statistical significance in the context of intellectual capital management. It is imperative to consider enhancing job performance and the correlation between employee contentment and employee education to align with contemporary developments in this domain, namely the advancement of the proficiency of the entire organization as a learning and growing entity. The Pearson's correlation coefficient revealed a weak relationship between the variables, with a coefficient value of 0.14. The research highlights the importance for companies to establish a comprehensive development strategy and assess the influence of employee satisfaction, which is reinforced by their training program (Hoglund, Martensson & Thompson, 2021).
Hypothesis 3 was deemed not valid based on the obtained results. Like the preceding instances, it has been determined that this association is not particularly noteworthy in the context of intellectual capital management. It is imperative to consider enhancing work performance and fostering a strong correlation between employee self-

improvement and training initiatives to align with emerging trends in this domain (Saad, 2020). This pertains to elevating the skillset of the entire organization as a learning and growth entity. The Pearson correlation coefficient yielded a value of 0.1, which suggests a weak strength of the relationship between the variables. The research findings suggest that it is advisable for companies to establish a development strategy that incorporates employee self-development and aligns it with the learning system. This approach has gained traction in universities, which are increasingly forging connections with practical applications and lifelong learning (Ullah, Mirza & Jamil, 2021).

Like previous instances of analysing test scores, it was determined that the correlation between the variables in question was not statistically significant in the context of intellectual capital. As a result, the fourth hypothesis was deemed invalid. It is imperative to consider enhanced work practices and the correlation between employee engagement and contentment to align with contemporary developments in the realm of learning and organizational advancement. The Pearson's correlation coefficient was utilized to measure the strength of the relationship, and the result obtained was -0.16, indicating a lack of strength in the relationship. At present, engagement stands out as a crucial key performance indicator (KPI) that warrants serious attention from organizations (Tasgit et al., 2023). It is imperative that they devise effective measures to eliminate any obstacles to engagement and establish a stronger connection between employee satisfaction and engagement in their strategic focus and human resources (HR) strategy. Once again, scholarly research indicates that it is advisable for companies to formulate a comprehensive development strategy and endeavour to synchronize employee engagement with their satisfaction levels.

The results of our study highlight the significant importance of intellectual capital in influencing the achievement of organizations. Nevertheless, the lack of expected correlations in the hypotheses indicates an urgent requirement to readjust management tactics. It is apparent that managers and executives must recognize that simply investing in recruitment or training alone would not be sufficient. However, it is imperative to match with the ever-changing trends in the market. For example, prominent technology companies such as Apple prioritize not only the evaluation of qualifications but also the assessment of potential and inventive cognitive abilities when selecting employees. This approach enables the formation of a highly skilled workforce that propels the development of progressive and visionary goods. In a similar vein, corporations such as Google place a high emphasis on the need of fostering both employee satisfaction and engagement, recognizing the interconnectedness of these factors and their consequential influence on overall productivity. For enterprises to achieve a competitive advantage, it is crucial to adopt a comprehensive approach to the management of intellectual capital. This entails effectively overseeing many aspects such as recruiting training, engagement, and satisfaction. It is important to note that these elements should not be treated as mere checkboxes, but rather as strategically linked initiatives that contribute to the overall performance and competitiveness of the firm.

Conclusion

Our study explores the intricate nature of intellectual capital and its significant impact on organisations, with a specific focus on the service industry. The study examined key areas including qualifications, self-improvement, employee satisfaction, and involvement. The findings revealed a significant underutilization and limited exploration of intellectual capital in the industry, which is supported by our empirical evidence and consistent with Sartawi's (2020) research. The endeavour highlighted a significant presence of service industry companies that have not fully utilised their intellectual capital, resulting in limitations on their ability to innovate, adapt, and progress within the dynamic business landscape.

Specifically, our findings reveal a noticeable gap between the acknowledgment and practical involvement with intellectual capital. The interconnected factors of training, engagement, and employee satisfaction are significant drivers that have the potential to transform companies into learning organisations. These organisations not only possess the ability to adapt to the ever-changing corporate environment but also exhibit inventive responses to its dynamic nature. Within this context, there exists a powerful instrument for individuals in managerial and leadership positions: a compelling invitation to shift their focus towards recognising and effectively cultivating intellectual capital. By adopting this approach, individuals create a path that leads not only to mere survival but also to a flourishing state characterised by exceptional innovation, a distinct advantage in competition, and a team that possesses extensive knowledge and drive. Together, these factors cultivate an atmosphere that is conducive to effectively navigating forthcoming obstacles with flexibility and foresight.

Nevertheless, it is important to recognise the challenges encountered in our research, such as the potential limitations in the representativeness of our sample and a significant emphasis on quantitative measures. This focus on quantitative measures may overlook the intricate impacts of organisational culture and informal learning processes. The temporal limitations of the study prevent it from providing a longitudinal perspective on the evolutionary path of intellectual capital inside organisations.

This study provides as an indicator of the importance of intellectually enriched organisational cultures for sustaining and improving commercial success in the current and future corporate environments, with practical implications. This proposal presents a feasible approach for managers and leaders, emphasising the need of strategic involvement with intellectual capital as a central element of organisational strategy. This approach aims to foster a future that is characterised by resilience, adaptability, and inherent innovation.

In order to advance the field, it is recommended that future research expands its scope by including a broader range of participants and employing a more comprehensive approach to thoroughly explore the complex dimensions of intellectual capital. By employing a mixed-method approach that incorporates both quantitative and qualitative methods, and by taking a longitudinal perspective, researchers can gain more comprehensive and nuanced

insights into how intellectual capital is utilised, evolves, and influences the success and growth of organisations in the face of rapidly changing business environments.

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The influence of indebtedness on the profitability of sales in agriculture in the Czech Republic

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Abstract

Debt is an integral part of the business. It is given that the high indebtedness of a company may not only be a negative signal but that its growth can positively contribute to higher profitability, which increases the company's market value. In the agricultural sector in the Czech Republic, the most discussed economic problems are short sales on the domestic market and low purchase prices of agricultural products. This study proves that in 2016-2019, the number of enterprises in the agricultural sector was, on average, 2310. The most significant decrease occurred in 2020 to 1959 enterprises. However, this situation can largely be attributed to the Covid-19 pandemic. The contribution aims to analyze agricultural enterprises, determine the average development of their indebtedness over time, and determine how this indicator affects sales profitability. The data is taken from the CRIBIS database of CRIF – Czech Credit Bureau from 2016 to 2020. Correlation analysis is used. Using this, it is established that the company's indebtedness is related to sales profitability. Correlation analysis is used further to determine whether the size of the company, determined by the number of employees and other parameters, is not associated with the profitability of sales of these companies. The correlation between the size of the company and its number in the given years has not been confirmed. This paper brings conclusions, which can be implemented in practical agricultural company driving by managers' view.

Keywords: development of profitability, total indebtedness, correlation, the legal form of business

Introduction

The business's primary goal is to achieve the greatest possible profit (Psárska, Hašková & Machová, 2019). For companies to know whether they are doing well in business, they must be able to evaluate the profitability of business assets (Rowland, Kasych & Šuleř, 2021).

This article focuses on the indebtedness and profitability of businesses in the agricultural sector. The debt ratio shows how a company uses equity and debt capital to finance assets (Horák, Dlouhý, 2021). It seems better to focus and draw only on equity when possible, but this is only sometimes true. Foreign capital is cheaper than own capital (Tian, 2016). The reason is that the interest from the loan can be counted by the company as tax-deductible costs (Čulkova et al., 2018). Valašková, Klieštik & Gajdošíková (2021) also agree with this when they say that a high share of own resources makes the company stable and independent. With a low share, on the other hand, the business is unstable, market fluctuations and credit uncertainty can have serious consequences. However, foreign capital is cheaper and too high a debt ratio can threaten the existence of businesses. Gajdošíková et al. (2023) further state that the company's indebtedness is one of the monitored parameters when evaluating the overall financial performance of the company. However, growing indebtedness can mean a difficult financial situation for companies in the form of insolvency and the inability to meet emerging obligations.

Identifying factors affecting profitability is essential from the perspective of market participants. Accounting profit is one of the most important measures of a company's performance (Vochozka et al., 2020). For this purpose, all factors affecting this parameter and the company's performance are analyzed. Based on this and other aspects of its performance, a possible allocation of company resources should be decided (Khazaei, 2021). Kalinová, Mrázová (2022) also agree with this when they say that profit is one of the most frequently used indicators of a company's performance, even in terms of its historical development. However, the amount of profit or loss comparison does not give an opportunity with different competitors, both in the industry and outside it. Janek & Horák (2021) say that therefore, other indicators (rent, liquidity and indebtedness) are used to evaluate the performance of companies. In most cases, bankruptcy models are based on financial indicators that describe the current state or a particular area of economic health, such as profitability and indebtedness but do not inform about relevant developments in the past (Karas, Reznakova, 2018). Regarding profitability, the higher the given indicator, the better we do in business. According to Grünwald, Holečková (2009, p. 23), the level of financial health is influenced by the resistance of the company's finances to external and internal operational risks. Due to unstable micro and macroeconomic conditions and growing competition, companies also struggle to achieve the desired profitability (Korneta, 2019).

According to Hloušková, Prášilová (2020), the weather has a significant influence on sales and indebtedness in agriculture. It is difficult for agricultural enterprises to prepare for this external factor. Farmers can follow the weather forecast but can't do anything if their crops are planted, and it doesn't rain. To sprinkle the entire fields is unthinkable, so they can only wait for the weather to clear up. But the rain is also not salvation. Water falling on parched soil is not absorbed, which is also contributed to by farmers using heavy agricultural machinery.

Tractors or threshers suffocate the soil, and the water then drains from the area even faster. At the same time, farmers are faced with rising costs for labour, seeds, fertilizers, plant protection products, and, nowadays, a significant fuel price increase (Machová, Kučera & Kašparová, 2022). According to Li (2023), whether and how quickly farmers adapt to a changing climate is crucial and can substantially impact understanding the potential effects of climate change on agriculture. In contrast, Fabri, Moretti & Van Passel (2022) argue that farms are not expected to suffer more from extreme weather than from average climate change.

Hloušková, Prášilová (2020) further say that for these reasons, Czech farmers are dependent on European subsidies. Domestic farmers receive payments from the EU for cultivated land and various projects, such as purchasing a new tractor. Subsidies are indispensable in this regard, as they contribute to food affordability. After the Czech Republic joins the EU, higher grants can improve the financial situation of Czech agricultural enterprises. On the other hand, subsidies cause problems in the European market. Cheap meat travels from abroad to the country, which people buy because of the low price. It can be reasonable mainly because other states heavily subsidize it. From another point of view, people in the Czech Republic today have started to focus on where what they buy comes from and sometimes prefer to pay more and support a Czech product (Gavurová et al., 2020). This influence was analyzed in the monitored years 2016 to 2019 in their study by Zámková et al. (2021). It was found that in 2019 quality was the main criterion for respondents, with the price criterion complemented by the perception of organic food as healthier than conventional food.

This article aims to determine whether the indebtedness of agriculture in the Czech Republic affects sales profitability, and we will express this effect. To achieve the stated goal of the work, two research questions are defined:

1) Is there a relationship between the size of agricultural holdings and the development of sales profitability during the monitored years?

2) Which agricultural enterprises, broken down by the legal form of business in the country, had the most significant indebtedness in the monitored years?

In this article, we will examine the current state of the agricultural sector. Subsequently, it will be determined whether the size of the agricultural enterprise can influence its profitability. This is a very specific industry that depends on the size of cultivated areas.

This article will have the following structure: in the literature review, a survey of current relevant literature will be conducted. The methodology will include a description of the data and the methodological procedure as it will be applied. The achieved results will be presented in the results section. The set research questions will be answered in the discussion. The conclusion will represent a summary of all achieved results and their influence on answering the set research questions.

Literature review

Financial performance, measurement and evaluation are the most important areas of management of modern enterprises. In the highly competitive environment represented by the market economy, companies must meet customers' increasingly demanding needs

(Krulický, Horák, 2021). If business entities want to survive in such a market, it is necessary to work with the market correctly and monitor, measure and evaluate their financial performance and stability. Correct assessment of the economic situation and monitoring trends in the development of financial health is one of the essential prerequisites for the company's future Access (Stehel, Horák & Krulicý., 2021).

It is, therefore, essential for every budding entrepreneur and company to penetrate the secrets of financial analyses. When starting a business, developing a thorough financial plan is necessary. Subsequently, it is essential to carry out a regular financial analysis (Horák, 2020). Buele, Tigsi & Solano (2021) state that predicting possible corporate bankruptcies is a subject of financial analysis. Predicting the financial sustainability of a company in the short or long term takes work (Syed, Bawazir, 2021). Vanegas, Aguliar & Suescún (2021) analyzed the financial health of a business using artificial intelligence techniques that oversee the organization's financial management. A whole range of financial indicators should be monitored as part of the financial analysis. Data for these indicators are drawn from company accounting, e.g. from the profit and loss statement, cash flow and balance sheet (Vochozka et al., 2020). The results obtained from the financial analysis are essential both for the business owner and for banks, business partners, managers and others (Kislingerová, Hnilica, 2008).

Indebtedness is one of the monitored indicators within the company's financial analysis. Indebtedness is a comprehensive and hard-to-grasp concept that can be viewed from many angles. The fact is that indebtedness cannot be unified, and immediate and precise conclusions can be drawn. According to Colin (2021), profit growth usually drives deleveraging. Indebtedness is also not inherently a purely negative value. Most of the investments, paid from loans, relate to the company's development. Various indicators are used to determine the company's indebtedness, which are readily available in the financial statements and balance sheets of companies (Andrikopoulos, 2009). The ideal amount of debt depends on the performance and profitability of the company (Chen, Liu, 2017). Fenoy et al. (2021) investigated whether the presence of women in corporate governance affects the level of indebtedness in agri-food family firms. The findings show that the presence of women in corporate governance structures contributes to better management behaviour of the company and, thus, to better use of the financing strategies of the companies.

The Return on Sales (ROS) is also integral to the company's financial analysis. This indicator represents the ratio of the financial result in various forms and sales, according to Růčková (2015), most often those that make up the operating result of the economy, but it is also possible to use total sales, especially if we calculate ROS concerning net profit. Knápková et al. (2017), however, recommend substituting Earnings Before Interest and Taxes (EBIT) for profit to better compare with the industry. Rusdiyanto et al. (2021) determined and analyzed the profitability of manufacturing companies listed on the Indonesian stock exchange using a quantitative research method with multiple linear regression analysis.

