JOMAES

Corporate Social Responsibility and Digital Transformation Interaction: Determining Strategic Orientations with Bibliometric Analysis

Ferda ALPER AY

Sivas Cumhuriyet University, Faculty of Health Sciences, Department of Health Management, Sivas, 58140, Türkiye. ferdaaay@cumhuriyet.edu.tr
https://orcid.org/0000-0002-6170-1578

Kasım YILMAZ

Karabuk University, TOBB Technical Science College, Karorsan Kale Köyü OSB Bolgesi, No: 7/10, Karabuk 78050, Türkiye. kasimyilmaz@karabuk.edu.tr
https://orcid.org/0000-0002-4544-4727

Abstract

Corporate digital transformation, which accelerates the global business competition plays an important role in the advancement of sustainability. This study aims to examine academic studies about the trends and interaction between corporate social responsibility (CSR) and digital transformation through bibliometric analysis. In this framework, a total of 107 studies published between 2017 and 2024 on the researched subject downloaded from the Scopus database and were subjected to a comprehensive bibliometric analysis using Biblioshiny application and VOSviewer program. The most popular topics in related studies were identified as 'environmental, social and governance-ESG', 'enterprise digital transformation' and 'green innovation'. Analysis pointed three conceptual themes as "sustainable development", "digital economy and innovation", and "environmental changes and policy". The analysis indicates a strong positive relationship between CSR and digital transformation and CSR activities are vital for a sustainable and more digital future. This study aims to develop potential research directions on CSR and digital transformation.

Keywords: Corporate Social Responsibility, Digital Transformation, Esg, Sustainability, Bibliometric Analysis.

1.INTRODUCTION

The success of business implementation and transformation for businesses depends on integrating ways of doing business according to sustainability principles (Bocken & Short 2021). Digital transformation, which is an interdisciplinary research field today, has gained importance as information technology-supported business transformation since the 1990s with the commercialization of computer technology and the widespread use of the internet (Plekhanov et al., 2022). For businesses, understanding how technological developments have changed the conditions of competition, learning how to use technology effectively in the promotion of products and services, and succeeding in creating customer value within the network by

providing reliable and superior products and services through the use of technology have become strategic issues (Kannan & Hongshuang, 2017).

The basic responsibilities of businesses are classified as economic, legal, ethical and social responsibilities. Corporate social responsibility is a concept that covers ethical and social responsibilities directly and all responsibilities indirectly (Argüden, 2007). With the digital transformation, concerns about sustainability, the interaction of labor and technology, the future of employment policies and the ethical compliance of the use of new technology have begun to emerge. These concerns have led to the necessity of a new orientation for businesses under the concept of corporate digital responsibility. With this orientation, businesses need to create a transition period with a sense of social responsibility for an increasingly digitalized workforce, taking into account the environment, sustainability and ethical elements at the company, individual and social levels. In this transformation, there is also a need to create a balance between time, value, trust, community, individual, health and privacy (Orbik & Zozulakova, 2019). Corporate social responsibility reflects the sense of social responsibility that emerges in a company's policies and actions towards its stakeholders. In order to alleviate the legitimacy pressures that arise with the digital transformation, many industries are focusing on corporate social responsibility practices (Huang & Shen, 2024). The companies yield to engage in socially responsible behavior as part of their organizational strategy with an aim of gaining competitive advantage against their rivals. Companies are fully aware of the benefits of sharing their CSR activities (Holcomb et al., 2007). Digital transformation has enabled customers to be more involved in the strategic decision-making processes of businesses through digital technologies (Wu et al., 2023). With the digital transformation, social responsibilities of businesses on issues such as unemployment, personal data security and inviolability of private life have become important both legally and ethically.

Digital transformation increases interaction with internal and external stakeholders, makes business policies more transparent and imposes new social responsibilities on businesses. Therefore, digital transformation and social responsibility are becoming closely related concepts. This research aims to analyze literature to understand the trends about and the interaction between corporate social responsibility (CSR) and digital transformation through bibliometric analysis.

2. THEORETİCAL BACKGROUND AND RESEARCH QUESTIONS

2.1. CSR and Digital Transformation

The concept of corporate social responsibility can be defined as an organization's "ethical" and "responsible" behaviors towards all stakeholders in its internal and external environment, and governing its decision-making process in this direction (Aktan & Börü, 2007). Social responsibility of organizations is their conscious evaluation of the positive or negative effects of their business on collective life and environment due and taking measures against negative effects (Özgener, 2009). Businesses with corporate social responsibility consciousness provide significant gains in terms of market values, employees' motivation levels, borrowing costs, customer loyalty and risk management. Businesses that are aware of corporate social responsibility undertake to comply with the law, moral standards and human rights and not to harm the environment while conducting their business activities. These businesses assume the highest level of responsibility and consider the effects of their activities on the market, the region, non-governmental organizations, the public and develop cooperation with social stakeholders (Argüden, 2007). Studies show that there is a positive relationship between corporate social responsibility and business performance (Van Beurden & Gössling, 2008; Alparslan & Aygün, 2013).

Today, corporate social responsibility emerges as an area that businesses give importance to with the expectations of reputation, recognition and preferability. These activities are the activities that businesses voluntarily carry out with a sense of responsibility towards their shareholders, employees, customers, government, suppliers, environment and society (Büyükyılmaz & Fidan, 2015). Corporate social responsibility is an important part of the concept of corporate sustainability (Engin & Akgöz, 2013). These activities are optional activities that are outside the economic, legal and ethical responsibilities of businesses. In this context, businesses are demanded by society to meet economic and legal expectations, are expected to comply with ethical rules, and are desired to engage in voluntary activities for the benefit of society (Carroll, 2015). Today, corporate social responsibility is increasingly becoming one of the main areas of management. Standards have begun to develop in this field and monitoring and auditing bodies have emerged (Crane et al., 2013).

Although at first glance, corporate social responsibility activities are seen as costs that have no return for businesses, it is likely that businesses will have to give more importance to these activities in the future for various reasons. Among these reasons are globalization and integrated business world. Also the possibility that companies' stock prices may be affected by social and moral expectations pushes managers to be more sensitive in this regard (Robins, 2005). The main characteristics of CSR may be listed as voluntarism, internalization or management of external factors, multi-stakeholder focus, harmonization of social and economic responsibilities, practices and values, and acting beyond philanthropy (Crane et al., 2013).

With the digital transformation, new concerns forced businesses to think about new orientations about corporate digital responsibility (Orbik & Zozulakova, 2019). Digital transformation refers to the transformation of relationships between organizational structure and resources, and the relationships between internal and external stakeholders affected by business activities (Zheng & Zhang, 2023). With digital transformation, businesses aim to create new business models and processes, renew existing ones, and transform their relationships between organizational structure and resources and internal and external stakeholders by using digital technologies in order to create value and gain competitive advantage (Plekhanov et al., 2022). The need for digital transformation in businesses has arisen from three main external factors; development of the widespread use of the internet and related technologies worldwide, the change in competition due to these technological developments, and the change in customer behavior due to the digital revolution (Verhoef et al., 2021). Emerging digital technologies have made the processing of unstructured market/customer data, business intelligence and analysis very important in terms of gaining competitive advantage and identifying threats and opportunities in a timely manner (Chen et al., 2012). The information obtained through digital technologies has important contributions to the competitive power of businesses (Kannan & Hongshuang, 2017).

Digital transformation defines a company-wide change that involves the development of new business models (Verhoef et al., 2021). Digital transformation depends on transformative strategies supported by a collaborative organizational culture that is open to risk-taking. Success in digital transformation requires strong leadership, broader integration between online and offline operations, and greater penetration of knowledge into processes (Kane et al., 2015). The digital transformation process is actually a disruptive process and must be managed strategically to achieve success. Digital transformation leads to change and transformation in the organizational structures of businesses, company culture, workplaces and business understanding (Henriette et al., 2016). The factors that trigger digital transformation can be classified as digital competence, management and market-related factors (Klein, 2020).

Digital transformation has radically affected all industries, changing not only business processes and models but also the business environment and the way of communication (Orbik &

Zozulakova, 2019). With digitalization, the boundaries between companies and sectors have started to disappear and it has become possible to create value for customers through competency-based networks that could not be achieved otherwise (Muzykant et al., 2020). The impact of corporate digitalization on strengthening corporate social responsibility activities is greater in businesses with lower resource constraints and higher asset cash recovery rates (Jiang et al., 2023). Digital transformation is a dynamic and costly process that requires knowledge and intensive resources. For businesses in need of external resources, being recognized by external stakeholders, having reputation and legitimacy becomes important in terms of resource supply. In a study covering 468 enterprises in China between 2011-2018, it was found that there is a bidirectional relationship between digital transformation and corporate social responsibility (Huang & Shen, 2024). According to a study conducted in Russia, business owners believe that their level of profitability is directly related to their reputation as perceived by society (Muzykant et al., 2020).

2.2. Research Questions

This study aims to analyze the interaction between corporate social responsibility and digital transformation by using Scopus database through conducting a bibliometric analysis of the studies in this field. The following research questions were developed in line with the aim of the study:

Q1: What is the growth and citation trend in corporate social responsibility and digital transformation studies?

Q2: Which journals, countries and organizations make significant contributions to the study of corporate social responsibility and digital transformation?