Agricultural production in the Czech Republic is one of the traditional branches of the national economy. Zagata, Hrabák & Losťák (2020) say that the radical agricultural shift began in the early 1990s when socialist models ceased to apply. According to Veznik, Konečný (2015), after the entry of the Czech Republic into the European Union, stabilization in this industry

and its further development were expected. However, in the past years since the Czech Republic joined the EU, the agricultural sector's production has decreased, the number of farm animals has also reduced, and the area of arable land has decreased. The decline in arable land area is slowing down but has not entirely stopped.

In recent years, due to the Covid-19 pandemic, the economic situation of agricultural enterprises has developed unfavourably (Sridhar, 2022). There has been an increase in demand for so-called green loans, which allow growers to buy seeds, fertilizers or plant protection products from processors and pay them for them only after harvesting part of their production (Huang, Liao & Li, 2019). These loans have developed over time, and the providers often require future harvest and agricultural machinery. Indebtedness of Czech agricultural enterprises has not decreased over the past year; instead, unpaid obligations are increasing, and payments are delayed to banks and business partners (Procházka, Cejpová & Smekalová, 2019).

One of the goals of Czech agriculture is to ensure food security at the national and European levels. And at the same time, thanks to this, it contributed to the energy and food self-sufficiency of the Czech Republic. The efficiency and competitiveness of Czech agriculture are also important. In the European Union, the issue of sources of competitiveness in agriculture is widely discussed (Rumánková et al., 2022).

It is, therefore, necessary to take a closer look at the indebtedness of Czech farmers and whether this indicator affects the profitability of sales. Ratio analysis is very often used for these purposes. Currently, studies use so-called correlation analysis. The latter is one of the most popular analytical methods for determining the relationship between two variables (Liang, 2022). For example, correlation analysis was used by Hušbauer et al. (2017), who used this method to analyze the relationship between the price of wood in neighbouring states and the price of wood in the Czech Republic.

Data and Methodology

The relationship between indebtedness and profitability of sales will be analyzed, and we will find out the development of profitability and indebtedness. These values will be examined in the agricultural sector from 2016 to 2020. Therefore, The aim will be to find out whether the agriculture debts in the Czech Republic affect sales profitability, and we will express this effect.

The data for the study was obtained from the CRIBIS database of CRIF – Czech Credit Bureau. The dataset includes information from financial statements from 2016 to 2020. The monitored data for the analysis will be taken only for active and profitable enterprises that operate in agriculture. According to the CZ NACE economic activity classification, this is section "A" (Agriculture, forestry and fishing).

First, irrelevant data not needed to perform the necessary calculations will be removed from the data file. After deletion, only the following data will remain ID number and name of the company (to identify the subject), Legal form of business, Category of employees

(this indicator will be used to determine the size of the company), Year, Operating profit, Interest expense, Financial profit, Revenues, Foreign resources and Total assets.

Subsequently, all inactive enterprises and enterprises in liquidation will be removed from the data set. In the same way, businesses with missing information on the turnover number of employees and companies whose profit before taxation and interest deductions are not listed will also be removed.

The data will be further divided according to individual years, and the number of monitored enterprises will be determined for each monitored year.

After these modifications of the input data, a different number of enterprises entered the research in the merged period. The specific number of enterprises participating in the research is shown in Table No. 1.

Tab. 1: Amount of monitored enterprises in 2016-2020

Year	2016	2017	2018	2019	2020
Amount of monitored enterprises	2252	2253	2396	2342	1959

Source: Own processing based on data from the CRIBIS database.

In the next step, EBIT (Earnings Before Interest and Taxes) will be calculated for each year and company using formula No. 1 (Knápková et al., 2017):

$$EBIT = operating\ economic\ result + financial\ economic\ result + cost\ interest \quad (1)$$

Next, ROS will be determined using formula No. 2 (Knápková et al., 2017):

$$ROS = \frac{EBIT}{sales} \quad (2)$$

Last but not least, it will also be necessary to determine the total indebtedness for each monitored company in all observed years. Total indebtedness will be defined using formula No. 3 (Knápková et al., 2017):

$$Total\ indebtedness = \frac{debt}{total\ assets} \quad (3)$$

Subsequently, each monitored year will determine the average ROS and indebtedness separately. After finding the resulting values, a correlation analysis will be performed. Correlation analysis is the so-called dependence between two quantities and is expressed by the correlation coefficient, which we denote by r. The given coefficient takes on the values [-1;1]. The value of absolute linear dependence is expressed by the value (+1) and (-1). A value of 0, on the other hand, represents total linear independence. If the coefficient is -1, it is an indirect dependence, and if the coefficient is +1, then it is a direct dependence (Synek, Kopkáně & Kubálková, 2009). Based on this method, we will find out the relationship between ROS and the indebtedness of agricultural enterprises.

After finding out the results of the main goal, the size of the enterprises will be determined according to the number of employees for each year individually, and the number of active enterprises in these years will also be determined. Based on this information, a correlation coefficient will be selected. After that, the average ROS will be chosen for individual years, and the size of the enterprises and some relationship of this indicator with the size of the enterprise will be sought. The last part will determine how many enterprises are active in various forms of business and what their average indebtedness is. The last step will be to decide which companies are the most indebted and which are the least, according to their legal form.

Results

From the data set, the number of active enterprises in agriculture was first determined for particular periods from 2016 to 2020. These enterprises were further divided according to the type of legal form of the company, where the control column coincides with the number of active enterprises.

This analysis was performed to obtain a better overview of the analyzed data set. The results are shown in Table No. 2.

Tab. 2: Amount of monitored enterprises in 2016-2020

Year	Amount of monitored enterprises	Legal form of enterprise	Amount of monitored enterprises according to legal form	Control column
2016	2252	Plc.	508	2252
		Co-op	220	
		Inc.	1508	
		Partnership	7	
		others	9	
2017	2253	Plc.	510	2253
		Co-op	196	
		Inc.	1525	
		Partnership	15	
		others	7	
2018	2396	Plc.	513	2396
		Co-op	314	
		Inc.	1551	
		Partnership	11	
		others	7	
2019	2342	Plc.	482	2342
		Co-op	339	
		Inc.	1507	
		Partnership	10	
		others	4	
2020	1959	Plc.	461	1959
		Co-op	281	
		Inc.	1205	
		Partnership	7	
		others	5	
Total				11202

Source: Own processing based on data from the CRIBIS database.

Note: Table No. 2 contains information about the amount of companies divided according to their legal form, which were monitored. Monitored companies were split into public limited company, Co-op, limited liability companies, partnership and others.

It is clear from Table No. 2 that the most significant decrease in the number of businesses occurred in 2020. This decrease is attributed to the Covid-19 pandemic. According to the legal form of business, the most active enterprises in all monitored years were limited liability companies.
The next step determined total indebtedness and average ROS in % for the monitored years 2016-2020. The determined values for individual years are shown in Table No. 3. Correlation coefficients were subsequently determined between these indicators.

Tab. 3: Total indebtedness and ROS (in %)

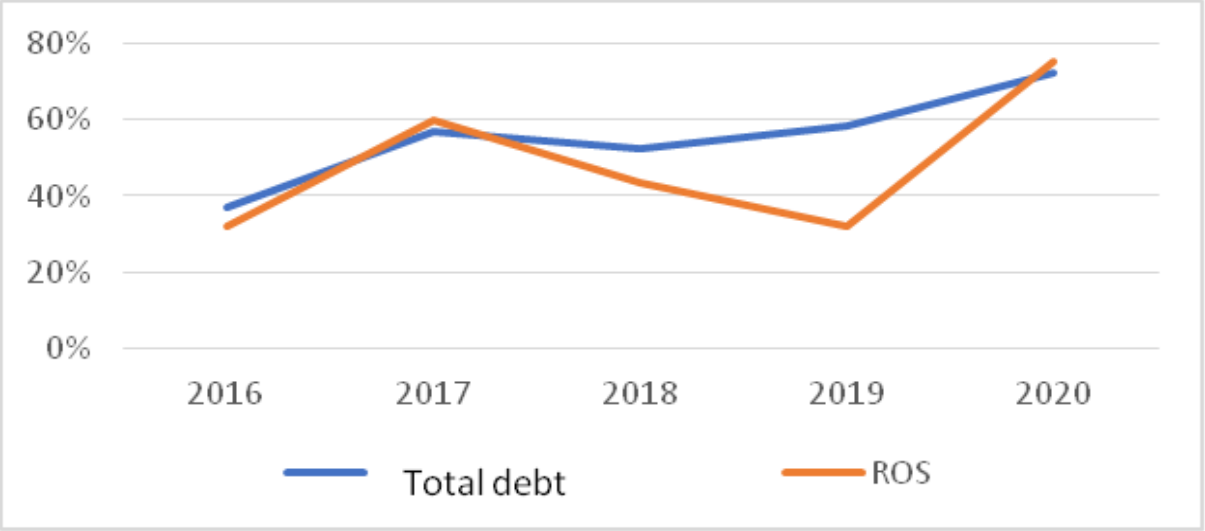
Year	Total indebtedness	ROS
2016	37 %	32 %
2017	57 %	60 %
2018	52 %	44 %
2019	58 %	32 %
2020	72 %	75 %

Source: Own processing based on data from the CRIBIS database.

Note: Table No. 3 shows Total indebtedness and return of sales to compare these results. There is very specific connections between these two parameters.

Graph 1 was created to compare trends in developing average total indebtedness and ROS of agricultural enterprises.

Graph 1: Trends in developing of average total indebtedness and ROS in 2016 – 2020



Source: Own processing based on data from the CRIBIS database.

Note: Graph No. 1 provides clearly view for comparative of both of monitored parameters.

Graph 1 shows that average total indebtedness and ROS were most correlated in 2016-2017. In 2016, total indebtedness was only 5 % greater than ROS, but in 2019 profitability was 26 % higher than indebtedness.

Based on the results contained in Table No. 3, a mutual relationship between average total indebtedness and ROS was subsequently sought. The resulting correlation of these two variables was determined to be 0.77, which is a value close to 1, indicating some relationship between these monitored variables. It is concluded that the indebtedness of the enterprise affects the ROS of the monitored agricultural enterprises.

Subsequently, the examined enterprises were divided according to the number of employees into individual size categories. The results are presented in Table No. 4. This table also shows the number of companies by size in a given year. Correlation coefficients were then determined again between these indicators.

Tab. 4: Size of companies and their number in 2016-2020

	Number of enterprises in each year					
Number of employees	**2016**	**2017**	**2018**	**2019**	**2020**	**Average**
1 - 5	836	885	888	903	695	841
6 - 9	257	247	270	248	198	244
10 - 19	338	317	364	346	299	333
20 - 24	97	112	129	346	91	155
25 - 49	325	326	346	346	313	331
50 - 99	288	254	282	274	259	271
100 - 199	97	97	100	96	90	96
200 - 249	5	4	4	4	2	4
250 - 500	7	10	12	14	11	11
501 - 3999	2	2	2	2	2	2
4000 - 4999	1	1	1	1	1	1
The correlation coefficient	-0,44	-0,43	-0,45	-0,48	-0,46	

Source: Own processing based on data from the CRIBIS database.

Note: Table No. 4 shows the number of enterprises in monitored years split by number of employees. Next, the correlation coefficient were established.

According to the determined correlation coefficients, it can be established that the size of the enterprise does not affect the number of enterprises in agriculture.

Table No. 5 reflects the profitability of sales depending on the size of the companies and in the given years. Furthermore, the average number of employees in the monitored years is considered. The correlation coefficient is determined by the year and the number of employees.

Tab. 5: The effect of company size on the profitability of sales in 2016-2020

	Average profitability of sales in a given year in %					
Number of employees	2016	2017	2018	2019	2020	Average
1 - 5	60	83	91	62	36	66
6 - 9	20	27	27	18	22	23
10 - 19	20	19	16	16	19	18
20 - 24	23	13	15	11	12	15
25 - 49	12	12	12	11	11	11
50 - 99	12	12	12	10	11	11
100 - 199	9	10	10	9	8	9
200 - 249	11	10	6	7	5	8
250 - 500	10	9	11	15	12	12
501 - 3999	31	35	24	21	19	26
4000 - 4999	32	36	20	15	14	23
The correlation coefficient	-0,47	-0,41	-0,38	-0,29	-0,48	

Source: Own processing based on data from the CRIBIS database.

Note: Table No. 5 gives the average profitability of sales in a given year in %. Values are split by number of employees for each monitored year.

From the point of view of the distribution by company size, the smallest companies have the largest ROS. Conversely, medium-sized enterprises (49 to 249 employees) have the lowest ROS. The highest correlation in the dependence of ROS on company size is in 2019 and the weakest in 2018.

Table No. 6 reflects which agricultural enterprises with the division according to legal forms of business in the country in the monitored years have the greatest indebtedness.

Tab. 6: Legal form of business and its indebtedness

Number of businesses	**Legal form of business**	**Indebtedness**
2623	Joint-stock company	33 %
1448	Co-op	43 %
9	State enterprise	55 %
18	Limited partnership	55 %
6	Spin-off of a foreign legal entity	73 %
13	European company	77 %
65	Partnership	78 %
7020	Inc.	100 %
11202		Total

Source: own processing based on data from the CRIBIS database

Note: Table No. 6 shows the level of indebtedness according to the legal form of the company. It seems that there is a very small amount of company form which are operating with large amounts of capital.

Most enterprises are represented in legal form by limited liability companies, specifically 7020. These enterprises have 100 % indebtedness. Joint-stock companies and cooperatives are the two most represented legal forms in the agricultural sector with the least indebtedness. Joint-stock companies have a debt ratio of 33 %, and the number of enterprises in this legal form is 2,633, and Cooperatives have a debt ratio of 43 %, and the number of enterprises in this legal form is 1,448.

Discussion

The article aimed to determine if the indebtedness of agriculture in the Czech Republic affects sales profitability and to express this effect.

A similar topic was dealt with, for example, by Kuster (2021), who investigated financial stability, including indebtedness, interest coverage and profitability of enterprises in agriculture, fishing and forestry. The research was conducted using accounting and financial analysis tools. He found that the companies managed to maintain an acceptable level of long-term financial stability. On the other hand, there was a more significant disruption on the side of short-term financial strength. Solid performances were recorded in interest coverage and indebtedness, where these indicators reached reference values in almost every monitored year. Poor performance was recorded in profitability, which was examined through the indicators Return of Assets and Return of Equity.

To achieve the stated goal of the work, two research questions are defined:

RQ1: Is there a relationship between the size of agricultural holdings and the development of sales profitability during the monitored years?

Based on the ROS analysis conducted, it was found that small businesses in 2016-2019 had the largest ROS. However, in 2020 compared to 2019, the value decreased by 26 %, the most considerable fluctuation in the overall data analysis. On average, the smallest companies have the highest ROS at 66 %. Companies with 200 to 249 employees have the lowest sales profitability, at an average of 8 %. The largest companies maintain average profitability of sales between 23 % and 26 %.

Based on the correlation analysis performed, when the correlation coefficient values were below 0 throughout the observed period, it can be concluded that the size of the enterprises included in the analysis has no relationship with the profitability of sales. According to Aliu, Nadirov and Nuhiu (2021), the stock markets of V4 are inefficient, so there is no good possibility to improve the earnings of listed companies including agricultural companies.

RQ2: Which agricultural enterprises, broken down by the legal form of business in the country, had the most significant indebtedness in the monitored years?

The analysis of companies in agriculture led to the following results. The most significant number of companies are represented in the legal form of business of limited liability companies, namely 7020. These companies have the most considerable indebtedness, namely 100 %. So there is a bond between most companies and enormous indebtedness. In addition, the most represented enterprises with the legal form Joint-stock companies with 2623 enterprises and indebtedness of 33 % and Cooperatives with 1448 enterprises and indebtedness of 43 %. Other legal business forms have an average of 22 enterprises, and their average indebtedness is 68 %.

Conclusion

Insufficient sales on the domestic market and low purchase prices - are precisely the problems being solved in the agricultural sector in the Czech Republic. Strict EU regulations and the import of cheap food also complicate the activity in the field. These factors affect the indebtedness of agricultural enterprises and their ROS. This work showed that in 2016-2019, the number of enterprises in the agricultural industry was, on average, 2310. The most significant decrease occurred in 2020 to 1959 enterprises. This was mainly due to the Covid-19 pandemic. In the paper, an analysis of agricultural enterprises in the Czech Republic was carried out for the monitored period 2016–2020. The effect of indebtedness on sales profitability for active companies in the given sector was monitored. This contribution aimed to find out if there is any influence between ROS indicators and indebtedness in the agricultural industry. From this point of view, the goal of the article was fulfilled.

Small businesses were found to have the largest ROS in 2016-2019. However, in 2020 compared to 2019, the value decreased by 26 %, the most significant fluctuation in the overall data analysis. On average, the smallest companies have the highest ROS at 66 %. Companies with 200 to 249 employees have the lowest sales profitability, at an average of 8 %. The largest companies maintain average profitability of sales between 23 % and 26 %. Based on the correlation analysis performed, when the correlation coefficient values were below 0 for the entire monitored period, it can be concluded that the size of the companies included in the analysis does not affect the profitability of sales. Furthermore, it was found that the most significant number of companies are represented in the legal form of business of limited liability companies, namely 7020. These companies have the most considerable indebtedness, namely 100 %. So there is a bond between most companies and enormous indebtedness. In addition, the most represented enterprises with the legal form Joint-stock companies with a number of enterprises of 2623 and indebtedness of 33 % and Cooperatives with a number of enterprises of 1448 and indebtedness of 43 %. Other legal business forms have an average number of enterprises of 22, and their average indebtedness is 68 %.

The benefit of the work can be both for companies that already operate in the given sector and those that would like to enter the agricultural industry. This is because the contribution analyzes the number of companies operating in the given industry and how the indebtedness

and profitability of sales development in the monitored years. From the obtained data, it is possible to determine, for example, the growth of the number of enterprises for individual years and the development of indebtedness for individual years. All active companies in the agricultural industry were analyzed in the article. For further analyses, the result could focus on dividing enterprises by region or establishing a business plant in the Czech Republic. This could determine whether the location and establishment of businesses affect the indebtedness and profitability of sales. This article will benefit both existing and new enterprises entering this sector, as it shows how the number of active enterprises in the agricultural industry developed in the given years and how sales' average indebtedness and profitability developed. Since, in the article, the companies were classified by size according to the number of employees and the number of active companies in this category, these data can be used to determine how big the competition is in this sector.

A limiting factor of this contribution can be considered the absence of newer data, especially after the end of the Covid-19 pandemic. In this regard, the contribution could be followed up to see if the agricultural sector has already recovered from this shock.

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A bibliometric analysis of the issue of CSR activities and their non-financial reporting from the perspective of different generations of employees

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Abstract

Companies in various industries should be focused both on making a profit and on responsible behavior towards the environment in which they run their business. This means taking into account both the economic as well as environmental and social aspects of their business activities. From January 1, 2024, the obligation of non-financial reporting of CSR activities based on the Corporate Sustainability Reporting Directive (CSRD) will apply to designated companies within the European Union. In this context, it seems interesting to consider how important CSR activities and their non-financial reporting are for different generations of employees, namely members of upcoming generations Y and Z. The article aims to assess the current state of scientific research on the issue of CSR activities and their non-financial reporting from the perspective of different generations of employees. Achieving this aim is based on bibliometric analysis of scientific publications in the Web of Science database. The results revealed a bibliometric gap in scientific research on the perspectives of different generations of employees related to CSR activities and their non-financial reporting.

Keywords: corporate social responsibility, non-financial reporting, employee generation, bibliometric analysis, scientific research

Introduction

Previous research studies on the behavior of companies focused mainly on such issues as economic prosperity (Mazé, Chailan, 2021), foreign direct investment (Eren, Taspinar & Gokmenoglu, 2019), or human resource management (Obara, Peattie, 2018). However, recently, many research studies also pay attention to the environmental and social effects of business activities, that is, corporate social responsibility (CSR) (Wrana, Diez, 2018; Tian et al., 2020). Within CSR, great emphasis is mainly placed on the environmental impacts of business activities (Mahadevan, Sun, 2020; Adeel-Farooq, Riaz & Ali, 2021), as well as on social sustainability (Bubicz, Barbosa-Póvoa, Carvalho, 2021) and responsible behavior within the customer-supply chain (Tian et al., 2020).

Du, Bhattacharya & Sen (2010) concluded that the way of presentation (communication) of CSR activities to stakeholders that are somehow involved and influenced by the company's activities or influence them themselves, is essential for the implementation of CSR activities. Reider-Gordon et al. (2013) came to a similar conclusion by stating that the CSR issue is not only about the ability to implement CSR activities but also about their appropriate presentation to stakeholders. Inadequate communication of CSR activities from management to stakeholders can lead to a skeptical or even negativistic reaction of stakeholders to the company's CSR activities, which can damage the overall image of the company (Wu et al., 2020). Companies should therefore take into account not only their economic goals but also the impact of their activities on the natural and social environment (Gaonkar, Chetty, 2020). An appropriate and understandable way of communicating information about CSR activities in the form of mandatory non-financial reporting can significantly help to establish and maintain transparent relationships between the company and stakeholders.

Conducted research studies (Orbaningsih, Sawitri & Suharsono, 2021; Valdez-Juárez, Castillo-Vergara, 2021; Ortiz-Avram et al., 2018; Latif et al., 2022) show that the publication of CSR activities is very important for achieving company goals and meeting the stakeholders' interests. According to Chijoke-Mgbame et al. (2020), the significance of individual CSR activities is different and is primarily related to the industry in which companies operate. Studying the importance of non-financial reporting, Chijoke-Mgbame et al. (2020) as well as Ling, Sultana (2015) concluded that non-financial reporting should be given the same importance as financial reporting, as positive impacts on the performance of companies that present this information, whether voluntary or mandatory, have been demonstrated.

The increased demand of stakeholders for publishing information about both the financial performance of companies, as well as about the environmental and social impacts of business activities (Boiral, Heras-Saizarbitoria & Brotherton, 2019; Jamali et al., 2017) is a result of globalization, climate change, environmental pollution, and resource scarcity that has occurred in recent decades. The European Union responded to this situation in 2015 by introducing a directive on non-financial reporting (2014/95/EU). Mandatory publication of reports on CSR activities could positively change the behavior of

companies. For example, Reimsbach, Hahn & Gürtürk (2018) state that the decision of banks to provide capital is also influenced by the fact that companies report their CSR activities. Reports on CSR activities have an impact on the predictions of the company's operational performance (Quick, Inwinkl, 2020), which is crucial for banks and investors (Lin-Hi, Blumberg, 2018).

From January 1, 2024, designated companies will be obliged to perform non-financial reporting within their financial reporting for the previous year, based on the new Corporate Sustainability Reporting Directive (CSRD). This obligation will apply to all large commercial companies with 250 or more employees and a balance sheet total of more than 20 million euros or a turnover of at least 40 million euros. From January 1, 2026, all reporting obligations will be extended to all listed SMEs. The current practical issue is that companies do not yet know what non-financial reporting should look like and what it should include, as its obligation is defined very generally in the related legal regulations. In addition to environmental issues, attention should be paid to social issues, especially information regarding employees, as significant stakeholders. It could be issues of gender equality, employment of persons with disabilities, achieving work-life balance, corporate culture, fighting corruption, or public relations (Chyzh, Sakhno, 2020).

All of these issues are important to job seekers' decisions to accept a job offer at a specific company, as well as to employees' decisions to stay with or leave a specific company. At the same time, different generations of employees may have different views on CSR activities and different requirements for socially responsible behavior of companies as employers. Generational changes mean the driving force of society, which companies should reflect on if they want to gain a company position in the markets. The classification of generations is quite variable. For this article, a classification by the independent agency Pew Research Center was used (see Table 1).

Tab. 1: The classification of generations

Generations	Years of birth	Characteristic
Silent	1928-1945	The largest generation of the generations classified so far.
Baby Boomers	1946-1964	The largest generations.
Generation X	1965-1982	Also called Baby Busters, Slackers, or Post Boomers.
Generation Y (Millennials)	1981-1996	Also called Next, Digital Generation, Nexters, Echo Boomers, Why Generation, or Google Generation. Currently the largest generation.
Generation Z (Post-Millennials)	1997-2012	Also called Zeds, Zees, Bubble Wap Kids, Digital Natives, Wired Generation, Screenagers, iGen, and The New Millennials.
Generation Alpha	2013-present	It has not yet been officially classified as a generation.

Source: Loria, Lee & York (2023)

Therefore, it seems interesting to consider how important CSR activities and their non-financial reporting are for different generations of employees, namely members of upcoming generations Y and Z. The article aims to assess the current state of scientific

research on the issue of CSR activities and their non-financial reporting from the perspective of different generations of employees. Achieving this aim is based on bibliometric analysis of scientific publications in the Web of Science database. Within the analysis, two research questions were defined:

RQ1: In which countries and journals the issue of CSR activities and their non-financial reporting is researched the most?

RQ2: Is there a bibliometric gap in scientific research on the issue of CSR activities and their non-financial reporting from the perspective of different generations of employees?

Methods and Data

To consider the current state of scientific research on the issue of CSR activities and their non-financial reporting from the perspective of different generations of employees, namely members of upcoming generations Y and Z, a bibliometric analysis of scientific publications in the Web of Science database was carried out from January to March 2023. Bibliometric analysis is a scientific discipline dealing with the creation, sharing, and use of recorded information from a quantitative perspective (Tague-Sutcliffe, 1992).

The bibliometric analysis of scientific publications in the Web of Science database was carried out for the period of the last twenty years (2002-2022) and also for the period of the last five years (2018-2022) to reveal possible progress of scientific publications in recent years. Descriptive statistics and bibliometric maps were used. The bibliographic map represents a spatial presentation of mutual relations between scientific disciplines, keywords, or authors based on selected quantifiable features (De Bellis, 2009).

In this article, the bibliometric map was created based on the content analysis of scientific publications with a focus on CSR activities and their non-financial reporting. Network visualization was used in the form of clusters of keywords from scientific publications on the given topic. The VOS viewer software was used to process the bibliometric map. When searching for factors related to the topic, the occurrence of territories with more than 10 scientific publications was chosen as a criterion. In the bibliometric map, the size of the circle determines the weight of the keyword. The color of the circle determines the cluster to which the keyword belongs. The distance between the circles expresses the relationship between the keywords from the perspective of correlation ties (smaller distance = stronger relationship; greater distance = weaker relationship).

Results

Table 2 summarizes the numbers of scientific articles found in the Web of Science database for the period 2002-2022 and 2018-2022 to consider the current state of scientific research on the issue of CSR activities and their non-financial reporting from the perspective of different generations of employees, namely members of upcoming generations Y and Z.

Tab. 2: Bibliographic records on queries in the Web of Science database

Search code	Query	2002-2022	2018-2022
A	Corporate Social Responsibility or CSR	56,044	24,943
B	CSRD or Corporate Sustainability Reporting Directive	1,338	788
C	"Generation Y" or "Generation Z"	3,482	2,000
AB	Corporate Social Responsibility or CSR" and "CSRD" or "Corporate Sustainability Reporting Directive"	480	310
AC	"Corporate Social Responsibility" or "CSR" and "Generation Y" or "Generation Z"	59	48
ABC	Corporate Social Responsibility or CSR" and "CSRD" or "corporate sustainability reporting directive" and "generation Y" or "generation Z"	0	0

Source: calculated by authors, access 2023/01/21

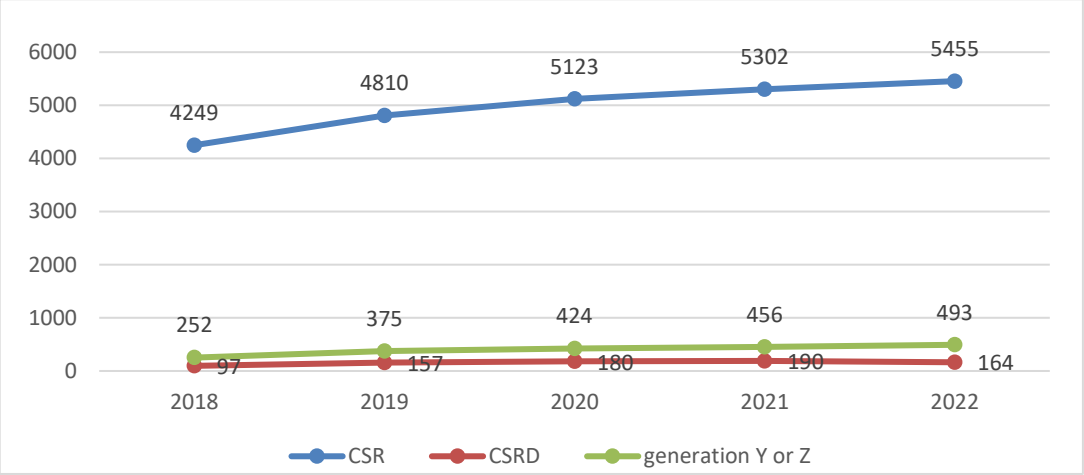
Code A: There were a total of 56,044 articles on the topic of Corporate Social Responsibility (CSR) in the period 2002-2022, mainly from the fields of Business (13,516), Management (11,498), Environmental Studies (5,946), Environmental Sciences (3,890), Economics (3,612), Business Finance (3,355), and Ethics (2,811). The articles were published mainly in the USA (11,531), China (8,772), India (6,464), England (4,811), Australia (2,972), Germany (2,364), and Italy (2,323). In the period 2018-2022, 44.5% of all articles (24,943) were published, which proves the growing interest in this issue (see Graph 1).