Q3: What are the conceptual structure, thematic issues and trending topics in this field?

Q4: What are the most influential articles and most cited journals in corporate social responsibility and digital transformation studies?

## 3.MATERIAL AND METHODOLOGY

This study aims to examine the interaction between corporate social responsibility and digital transformation, to synthesize the literature in this field and to contribute to the advancement of studies by using bibliometric analysis techniques. Bibliometric analysis is a popular method for exploring and analyzing scientific data. Bibliometric analysis studies can form the basis for identifying knowledge gaps, the emergence of new ideas and the development of a particular field (Donthu et al., 2021). Bibliometric analysis offers insights into any scientific topic, helps identify emerging trends, and functions better in evaluating literature compared to other techniques (Goyal et al, 2023).

Scopus database was used to obtain data for the study. The words "corporate social responsibility" and "digital transformation" were searched by selecting the "title, abstract and keyword" criteria from the Scopus database. A total of 107 studies in which these words occurred together until 04.07.2024 were identified in the Scopus database. All studies such as articles, books, conferences and studies in all languages were downloaded and found suitable for bibliometric analysis. In the evaluation of the data in the study, Biblioshine software (Aria et al, 2017) and VOSviewer (Van Eck et al., 2017) from the R bibliometrix library were used for bibliometric analysis.

4.FINDINGS

4.1. Subject Areas of Documents

The subject areas of the documents related to 'corporate social responsibility and digital transformation' in the Scopus database are given in Figure 1.
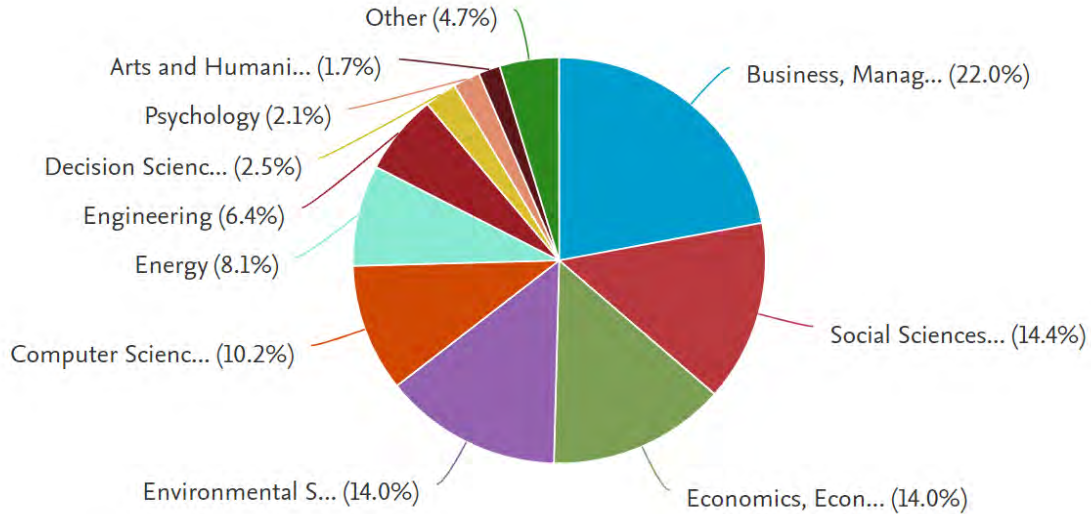
Figure 1. Subject Areas of Scientific Studies in Scopus

According to Figure 1, the highest percentage of studies on corporate social responsibility and digital transformation were conducted in the subject areas of Business, Management and Accounting (22%), Social Sciences (14.4%), Environmental Science (14%) and Economics, Econometrics and Finance (14%) respectively.

4.2. Basic Information About the Studies

The basic information in the data file for CSR and digital transformation activities is shown in Figure 2.


Figure 2. Basic information about CSR and Digital Transformation Studies

As seen in Figure 2, 107 documents published between 2017 and 2024 related to corporate social responsibility and digital transformation in 78 sources (journals, books, etc.) were analyzed from the Scopus database. These studies have an annual growth rate of 60.13%, the average age of the documents is 1.58 years and each document has an average of 10.98 citations. Of the total 281

authors, 12 of them published as a single author. The rate of international co-authorship in the documents is 21.5%.