Code B: There were a total of 1,338 articles on the topic of the Corporate Sustainability Reporting Directive (CSRD) in the period 2002-2022, mainly from the fields of Psychiatry (193), Neurosciences (137), Environmental Sciences (52), Psychology (48), and Multidisciplinary Sciences (43). The articles were published mainly in the USA (1,045), India (126), Germany (52), China (50), Australia (48), and England (45). In the period 2018-2022, 788 articles (58.9%) were published on this topic, which proves the growing interest in this issue. A more detailed analysis by individual years showed that the increase in the number of articles on the given topic was until 2021. In 2022 a slight decrease was recorded (see Graph 1).

Code C: There were a total of 3,482 articles on the topic of generations Y and Z in the period 2002-2022, mainly from the fields of Business (798), management (624), Education Educational Research (366), Hospitality Leisure Sport Tourism (301), Economics (281), and Communication (148). In the period 2018-2022, 2,000 articles (57.4%) were published on this topic, which proves the growing interest in this issue (see Graph 1).

Code AB. When connecting the topics of CSR (code A) and CSRD (code B), only 480 articles were found in the Web of Science database in the period 2002-2022, of which 310 articles were in the period 2018-2022 (64.5%).

Graph 1: Bibliographic records on a query in the Web of Science database

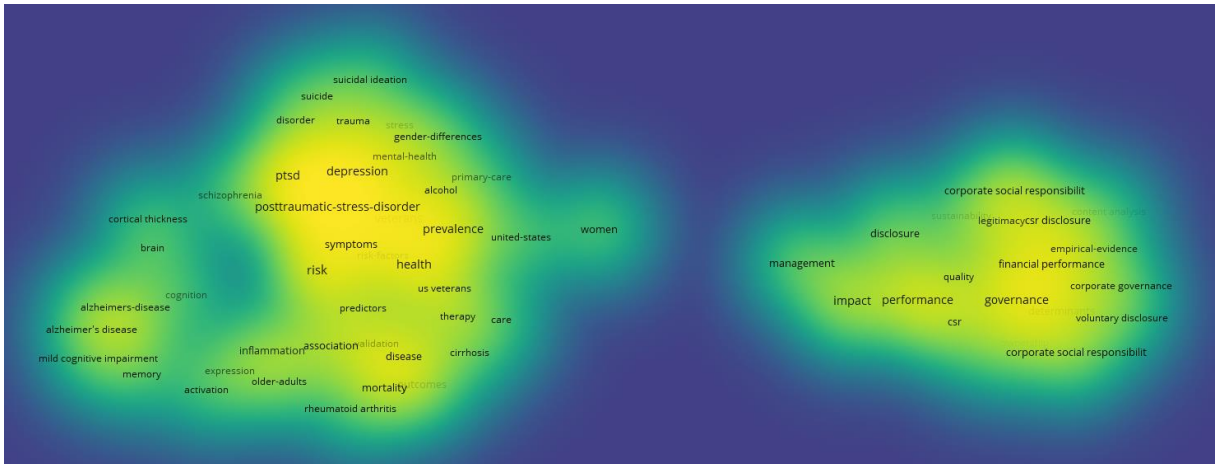


Source: authors

In response to the first research question "In which countries and journals the issue of CSR activities and their non-financial reporting is researched the most?" (RQ1), based on the bibliometric analysis of published scientific journals, it could be stated that the most attention to the issue of CSR and their non-financial reporting is paid in the USA, China, India, England, Australia, or Germany, which are developed or developing economies with large populations that influence the world economy.

Within the bibliometric analysis, a content analysis was carried out using the VOS viewer software. The output is a bibliometric map that shows three main clusters that can be identified within the keywords in the given scientific articles (see Figure 1).

Figure 1: The bibliometric map – CSR and CSRD

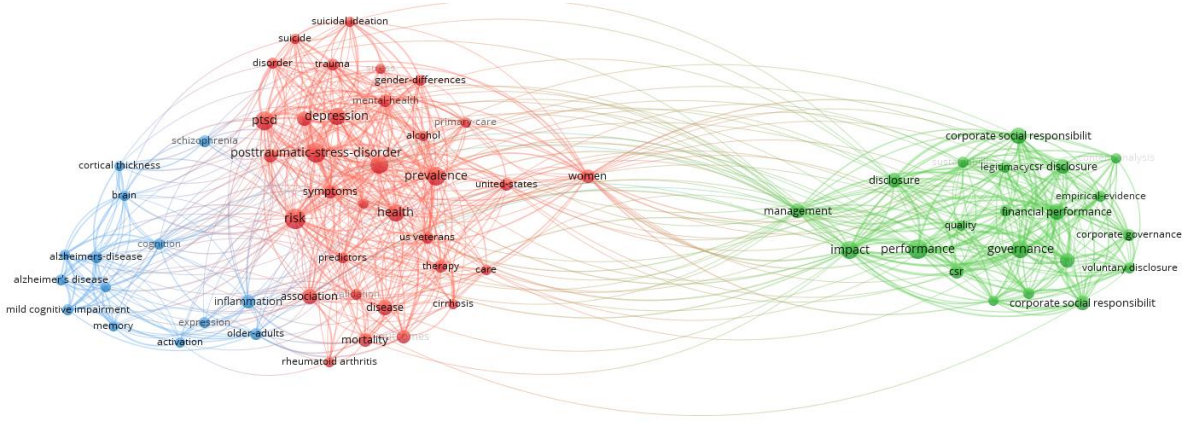


Source: authors according to the Web of Science database on 2023/05/09 and the VOS viewer software.

The most frequent relations between the most frequent keywords are shown in Figure 2. The most frequent keywords include (these are the keywords highlighted in yellow in Figure 1):

- Number of occurrences in 30-41 articles: governance, posttraumatic-stress-disorder, prevalence, impact, performance, veterans, and risk.
- Number of occurrences in 20-29 articles: financial performance, depression, determinants, CSR disclosure, health, disclosure, management, health, association, and corporate governance.
- Number of occurrences in 10-19 articles: legitimacy, trauma, ownership, empirical evidence, voluntary disclosure, woman, symptoms, association, metanalysis, and mental health.

Figure 2: Network visualization – CSR and CSRD



Source: authors according to the Web of Science database on 2023/05/09 and the VOS viewer software.

An in-depth analysis of the most frequent keywords enabled identifying three thematic clusters (see Table 3).

Tab. 3: Clusters for CSR and CSRD keywords from Web of Science articles (2002-2022)

Cluster number (color)	**Keywords**
1 (red)	Association, care, depression, disease, disorder, gender differences, health, mental health, mortality, outcomes, predictors, prevalence, primary-car, risk, stress, and women.
2 (green)	Content analysis, corporate governance, CSR disclosure, determinants, empirical evidence, financial performance, governance, impact, legitimacy, management ownership, performance quality, stakeholder theory, sustainability, and voluntary disclosure.
3 (blue)	Activation, aging, brain, cognition, expression, inflammation, memory, and older adults.

Source: authors according to the Web of Science database on 2023/05/09 and the VOS viewer software.

In response to the first research question "In which countries and journals the issue of CSR activities and their non-financial reporting is researched the most?" (RQ1), table 4 provides an overview of the journals in which the analyzed topics were published the most. The data are presented according to the analyzed areas (see codes A, B, C, AB, and AC). In all analyzed subject areas, the *Sustainability* journal was in one of the first three places.

Tab. 4: The most significant journals by the number of articles

Order	Journal (number of articles)				
	Code A	**Code B**	**Code C**	**Code AB**	**Code AC**
1	Sustainability (1,820)	American Journal of Respiratory and Critical Care Medicine (21)	Sustainability (93)	Sustainability (12)	Sustainability (4)
2	Journal of Business Ethics (1,758)	Plos One (17)	Young Consumers (38)	Biological Psychiatry (11)	Asian Journal of Business Ethics (2)
3	Corporate Social Responsibility and Environmental Management (1,265)	Sustainability (14)	Marketing Identity (37)	Journal of Asian Finance Economics and Business (10)	Journal of Risk and Financial Management (2)

Code A – Corporate Social Responsibility or CSR
Code B – CSRD or Corporate Sustainability Reporting Directive
Code C – "Generation Y" or "Generation Z"
Code AB – "Corporate Social Responsibility" or "CSR" and "CSRD" or "Corporate Sustainability Reporting Directive"
Code AC – "Corporate Social Responsibility" or "CSR" and "Generation Y" or "Generation Z"

Source: authors according to the Web of Science database on 2023/05/09

Within the AC code including articles related to CSR and "Generation Y" or "Generation Z", only 59 articles were found in the Web of Science database in the period 2002-2022. A content analysis was applied to these articles to find out whether the views of generations Y and Z on CSR activities and their non-financial reporting are paid attention to in the scientific articles. The articles found are most often devoted to the approach of generations Y and Z to purchasing behavior according to the level of involvement of the company from which they buy something in CSR activities (see Robichaud, Yu, 2022; Pelikánová, Hála, 2021; or Narayanan, 2022). Other articles are devoted to marketing (see Casalegno, Candelo & Santoro, 2022; Moisescu, Gică, 2020; Průša, Sadílek, 2017, or Wong, 2021).

In response to the second research question "Is there a bibliometric gap in scientific research on the issue of CSR activities and their non-financial reporting from the perspective of different generations of employees?" (RQ2), based on the bibliometric analysis of published scientific journals, it could be stated that there is a bibliometric gap in scientific research. Research studies to date have mainly dealt with the concept, benefits, and difficulties of CSR as such. With the introduction of the obligation of non-financial reporting of CSR activities, the issue of implementation of non-financial

reporting including its benefits and difficulties was added. This issue is relatively new, and therefore there are not many research studies dealing with non-financial reporting of CSR activities. However, the bibliometric analysis revealed that so far there is a minimum of research studies that deal with the relationships of CSR activities, non-financial reporting, and perspectives of different generations of employees, namely members of upcoming generations Y and Z. This is an obvious opportunity for further research.

Discussion

The bibliometric analysis of scientific articles related to the issues of CSR activities, non-financial reporting, and different generations of employees in the Web of Science database in periods 2002-2022 and 2018-2022 revealed that CSR activities are receiving increasing attention from scientific, business, government, and public communities due to the growing discussion about the impacts of business activities on the natural and social environment. The CSR activities of companies have the most significant effect on generation Y (Supanti, Butcher, 2019), which shows a high level of interest in socially responsible production and consumption (Luger, Hofer & Floh, 2022).

Generation Y represents a current workforce that is demanding, influential, and has significant bargaining power (Zainee, Puteh, 2020). This is also reflected in the demand for socially responsible behavior in companies. At the same time, it can be expected that Generation Z will have similar demands regarding the CSR activities of companies (Kutlák, 2020). A generational change is taking place in the labor markets. Generations Y and Z are replacing the Baby Boomers. The quite different views of these generations on CSR activities are the result of the different environments in which these generations grew up, as well as the rapid technological progress of the last few decades (Bieleń, Kubiczek, 2020).

Understanding the relationship of generations Y and Z to CSR activities is important both for the development of socially responsible behavior of companies and for the development of new generations of the workforce (Nguyen Ngoc et al., 2022). An aging workforce and the retirement of Baby Boomers raise a need for companies to learn how to attract and retain people of generations Y and Z (Singh et al., 2023). In this context, CSR activities are significantly related to the internal motivation of generations Y and Z in the workplace (Lee et al., 2022).

The results of the bibliometric analysis bring value to both CSR theory and practice by identifying a bibliometric gap in scientific research on the issues of CSR activities, non-financial reporting, and different generations of potential and existing employees and customers. These are opportunities for further CSR research that would benefit CSR practice.

Conclusion

Based on a bibliometric analysis of scientific publications in the Web of Science database, the article searched for the current state of scientific research on the issue of CSR activities and their non-financial reporting from the perspective of different generations of employees. The results revealed the growing attention of research studies to CSR activities and their non-financial reporting, which is logical given the upcoming obligation of non-financial reporting of CSR activities for designated companies within the European Union. However, the results also revealed a bibliometric gap in scientific research on the perspectives of different generations of employees, namely members of upcoming generations Y and Z, related to CSR activities and their non-financial reporting.

The results bring an obvious opportunity for further research. Members of upcoming generations Y and Z represent potential and existing employees and customers. Their requirements for socially responsible behavior of companies as employers and producers can significantly affect their attractiveness and so their brand value and competitive advantage. Therefore, it is important to consider what CSR expectations different generations have. This can be beneficial for both CSR theory and practice. Potential limitations of the conclusions made are in the limited scope of the bibliometric analysis, focusing only on scientific articles in the Web of Science database in periods 2002-2022 and 2018-2022. This secondary analysis could be supported in the future by a primary analysis focused on representatives of companies and stakeholders.

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The effect of enterprise size on the profitability of sales: Evidence from the manufacturing industry in the Czech Republic

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Abstract

Competition in the manufacturing industry is of great importance; in other words. Customers have a lot to choose from. Businesses must pay more attention to the sustainability of the environment because this is currently important in the ranking of values, especially for the young generation. Of course, this is not the only thing that affects business plants, as businesses must constantly cope with the consequences of the Covid-19 pandemic or the rising prices of input materials for production. Several strategic studies have already investigated the reasons for the survival and disappearance of some companies. One of the reasons for survival is how a business can adapt to environmental changes. In the case of a slow response to the changing environment, a company in a widely represented industry can lose its competitiveness. All this has an impact on the profitability of sales of business plants. Therefore, the company asks whether the size of the company affects the profitability of the company. The contribution deals with the company's size and effect on sales profitability. The article will aim to compile a model of how much the size of the enterprise contributed to the profitability of sales in the years 2016-2020 for the manufacturing industry in the Czech Republic. The data is taken from the CRIBIS database of CRIF – Czech Credit Bureau from 2016 to 2020. Data from the manufacturing industry from active and, at the same time, profitable enterprises are selected for the paper. For the industry analysis, an empirical approach is used using an analysis of the industry structure, analysis of sales profitability and tracking the development of average profitability for the monitored period 2016-2020. It is essential to find out the structure of companies in the industry and the average profitability of sales in individual groups. The most significant representation is among small businesses with up to 25 employees, and here the average profitability for the monitored period shows the most significant fluctuations. Big enterprises with more than 500 employees are the most stable. The obtained data using correlation establishes that the size of enterprises, in terms of the number of employees, does not affect sales profitability.

Keywords: enterprise structure, profitability, profitability development, time lines, correlation

Introduction

The impact of company size on the profitability of sales in the manufacturing industry in the Czech Republic (CR) can be significant and depends on several factors. Profitability of sales, which is a measure of the profitability of an enterprise, can be affected by many different factors, including the size of the enterprise. The societal demand for answers continues to grow. The representation of business companies in the processing industry in the Czech Republic is wide, with different sizes of companies according to the number of employees (Vochozka, Krulický, 2018).

Competition in the given sector is of great importance; in other words: "customers have a lot to choose from." Businesses must pay more and more attention to environmental sustainability, as this is currently important in ranking values, especially for the young generation (Horák et al., 2022). Of course, this is only one thing that affects business plants, as businesses must constantly cope with the consequences of the Covid-19 pandemic or the rising prices of input materials for production (Kuděj, Gavurová & Rowland, 2021). Several strategic studies have already investigated the reasons for the survival and disappearance of some companies. One of the reasons for survival is how a business can adapt to environmental changes. In the case of a slow response to the changing environment, enterprise in a widely represented industry may lose its competitiveness (Paliokaitė, Pačėsa, 2015). All this has an impact on the profitability of sales of business plants, and therefore the enterprise asks whether the size of the enterprise affects the profitability of the enterprise (Psárska, Hašková & Machová, 2019). The concept of firm size is a significant topic in marketing and strategic management, as it provides information about the variety and size of a company's production capacity and skills or the number and variety of goods and services it can provide to customers. At the same time, it is also a variable that helps to classify companies and can be measured mainly from the number of employees or the company's turnover (Decouré et al., 2020). Shaheen, Malik (2012) state that an increase in firm size can improve performance. The company's equity shows whether the business is large or small. Companies with significant total assets will use available resources to the maximum extent to achieve maximum business profit, and small businesses will, of course, generate profits as well, but by their resources (Hirdinis, 2019). When analyzing the company's financial situation, it is worth following indicators of profitability of sales. When managers know their results, they get information on whether the sale is profitable and to what extent the realized margin covers fixed and variable costs. Business managers are looking for solutions that will help increase sales and sales revenue and reduce costs. One of the popular methods to achieve such results is a joint procedure within the group purchasing organization (Zimon, 2019).

Factors that affect firm value include firm size, capital structure, profitability, sales, and liquidity, while equity value represents firm value. Using a quantitative method, Nguyen, Tan & Nguyen (2021) first found that firm size has the most tremendous significance for firm value. This refers to the fact that the value of a large firm has a higher rank than that of a small firm. On the other hand, the capital structure hurts the firm's value.

Furthermore, Nguyen, Tan & Nguyen (2021) found that the other independent variables (profitability, sales and liquidity) were statistically insignificant in the regression model. This means that these mentioned factors do not affect the company's value. Nguyen, Tan & Nguyen (2021) also suggest that firm size and capital structure determine firm value. Signalling theory deals with the investigation of the value of the company and the factors affecting it. These factors are debt policy, asset structure, firm size, and profitability. In the studies conducted, the authors came up with different findings. Lusy et al. (2018) found that capital structure positively affects profitability. Hossain (2016) found that firm size does not affect profitability. Chen, Chen (2011) found that capital structure negatively affects firm value from the perspective of managerial ownership, firm size, and profitability. In many countries, several researches dealing with the influence of the capital structure on the profitability of companies have already been carried out, which brought different findings. The culprits in the different results can be found in the samples used, namely different countries, sectors, companies or periods, nevertheless also in the profitability measures used, such as ROA, ROE, ROI and others (Hossain, 2016). Nguyen Nguyen (2020) found that the determinants include firm size, liquidity, solvency, financial leverage and financial adequacy, while financial performance is assessed using three different indicators: return on assets (ROA), return on equity (ROE) and return on sales (ROS). Nguyen, Nguyen (2020) found that (1) firm size has a positive effect on both ROA and ROS, especially on ROA, but has an opposite effect on ROE, (2) the adequacy ratio has a positive effect on ROA and ROS, but a negative effect on ROE, (3) financial leverage has a significantly negative effect on ROE and ROS, but positive on ROA, (4) liquidity has a positive effect on both ROA and ROE, but negative on ROS, and (5) solvency has a positive effect on ROA and ROS, but negative on ROE. Milenkovic et al. also agree with this. (2020) investigated how internal factors such as firm size, sales growth, financial leverage, proportion of fixed assets, lagged profitability, and inventory level affect the analysed firms' return on assets (ROA) over a given period. The methodological framework includes diagnostic tests to eliminate the potential problem of multicollinearity, heteroskedasticity, and autocorrelation, as well as model specification and validation. Using an OLS model, we show that these factors significantly affect profitability, except for sales growth. Milenkovic et al. (2020) revealed that company size and lagged profitability positively affect ROA, while sales growth, financial leverage, fixed assets ratio, inventory level, and a dummy variable hurt profitability in the observed period.

The size of a business can be understood as the number of assets it owns. Companies considered significant try to acquire, develop, use, maintain and disclose strategic resources to the maximum extent. The firm's size is represented by its total assets, amount of sales, average total sales, average total assets and others (Budisaptorini, Chandrarin & Asih, 2019).

In this article, an analysis of enterprise in the active and profitable processing industry in the Czech Republic will be carried out for the observed period 2016-2020, where the size of the enterprises from the point of view of the number of employees and the profitability of sales will be monitored. The article will aim to compile a model of how much the size of the enterprise contributed to the profitability of sales in the years 2016-2020 for the

manufacturing industry in the Czech Republic. One research question is defined to fulfil the stated objective:

• How does enterprise size affect the profitability of sales in the manufacturing industry in the Czech Republic in 2016-2020?

The article is divided into the following parts: the literature review, which contains references to research by prominent experts on the topic. The methodology, which is in the methods and data section, describes the data and methods used, in this paper, the profitability of sales and the corelation analysis will be used, which will then be evaluated using Excel. In the results section, the achieved results calculated using the mentioned methods will be presented. The discussion of the results, which is in the discussion section, will in turn answer the research question and also compare the results with other authors and finally summarize the findings (in conclusion section) and if necessary, write various recommendations.

Literature review

Firm size can be understood as a measure or variable that describes the size of enterprise based on factors. These factors are total assets, market value, total sales, total income, total capital, etc. The enterprise's size is the average total net sales for a year to several years (Zuntová, Kučera, 2020). The size of the enterprise can also affect its performance. This is mainly because large companies have broader views and can use their resources, allowing them to better adapt to the environment. Therefore, large companies also have more significant opportunities to generate profits than small ones (Sudiyatno, 2020). Due to unstable micro- and macro-economic conditions and increasing competition, companies need help achieving the required profitability (Korneta, 2019). Hardiness (2019) showed that the capital structure does not affect the company's profitability but has a positive effect on the firm's value, which is positively influenced by the company's size. The results were achieved thanks to the significance test of individual parameters and the individual significance test (Hirdinis, 2019). Wang, Johnson & Wang (2018) found strong evidence that a firm's location affects its capital structure. Sikveland, Zhang (2020), in turn, say that capital structure is represented by long-term and short-term debt, total debt and liquidity. The optimal capital structure that maximizes enterprise value is determined by a trade-off between high operating efficiency and low cost of capital (Vo, 2021). Other authors also dealt with the relationship between company size, profitability, and value. Using multiple regression and correlation methods, Niresh, Velnampy (2014) concluded that the positive relationship between size indicators and profitability in a sample of manufacturing firms is weak. Manoppo, Arie (2016) concluded that for the studied companies in the automotive industry, firm size positively affects firm value. A company's profitability is the ability to generate profit and thus measure the operational efficiency of assets. It is also one factor that affects the company's value. The measure of profitability in (Sacuahi et al., 2016) is the return on equity (ROE), through which, using e Tomin's Q, they concluded that profitability has a significant positive effect on firm value.

Determinants of profitability are addressed by empirical research focusing on different industries, regions and periods. According to this research, profitable firms can be considered the engine of any economy's healthy growth (Kumar et al., 2022). In emerging markets, for-profit firms have a significant role, depending on stakeholders and firm performance (Cheong et al., 2020). Devi, Devi (2014) identified determinants of corporate profitability in Pakistan. At the same time, the results showed a positive correlation between firm size and profitability and a negative correlation between capital structure and profitability. Working capital management (WCM) is one of the most critical issues in financial management and plays an essential role in increasing the profitability of a business. Liu, Xu (2019) revealed that after controlling for company characteristics and macroeconomic conditions, the maturity deferral cycle positively impacts firm profitability as measured by return on assets (ROA). Liu, Xu (2019) further confirm the convex quadratic relationship between the receivables collection cycle and ROA. Furthermore, they found a positive relationship between firm size and sales growth and ROA and a negative relationship between firm leverage and ROA. This article determines the requirements for an effective WCM to maximise the analysed enterprises' profitability.

In their paper, Fuertes-Callen, Cuellar-Fernandez (2019) found that in the short run, growth positively impacts profits, with the effect of profits on growth depending on the growth rate used. Thus, employee growth requires prior profit, but profit does not play a significant role as a determinant of sales growth. The rate of profit persists in the short run. In contrast, the reversibility of the employee turnover rate and growth rate is observed. The moderation analysis used shows that the strategy that has enabled firms to grow is exporting. In addition, the effect of export intensity on profitability during the economic crisis is obtained indirectly through the growth of sales and employees. Contrary to expectations, innovation effort does not moderate the relationship between profitability and firm growth. In an analysis using empirical research, it has been found for manufacturing firms in Belgium, France and others that size and leverage have an inverse relationship with profitability. In contrast, market share and liquidity positive have an impact (Goddard et al., 2006). Qureshi, Youssaf (2014) concluded that leverage was inversely associated with size and that liquidity, growth and capital intensity were positively associated with profitability. Investigating the determinants of profitability in Turkish firms found that leverage is inversely related, while profitability is positively related to liquidity and size (Akben-Selcuk, 2016). In addition to the relationship between growth and size, the relationship between growth and profitability is also examined. The relationship between growth and profitability is positive if the business environment has the potential for investment and growth. If this potential exists, the relationship between growth and profitability could be more robust (Suntraruk et al., 2018). Nakano, Kim (2011) found that current profits significantly determine future growth in Japanese manufacturing companies. Coad (2007) revealed a link between corporate growth and profitability in French manufacturing firms. Gibrat's Law contrasts with empirical studies and states that the growth rate of companies is independent of their size. This claim is supported by Geroski et al. (2002), who investigated the relationship between growth and

size over a significant period. At the same time, he states that this Law tended to apply to large British companies. Gibrat's Law is also confirmed by the study of Liñares-Zegarra, Wilson (2018), who revealed an insignificant relationship between growth and company size for large microfinance institutions from 120 countries. On the other hand, Olivier, Fortunato (2006) argued against Gibrat's Law, as they found an inverse relationship between growth and size in Portuguese manufacturing companies. Distante et al. (2018) also disagreed with Gibrat's Law. Using quantile regression analysis, they concluded that smaller firms grow faster than larger ones. One of the most modern techniques, the panel data technique, can also help to determine the effect of company size on profitability. Through this method, Kartikasari, Merianti (2016) found that leverage and firm size significantly affect profitability simultaneously for manufacturing companies in Indonesia. Akinyomi, Olagunju (2013) found that in Nigerian manufacturing firms using panel data, firm size, as expressed by total assets, positively affects profitability.

The side effect is the negative relationship between firm size and expected returns. New research debates whether the size effect still exists today (Li et al., 2021). Schwert (2003) reports that the effect of size and value disappeared after the publication of studies investigating them. Ciliberti et al. (2017) further state that the size effect is still significant in the case of quality control. Hou, van Dijk (2019) found that the size effect existed significantly in advanced Europe before the 1980s and disappeared. They further report that although the size effect has disappeared from (ex-post) realized returns, it is still robust to (ex-ante) expected returns. On the contrary, Camska, Klecka & Scholleova (2022) verified the industry's sensitivity to changes in production volume (sales). Confirmation of sensitivity is not based on data describing an economic downturn but on persistent internal industry factors. Internal factors consider the dependence of costs on changes in the amount of production produced. An ex-ante analysis would reveal why some sectors are more vulnerable than others to a significant disruption to the economy. This has a severe impact on the performance of the industry and the competitiveness of businesses. The investigated sensitivity will be expressed by the degree of operating lever (DOL) indicator. The assumption being tested should classify neutral industries as low-sensitivity industries and cyclical industries as high-sensitivity industries. The research is based on data from more than 1,000 companies belonging to four industries. Cyclical industries are represented by CZ-NACE 29, which manufactures motor vehicles, trailers and semi-trailers and CZ-NACE H Transport and Storage. Neutral sectors are symbolized by CZ-NACE 10 Production of food products CZ-NACE 20 Production of chemical substances and preparations. The conclusions of the research are not conclusive, as the original assumptions were not confirmed and, using the DOL, significant differences between cyclical and neutral industries were not unexpectedly found. Camska, Klecka, and Scholleova (2022) show that the investigated issue is more complex and that the observed economic environment remains unstable even during macroeconomic stability. Kučera, Tichá (2022) analyzed how Czech car manufacturers dealt with the COVID-19 pandemic. Included are data on manufacturing companies taken from the Cribis database of CRIF - Czech Credit Bureau a.s., specifically data on ŠKODA AUTO a.s., Hyundai Motor Manufacturing Czech s.r.o. and Toyota Motor Manufacturing Czech Republic s.r.o.

Subsequently, the research includes economic results, ROS (return on sales) and indebtedness calculated about the above companies for 2019-2020. Kučera and Tichá (2022) found that car manufacturers had more significant losses during the COVID-19 pandemic than in the previous year. In addition, they took on more debt in 2020 and had a lower return on sales than in 2019.

In his article, Zimon (2019) analyzes the profitability of sales on the example of 31 business enterprises operating in industry group purchasing organizations and 19 enterprises operating independently on the market. The research period they have included the years 2013-2015. Selected indicators of the ratio analysis and information from the preliminary analysis were used for the research. Zimon (2019) found that operating within industry group purchasing organizations allows businesses to achieve a positive economic outcome. In the case of companies operating on the market independently, a large part of them suffered a loss. The profitability of sales in the investigated groups is influenced by the size of the company, its location and the share of fixed costs. When analyzing the results, companies operating in groups achieved higher results than independent entities. Small units operating in groups with an annual turnover of PLN 15-20 million (USD 3.6-4.8 million) achieve the best results. Parsa (2020), on the other hand, used a panel analysis to examine the effect of receivables, inventories, liabilities, company size, sales growth, GDP growth and inflation rate on the profitability of Croatian manufacturing SMEs in six years (2010-2015). The model confirmed the effect of inventory, payables and sales growth on the company's profitability level. In contrast, the effect of receivables and company size on the company's profitability was not confirmed, thus partially confirming the primary working hypothesis. The control variables, GDP and inflation, were not statistically significant. Parsa (2020) found that manufacturing businesses can increase profitability by avoiding late payments to suppliers and increasing inventory turnover, i.e. holding inventory for as short as possible. In addition, businesses can increase their profitability by increasing sales growth.

Methods and Data

The input data required for the analysis will be taken from the CRIBIS database of CRIF – Czech Credit Bureau. This database contains data of individual companies of the given industry: complete financial statements, e.g., balance sheet or profit and loss statement, and other financial data. The database also contains non-financial data about companies, such as the number of employees or turnover, identification number, VAT number, and place of business. The data needed for the analysis will be from active and, at the same time, profitable companies operating in the manufacturing industry. According to the CZ NACE classification of economic activities, this is section "C" (manufacturing industry). The data used will be for the period 2016-2020.

In the legal phase of the work, I will modify the relevant table in Excel for my needs. So, first, I will clear the lines in which the companies are already inactive or in liquidation. In

the next step, the table will be cleaned of companies that report zero profits or losses and companies whose financial result line is empty. Only necessary columns will be left in the table, namely: Company ID number, name of the enterprise, category of employees, year and return on sales (ROS). ROS is a helpful tool for measuring, analyzing and planning the financial performance of a business, especially in terms of its ability to generate profit relative to its sales. The table modified this way will be copied, and the resulting sheets will only have values for one observed year. The created sheets will therefore read SHEET 1 – 2016, SHEET 2 – 2017, SHEET 3 – 2018, SHEET 4 – 2019, and SHEET 5 – 2020.

Subsequently, the rows of the individual sheets will be cleaned by rows where data is missing in the number of employees column or the return on sales (ROS) column. Table 1 below reflects the subsequent division of companies into groups according to the number of employees I will base my work on. Small-sized enterprises has less than 25 employees. Middle-sized enterprises have from 25 to 499 employees and other side Big-sized enterprises has 500 and more employees.

After evaluating the representation of business plants in individual categories for 2016-2020, the data presented in table 2 will be displayed for all years. This will also be shown below in graph 1.

An analysis of the profitability of sales will be carried out in the relevant groups. The average sales profitability for each year in each group of business plants will be determined. Furthermore, the profitability of the maximum and minimum sales will be determined in a given year and group of companies. Excel's average, min and max functions will also be helpful for this. The determined average, minimum and maximum values will be presented in clear tables divided by monitored groups and years 2016-2020.

By analysing the time series, we will determine the profitability of the average sales in individual groups for the monitored period 2016-2020. This will then be shown in a graph for a better overview.

Correlation analysis will determine how the enterprise's size and the sales' profitability influence each other. To determine the individual correlation coefficients for groups of companies for the monitored years, the CORREL function in Excel will be used. A correlation function is a statistical concept that measures the degree of correlation between two variables. This method allows us to express whether and how strongly two variables are related. The correlation function is essential in data analysis, whether scientific research, economic analysis, or social studies because it helps us understand patterns and relationships between different variables. Separate groups of enterprises will be assigned the values in the table's newly created column, shown in the following table 2.

After assigning individual values, a correlation analysis will be performed. For matrix one, the size of enterprises will be used in different years, and for matrix two, the sales profitability values will be used. The detected data will be shown in a table.

Results

The number of companies in the manufacturing industry for the particular periods from 2016 to 2020 was determined from the data set using the above criteria. The number function was used to determine the number of companies in a given year with the help of Excel software from Microsoft. Subsequently, using a filter, the companies were divided into individual groups according to size, into small, medium and large. Table 3 reflects the total number of enterprises included in the analysis and the division of these enterprises in individual years into groups by size.

Table 1: Distribution of enterprises by size

Year	Total number of businesses	Groups	Number of business in a group
2016	10 520	Small-sized	6 638
		Middle-sized	3 603
		Large-sized	279
2017	11 090	Small-sized	6 930
		Middle-sized	3 817
		Large-sized	343
2018	11 213	Small-sized	7 066
		Middle-sized	3 827
		Large-sized	320
2019	10 316	Small-sized	6 422
		Middle-sized	3 584
		Large-sized	310
2020	7 821	Small-sized	4 505
		Middle-sized	3 067
		Large-sized	249

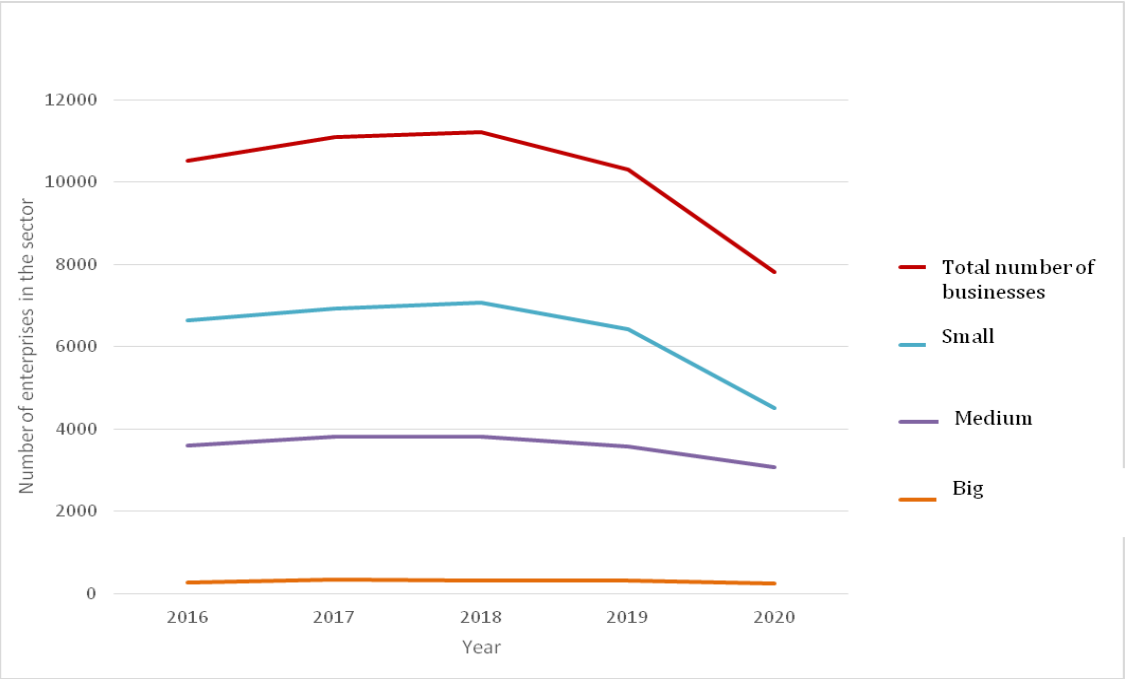
Source: Own processing based on data from the CRIBIS database.

The table shows an increase in the total number of enterprises in the given sector. Towards the end of the monitored period, i.e. in 2019 and 2020, these numbers began to decrease. The highest number of enterprises meeting the required criteria for inclusion in the analysis was in 2018 when the total number of enterprises in the sector was 11,213.

The time series analysis concluded that small businesses are the most represented in the manufacturing industry, i.e., businesses with a maximum number of employees of up to 24 people. On the contrary, big enterprises are the least represented group in the sector, with employees exceeding 500 people.

In figure 1, we can observe the development trend of the total number of enterprises. In addition to the total number of enterprises in the sector, the graph also shows individual groups of enterprises.

Figure 1: The development trend of the number of enterprises in the sector



Source: Own processing based on data from the CRIBIS database.

The next step was determining the profitability of the average, minimum and maximum sales for individual groups for the monitored years 2016-2020. A function in the Excel software was used to determine the necessary average values, namely the average for all enterprises in a given group and year. To determine the minimum and maximum value of sales profitability, functions were also used in Excel, namely min and max. The values for 2016 for individual groups are shown in Table 2.

Table 2: Return of Sales in 2016

Enterprise size	Average Return of Sales	Minimal Return of Sales	Maximal Return of Sales
Small-sized enterprise	0,49	-2,79	2191,20
Middle-sized enterprise	0,09	-0,08	8,95
Big-sized enterprise	0,10	-0,003	3,49

Source: Own processing based on data from the CRIBIS database.

The average sales profitability in 2016 was the largest for small businesses when it reached a value of 0.49. The same was the case with the minimum and maximum profitability of sales. The lowest average profitability was for medium-sized enterprises when the value was 0.09. For big enterprises, the value was only one-hundredth higher, i.e. 0.1.

Table 3 shows the determined values of the average profitability of sales, the minimum profitability of sales and the maximum profitability of sales for the year 2017 for individual groups of enterprises according to size in terms of the number of employees.

Table 3: Return of Sales in 2017

Enterprise size	Average Return of Sales	Minimal Return of Sales	Maximal Return of Sales
Small-sized enterprise	0,19	-24,31	208,00
Middle-sized enterprise	0,09	-0,41	22,64
Big-sized enterprise	0,07	-0,10	0,48

Source: Own processing based on data from the CRIBIS database.

As in the previous year, average profitability for 2017 was highest among small businesses. Here the differences are no longer so significant, as the value was 0.09 for medium-sized enterprises and 0.07 for big enterprises.

Table 4 reflects the established average, minimum and maximum sales profitability for groups of companies for 2018.

Table 4: Return of Sales in 2018

Enterprise size	Average Return of Sales	Minimal Return of Sales	Maximal Return of Sales
Small-sized enterprise	0,33	-5	777
Middle-sized enterprise	0,20	-0,15	458,34
Big-sized enterprise	0,07	-0,01	0,46

Source: own processing based on data from the CRIBIS database.

Even in 2018, small businesses hold the highest rank in the form of average profitability; here, the average value is 0.33. Big enterprises are again characterised by the lowest average return on sales, where the average value remains the same as in the previous year, i.e. 0.07.

The values of average profitability of sales, minimum profitability and maximum profitability for 2019 are shown in Table 5 below.

Table 5: Return of Sales in 2019

Enterprise size	Average Return of Sales	Minimal Return of Sales	Maximal Return of Sales
Small-sized enterprise	0,50	-10,57	1033
Middle-sized enterprise	0,08	-0,43	0,82
Big-sized enterprise	0,07	-0,02	1,14

Source: Own processing based on data from the CRIBIS database.

2019 the highest difference between the values can be seen in the average profitability. Here, too, small businesses have the highest average return on sales, with a value of 0.5. Big enterprises achieve the lowest average return on sales, by only one-hundredth of the

value compared to medium-sized enterprises. Large businesses show an average return on sales of 0.07.

The average, minimum and maximum sales profitability values for the last monitored year are shown in Table 6.

Table 6: Return of Sales in 2020

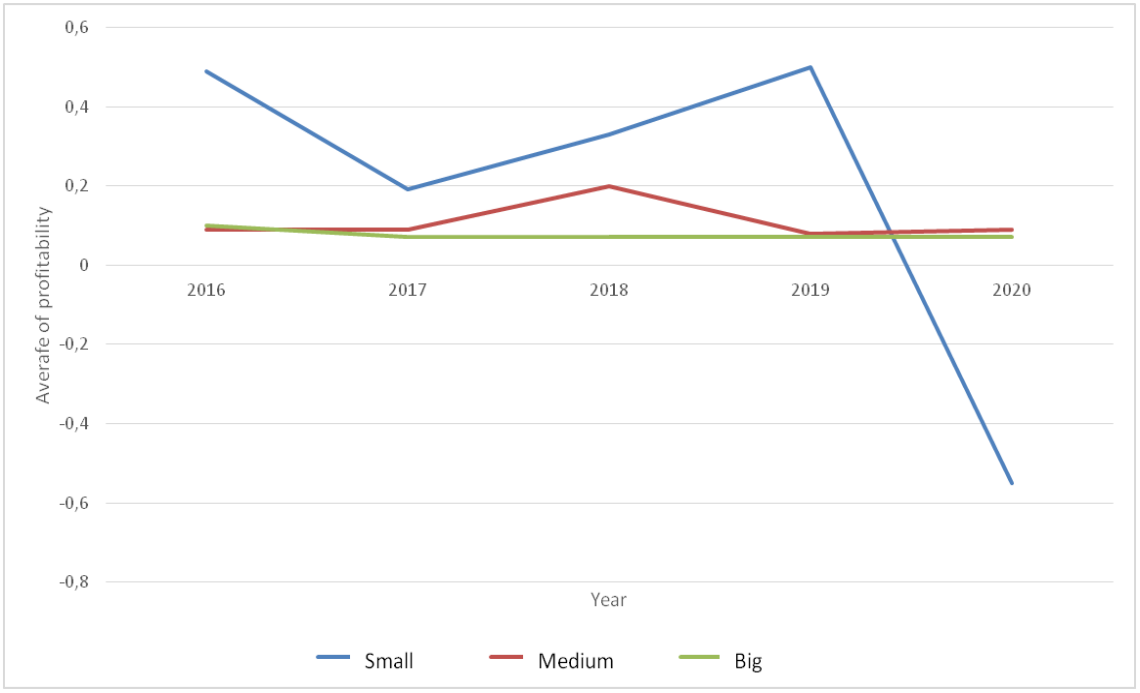
Enterprise size	Average Return of Sales	Minimal Return of Sales	Maximal Return of Sales
Small-sized enterprise	-0,55	-3 248,32	95,55
Middle-sized enterprise	0,09	-0,41	5,84
Big-sized enterprise	0,07	-0,004	0,43

Source: Own processing based on data from the CRIBIS database.

In the last monitored year, i.e. 2020, the average profitability reached the most significant difference. Small businesses show a negative average profitability value of -0.55. On the contrary, medium-sized enterprises in 2020 showed the highest average return on sales, with a value of 0.09.

Figure 2 clearly shows the development of the profitability of the average sales for individual groups of companies for the entire monitored period 2016-2020.

Figure 2: Development of average profitability



Source: Own processing based on data from the CRIBIS database.

By analysing the time series of average profitability for individual groups of companies, we obtained its clear development, shown in figure 2. Large companies maintained a

constant level of average sales profitability throughout the monitored period. Conversely, small businesses are characterised by the highest value fluctuations.

The next step was the processing of the correlation analysis. In 2016-2019, the correlation coefficient values range slightly below zero, i.e. up to a maximum of -0.02. Only in 2020 did the value of the correlation coefficient rise very slightly above 0, i.e. to a value of 0.01. Based on the above, the enterprise's size does not affect the profitability of the sales of the monitored manufacturing industry companies in the period 2016-2020. In correlation analysis, a value of -0.01 indicates almost no linear correlation between two variables, while a value of -0.02 needs to be revised. A value of 0.01 is also almost zero correlation but positive. All these values indicate no solid linear relationship between the variables. When correlation coefficient values are close to zero (either positive or negative), it means that changes in one variable are not linearly related to changes in the other variable. This does not mean there is no relationship between them, but that relationship is beyond the reach of linear correlation and may be more complex or non-linear. If the correlation coefficient is near zero (not values close to -1 or +1), no significant linear relationship is observed between the variables. This means that changes in one variable are not predictable or correlated with changes in the other variable based on a linear model.

Discussion

The thesis aimed to compile a model of how much the company's size contributed to the profitability of sales in the years 2016-2020 for the manufacturing industry in the Czech Republic.

The input data needed for the analysis was taken from the CRIBIS database of CRIF – Czech Credit Bureau. This database contains data of individual companies of the given industry: complete financial statements, e.g., balance sheet or profit and loss statement, and other financial data. First, the table in the Excel file was edited, where the rows containing inactive or liquidation companies were cleaned. In the next step, the table was cleaned of companies that reported zero profits or losses and companies whose financial result line was empty. The resulting table was copied, and the values for only one observed year were left on the resulting sheets. So the created sheets were: SHEET 1-2016; LETTER 2-2017; LETTER 3-2018; LETTER 4-2019; and LETTER 5-2020. Subsequently, the rows of the individual sheets were cleaned for rows where data was missing in the number of employees column or the profitability of sales (ROS) column. Then, the representation of business plants in individual categories was evaluated for the monitored years 2016-2020.

An analysis of sales profitability was then carried out in the relevant groups, where the average profitability of sales for each year in each group of business plants was determined. The maximum and minimum profitability of sales in a given year and group of companies was also determined. The average, min and max functions in Excel were also used for these purposes. Time series analysis was used to determine the development of

the average sales profitability in individual groups for the monitored period 2016-2020. Correlation analysis was used for these purposes. After assigning individual values, a correlation analysis was performed. For matrix one, the size of enterprises was used in individual years; for matrix two, the sales profitability values were used.

One research question was defined to fulfil the stated objective:

RQ1: How does enterprise size affect the profitability of sales in the manufacturing industry in the Czech Republic in 2016-2020?

Based on the sales profitability analysis, it was found that small businesses are characterised by the most significant fluctuations in sales profitability. On the contrary, big enterprises show a constant level of sales profitability for the entire monitored period. Medium-sized enterprises showed a change in the profitability of the average sales only in 2018. Otherwise, they also more or less maintained their level.

Based on the performed correlation analysis, when the values of the correlation coefficient first moved slightly below zero, and in the last monitored year very slightly above the value of 0, it can be stated that the size of the companies included in the analysis does not affect the profitability of sales.

The company's size can affect the profitability of sales in the manufacturing industry in the Czech Republic. However, it should be noted that many factors, such as industry, competitive environment, business strategy, etc., can influence the effect of business size on profitability. Overall, the effect of business size on sales profitability is complex and depends on many factors. Some large firms may have high profitability due to economies of scale, while smaller firms may achieve high profitability due to specialization and innovation. Different businesses may have different strategies, costs, market positions, and external influences that can influence how size affects their profitability. The effect of company size on the profitability of sales in the manufacturing industry in the Czech Republic depends on the interaction of these factors and specific circumstances. Each business may have specific strategies, competitive advantages, and production practices that will determine how size affects its profitability.

Several authors, such as Hossain, Imran (2016), Chen, Chen (2011) and Hirdinis (2019), investigated the size of the enterprise depending on the overall profitability. In contrast to them, this paper was focused directly on the profitability of sales. Devi, Devi (2014) proved that there is a positive correlation between firm size and profitability for Pakistani firms. This paper is more inclined to the opinion of Niresh, Aloy & Velnampy (2014), who, using correlation analysis, concluded that the relationship between size and profitability in manufacturing firms is very weak.

Conclusion

The enterprise wants answers to the questions: What is the structure of enterprises in the processing industry in the Czech Republic? Does the size of the business affect the profitability of the enterprise? This work showed that the manufacturing industry

between 2016-2020 was made up mainly of small and medium-sized enterprises in terms of the number of employees. On the contrary, big enterprises make up only a tiny percentage, whereas a large enterprise is defined as an enterprise with 500 or more employees. Based on the analysis of the average profitability of sales and correlation analysis, it was found that the size of the enterprise in terms of the number of employees does not affect the profitability of sales. Small businesses show large fluctuations in the average profitability of sales; however, large companies are constant throughout. This also shows that small businesses are very susceptible to change. Large companies, on the other hand, are more flexible in the face of changes, such as the coronavirus pandemic or rising prices.

This work will benefit new entrants to the manufacturing industry in the Czech Republic, as it will provide them with information on the total number of companies in the industry and the structure of the companies. It will also provide information on the average profitability in individual groups from the point of view of sales profitability. It will also benefit already existing business plants in the processing industry, as it provides them with just how much competition there is in their category regarding the number of employees. The thesis aimed to compile a model of how much the company's size contributed to the profitability of sales in the years 2016-2020 for the manufacturing industry in the Czech Republic. To meet the set goal, two research questions were defined: How large was the representation of companies in groups according to the number of employees in the manufacturing industry in the Czech Republic in the years 2016-2020? How did the size of the company affect the profitability of sales in the processing industry in the Czech Republic in 2016-2020? In the results chapter, individual groups of enterprises were analyzed in 2016-2020, whose development was also demonstrated by the created graph. The most significant representation is among small businesses with up to 25 employees. Furthermore, the profitability of the average sales was calculated in individual years, and the profitability of the minimum and maximum sales for individual groups was determined. The average profitability of small businesses was the most fluctuating. On the contrary, the most stable average profitability was for large enterprises. The last step was determining whether the business plant's size affects sales profitability. Based on the achieved values, the company's size in terms of the number of employees does not affect the sales profitability.

The benefit of the work is found mainly for new companies entering the industry in the Czech Republic, as this contribution provides information about the structure of companies. Furthermore, it is also for companies already operating in the sector, which provides a basic overview of the number of competitors in the processing industry. The limit of work is found in the missing data for many enterprises, which had to be excluded from the analysis as a result. In this work, business plants in the manufacturing industry were analyzed as a whole; further, the work could only deal with one of the groups according to the NACE code in the manufacturing industry or deal with the division of companies by region in the Czech Republic, which would provide a more specific overview of the competition and the development of profitability in a specific location.

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Corporate social responsibility and employer branding: challenges for the wine sector resulting from a bibliometric analysis

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Abstract

The greatest boom of the corporate social responsibility (CSR) concept in companies occurred in the 1990s when managers began to understand that the implementation of CSR activities requires specific attention. At that time, CSR also merged with fields such as marketing, public relations, diversity, and human resources. Based on the bibliometric analysis, the article aims to identify areas of scientific research in which the issue of CSR is addressed within the issue of employer branding (EB), with a focus on the wine sector. The findings confirm that the issues of CSR and EB have not been given enough attention so far, either in general or specifically in the wine sector. This fact reveals an interesting research gap, as current generations of the workforce demand socially responsible behavior from their potential or actual employers. The integration of CSR in employer branding thus represents a desirable strategy that could also be useful in the wine sector, which is currently facing a shortage of quality people.

Keywords: corporate social responsibility, employer branding, wine sector, bibliometric analysis, Web of Science, Czech Republic

Introduction

The concept of corporate social responsibility (CSR) has been known since the 1930s (Carlini et al., 2019). However, in recent years it has gained importance as a result of various economic, social, and environmental crises, the impacts of which are globally

much more noticeable and discussed among people mainly thanks to the phenomenon of social networking (Roper et al., 2013; Kozáková, Hudáková & Filová 2021). Thus, the issue of socially responsible behavior of companies is perceived more and more sensitively among people (Arasanmi, Krishna, 2019; Vrabcová, Urbancová & Hudáková, 2022).

Companies are increasingly using CSR activities in employer branding to attract and retain potential and current employees and engage them in CSR activities and employer branding (Spurný et al., 2021). However, there is a lack of literature synthesizing the delivery of CSR activities and employer branding to understand employee engagement in CSR activities from the employer branding perspective (Jones, Willness & Madey, 2014). In this article, the authors concluded that the reputation and attractiveness of employers are increased by the social value and engagement of employers perceived by potential and current employees as a result of CSR activities. The research results also suggest that employer branding mediates the relationship between corporate social responsibility and employer reputation and attractiveness (Binu Raj, Akbar & Subramani, 2022).

Employer branding is a relatively young concept, first defined in 1996 by Tim Ambler and Simon Barrow (Ambler, Barrow 1996). It is a set of many interconnected steps that lead to building an employer brand. Above all, it is about company culture, how employees perceive it and how they feel about it, as well as what employees can offer the company and what it can offer them (Staniec, Kaliňska-Kula, 2021). The issue of building an attractive employer brand through corporate social responsibility is important also for the wine sector in the Czech Republic, which has been experiencing a shortage of quality people in recent years.

The wine sector is a specific area of agriculture. There are two main wine regions in the Czech Republic: Bohemia and Moravia. These regions are divided into sub-regions. The sustainable development of these regions depends above all on people and their approach to socially responsible business activities. For every wine business, it is important to attract and retain quality people ready to participate in the development of a socially responsible business and build an attractive business brand, including an employer brand. Linking CSR and employer branding activities can help accomplish this purpose.

Therefore, it makes sense to deal with the relationship between CSR and employer branding activities in the wine sector. Based on the bibliometric analysis, the article aims to identify areas of scientific research in which the issue of corporate social responsibility (CSR) is addressed within the issue of employer branding (EB), with a focus on the wine sector, which belongs to one of the traditional agricultural industries in the Czech Republic. Following the stated aim, four research questions were established:

RQ1: Will the bibliometric analysis confirm a significant increase in scientific interest in the issue of CSR in connection with the issue of EB?

RQ2: In which areas of scientific research the topic of CSR and EB is addressed most?

RQ3: Which journals pay the most attention to the issues of CSR and EB?

RQ4: Will the bibliometric analysis confirm a research gap on the issues of CSR and EB in the wine sector?

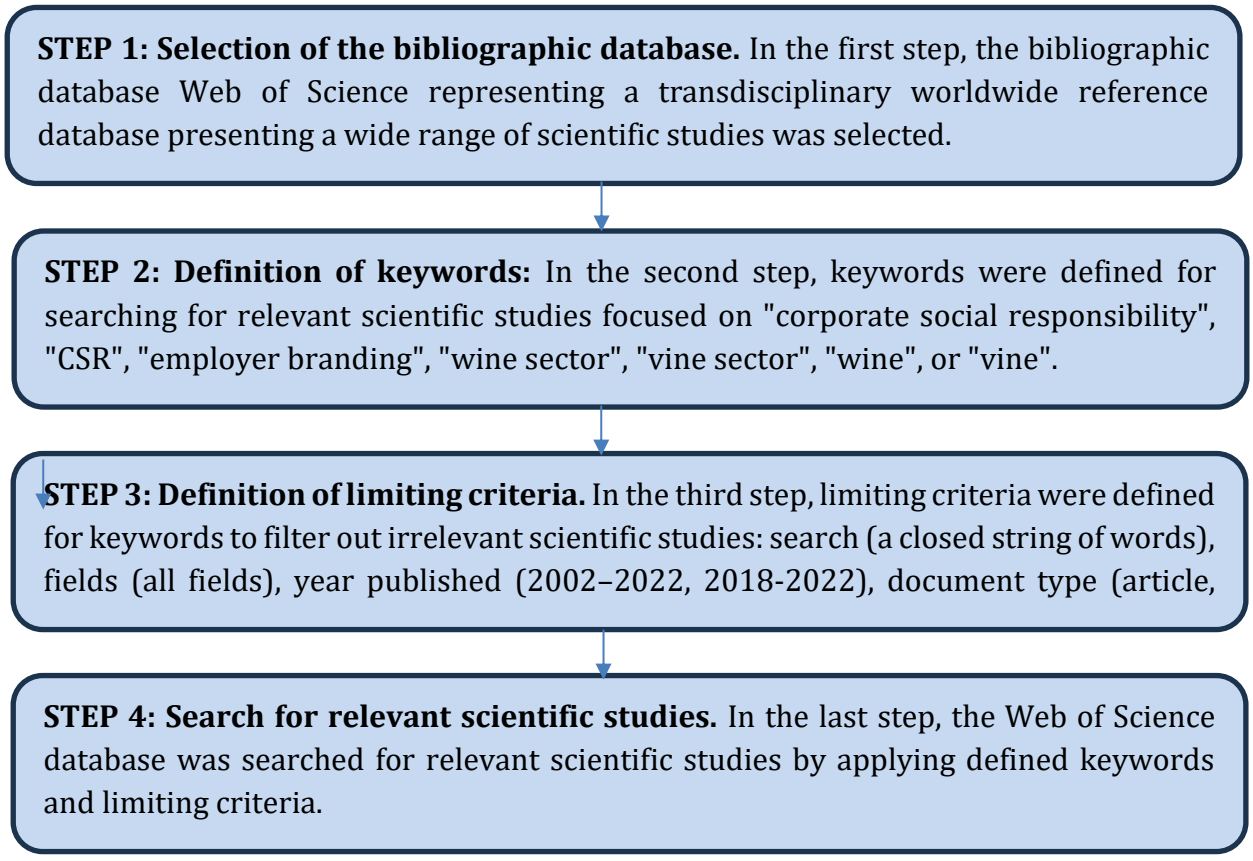
Methods and Data

The article deals with areas of scientific research in which the issue of corporate social responsibility (CSR) is addressed within the issue of employer branding (EB), with a focus on the wine sector. To achieve the aim of the article, a bibliometric analysis of scientific articles in the Web of Science database was used.

A bibliometric analysis is an effective method to find trends in specific areas of research and identify relevant studies for further qualitative research, where the studies and trends are worked on in greater detail (Jacimovic et al., 2021). Examining scientific studies published in any field of science at regular intervals is of great importance both for determining the level of development in a given field and for determining which topics and questions the authors mainly focus on (Matsimbe et al., 2022).

The bibliometric analysis on the issues of corporate social responsibility (CSR) and employer branding (EB) in the wine sector was carried out in the following steps:

Figure 1: flowchart of the methodological procedure



Results

To identify areas of scientific research in which the issue of corporate social responsibility (CSR) is addressed within the issue of employer branding (EB), with a focus on the wine sector, scientific studies were searched in the Web of Science database for the period 2002-2022 and 2018-2022 (see Table 1).

Tab. 1: Bibliographic records on various queries in the Web of Science database

Search code	Query	2002-2022	2018-2022
A	Corporate Social Responsibility or CSR	56,044	24,943
B	Employer Branding	447	283
C	"Wine Sector" or "Winer*"	10,609	3,967
AB	Corporate Social Responsibility or CSR and "Employer Branding"	40	24
AC	"Corporate Social Responsibility" and "Vine Sector" or "Vine*"	34	22
ABC	Corporate Social Responsibility or CSR and "Employer Branding" and "Vine Sector" or "Vine*"	0	0

Source: calculated by authors, access 2023/05/07

Code A: There were a total of 56,044 scientific studies related to Corporate Social Responsibility or CSR in the period 2002-2022, mainly from the fields of Business (13,516), Management (11,498), Environmental Studies (5,946), Environmental Sciences (3,890), Economics (3,612), Business Finance (3,355), and Ethics (2,811). The scientific studies were published mainly in the USA (11,531), China (8,772), India (6,464), England (4,811), Australia (2,972), Germany (2,364), and Italy (2,323). In the period 2018-2022, 44.5% of all scientific studies (24,943) were published, which proves the growing interest in this issue (see Graph 1).

Code B: There were a total of 447 scientific studies related to Employer Branding in the period 2002-2022, mainly from the fields of Management (228), Business (160), Economics (49), and Industrial Relations Labor (37) and from India (66), Germany (44), Poland (35), England (34), USA (26), and Czech Republic (15). In the period 2018-2022, 63% of all scientific studies (283) were published, which proves the growing interest in this issue (see Graph 1).

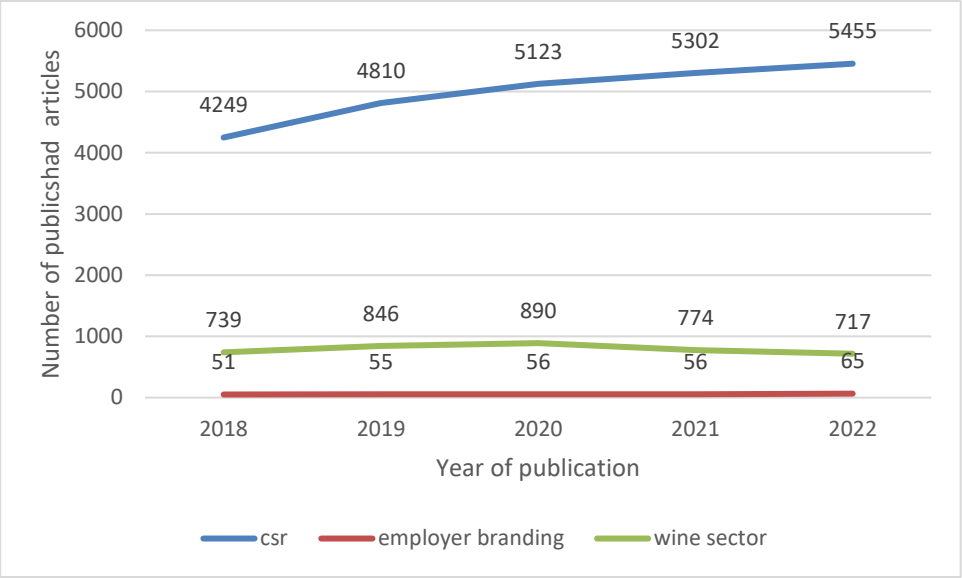
Code C: There were a total of 447 scientific studies related to "Wine Sector" or "Winer*" in the period 2002-2022, mainly from the fields of Food Science Technology (1,582), Oncology (1,274), Physic Particle Fields (1,211), and Environmental Science (654) and from the USA (5,117), Spain (2,961), Italy (2,682), France (2,144), Germany (2,068), and Czech Republic (1,123). In the period 2018-2022, 37% of all scientific studies (3,967) were published (see Graph 1).

Code AB: There were a total of 40 scientific studies related to Corporate Social Responsibility or CSR and "Employer Branding" in the period 2002-2022, mainly from the fields of Business (23), Management (13), Economics (10), and Environmental Studies (5) and from India (7), Poland (7), Czech Republic (4), Spain (4), and Germany (3). In the period 2018-2022, 60% of all scientific studies (24) were published (see Graph 1).

Code AC: There were a total of 34 scientific studies related to "Corporate Social Responsibility" and "Vine Sector" or "Vine*" in the period 2002-2022, mainly from the fields of Business (14) and Environmental Studies (9) and from Italy (11), Spain (7), USA (5), France (4), England (3), and Czech Republic (1). In the period 2018-2022, 65% of all scientific studies (22) were published (see Graph 1).

Code ABC: There were no scientific studies related to Corporate Social Responsibility or CSR and "Employer Branding" and "Vine Sector" or "Vine*"in the period 2002-2022.

Graph 1: Bibliographic records on various queries in the Web of Science database



Source: authors

In response to the first research question "Will the bibliometric analysis confirm a significant increase in scientific interest in the issue of CSR in connection with the issue of EB?" (RQ1), it could be stated that there is a significant increase in scientific interest in the issues of corporate social responsibility and employer branding.

In response to the second research question "In which areas of scientific research the topic of CSR and EB is addressed most" (RQ2), it could be stated that in business, management, economics, and environmental studies.

In response to the third research question "Which journals pay the most attention to the issues of CSR and EB?" (RQ3), table 2 presents journals in which the searched scientific studies were published the most. The data are presented according to the search codes A, B, C, AB, and AC.

Tab. 2: The most significant journals by the number of articles

Order	**Journal (number of articles)**				
	Code A	**Code B**	**Code C**	**Code AC**	**Code AB**
1	Sustainability (1,820)	India (73)	USA (5,122)	Italy (11)	India (7)
2	Journal of Business Ethics (1,758)	Germany (48)	Spain (2,964)	Spain (7)	Poland (7)
3	India (6,635)	England (35)	Italy (2,686)	USA (5)	Czech Republic (4)

Code A – Corporate Social Responsibility or CSR
Code B – Employer Branding
Code C – "Wine Sector" or "Winer*"
Code AB – Corporate Social Responsibility or CSR and "Employer Branding"
Code AC – "Corporate Social Responsibility" and "Vine Sector" or "Vine*"

Source: authors according to the Web of Science database on 2023/05/07

Within the AB code including scientific studies related to Corporate Social Responsibility or CSR and "Employer Branding" a content analysis was carried out, because few scientific studies have been published in this area so far, and therefore it was analyzed which specific issues the authors of the scientific studies dealt with.

Tab. 2: countries from which most articles on the topic have been published

Order	Journal (number of articles)				
	Code A	**Code B**	**Code C**	**Code AB**	**Code AC**
1	USA (11,733)	Sustainability (12)	J. of Clinic Oncology (394)	Corporate Communications (2)	British Food Journal (5)
2	China (9,100)	Journal of Product and Brand Manage-ment (11)	Physical Review (383)	Corporate Social Responsibility and Environmen-tal mgmt (2)	Developing in Marketing Science (5)
3	Corporate Social Responsibility and Environmental Management (1,265)	International Journal of Organizational Analysis (11)	Journal of High Energy Physics (362)	Sustainability (1)	Sustainability (5)

Code A – Corporate Social Responsibility or CSR
Code B – Employer Branding
Code C – "Wine Sector" or "Winer*"
Code AB – Corporate Social Responsibility or CSR and "Employer Branding"
Code AC – "Corporate Social Responsibility" and "Vine Sector" or "Vine*"

Source: authors according to the Web of Science database on 2023/05/07

The authors found mostly deal with the strategy of using corporate social responsibility within employer branding (Bharadwaj, Yameen, 2021), the connection of the concepts of corporate social responsibility and employer branding (Matuska, Sałek-Imińska, 2014), the synergistic use of the concepts of corporate social responsibility and employer branding (Carlini et al., 2019), the limited use of corporate social responsibility within employer branding (Puncheva-Michelotti, Hudson & Jin, 2018), the dimensions of employer branding, including corporate social responsibility (Nguyen, Nguyen, 2021), the impacts of employer branding on employees (Bendová, Štěpánková & Kaneva, 2017), or the benefits of employer branding for employers (Saini, Saini & Kumar, 2021).

In response to the fourth research question "Will the bibliometric analysis confirm a research gap on the issues of CSR and EB in the wine sector?" (RQ4), it could be stated that currently there are not enough scientific studies dealing with the connection of the concepts of corporate social responsibility and employer branding, and not at all in the wine sector. This is a clear research gap.

Discussion

The bibliometric analysis of scientific studies on the issues of corporate social responsibility (CSR) and employer branding (EB), with a focus on the wine sector, revealed that issues are receiving increasing attention.

The first conceptual framework of the employer branding was created by Backhaus, Tikoo (2004). In this framework, the authors emphasized three fundamental directions for building an employer brand – employer brand associations, organizational identity, and organizational culture. Employer brand associations lead to employer image and employer attraction. Organizational identity and organizational culture lead to employer brand loyalty, which results in employer productivity. By this, the authors showed significant benefits of employer branding for the employer. Similarly, Saini, Saini & Kumar (2021) concluded that employer branding activities lead to three main benefits for the employer – increasing awareness of the employer brand, increasing the attractiveness of the employer, and differentiating the employer from competitors. However, companies still use little of the potential of CSR activities to improve their employer brand.

Puncheva-Michelotti, Hudson & Jin (2018) found that CSR communication in job advertising as part of employer branding is generally limited. It is mostly an ad-hoc practice that focuses on employee participation and development. Even large companies with a CSR department use their CSR image surprisingly little to attract job seekers. However, employer branding can be seen as one of the effective strategies for attracting and retaining talent, and the involvement of CSR activities can significantly help in this. It was demonstrated by Nguyen, Nguyen (2021), who identified several dimensions that create employer branding. The most important is corporate social responsibility, followed by career growth, work-life balance, personal development, and teamwork.

Today's employers are under increasing pressure to be competitive and socially responsible (Santana, Morales-Sánchez & Pasamar, 2020). Connecting the concepts of employer branding and corporate social responsibility thus represents a suitable strategic tool (Matuska, Sałek-Imińska, 2014). An appropriate strategy of using corporate social responsibility within employer branding allows to improve the employer's reputation for both current and future employees (Bharadwaj, Yameen, 2021). Corporate social responsibility improves the company's image, which is reflected in greater employee engagement (Bendová, Štěpánková & Kaneva, 2017) as well as in the higher interest of potential job seekers (Jones, Willness & Madey, 2014).

On the other hand, delivered CSR activities may not always lead to positive employee reactions. The reason is often inappropriate CSR activities that do not support employee motivation and engagement (Donia et al., 2019). In general, it is necessary to prevent employee dissatisfaction with the employer's CSR activities, which can negatively affect the employer's reputation and attractiveness (Tetřevová, 2017).

Understanding all the above facts related to the issues of corporate social responsibility and employer branding is important especially in light of the current situation in the labor markets when current generations of workforce highly demand socially responsible behavior from their potential or actual employers. The integration of corporate social responsibility in employer branding thus represents a desirable strategy that could be useful for most employers challenging an actual or potential shortage of quality people.

Conclusion

Carrying out a bibliometric analysis of scientific studies in the Web of Science database, the article identified areas of scientific research in which the issue of corporate social responsibility is addressed within the issue of employer branding, with a focus on the wine sector. The findings revealed a significant increase in scientific interest in the issues of corporate social responsibility and employer branding, but also a significant research gap on the issues of corporate social responsibility and employer branding, especially in the wine sector.

The findings revealed a clear research gap for further research. More attention should be paid to the connection between the concepts of corporate social responsibility and employer branding as well as to the positive and negative impacts of various corporate social responsibility and employer branding strategies and activities. This could help companies to attract and retain needed employees.

Potential limitations of the findings are in the limited scope of the bibliometric analysis, focusing only on scientific studies in the Web of Science database related to corporate social responsibility and employer branding, with a focus on the wine sector in the Czech Republic, in 2002-2022 and 2018-2022. The findings could be refined by future primary analysis focused on the issues of corporate social responsibility and employer branding across industries.

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