4.3. Annual Increase in Publications

Figure 3 shows the numerical trend of CSR and Digital transformation related studies in documents over time.
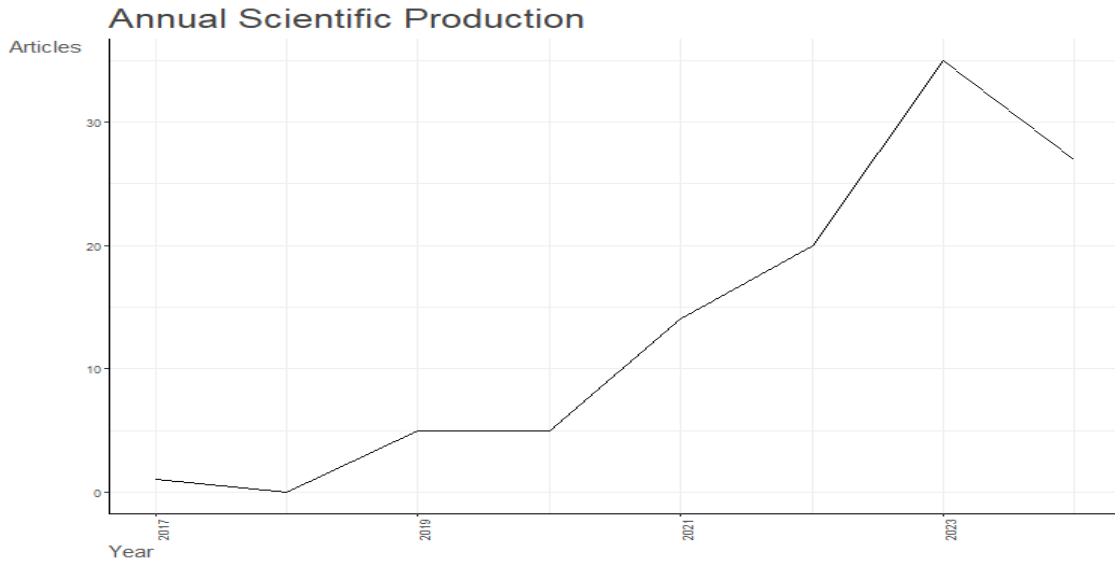

Figure 3. Annual Increase in Publication Related to CSR and Digital Transformation

According to Figure 3, the number of publications in this field among scientists worldwide has been increasing over the years. In terms of the number of publications, 27 publications were made in 2024, 35 in 2023, 20 in 2022, and 14 in 2021.

4.4. Average Annual Citation Status of Articles

Figure 4 shows the distribution of annual citations between 2017 and 2024 in articles related to CSR and digital transformation.
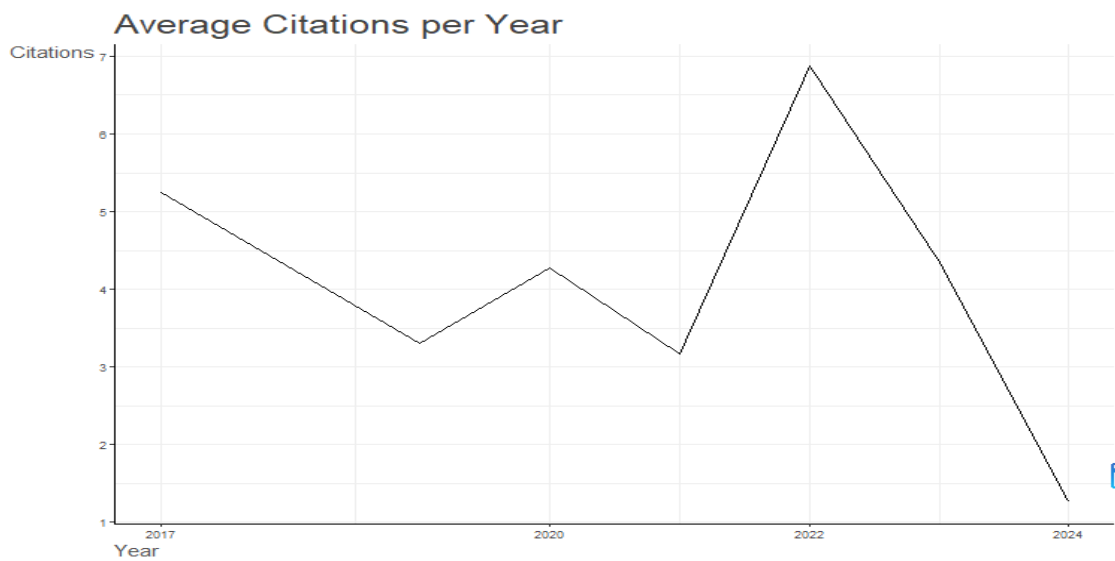

Figure 4. Annual Average Citation Trend of CSR and Digital Transformation Studies

According to Figure 4, the average number of citations per document by year is 1.26 in 2024, 4.34 in 2023, 6.87 in 2022, 3.16 in 2021, 4.28 in 2020, and 6 in 2019. The highest average number of citations per document in studies on CSR and digital transformation was 6.87 in 2022.

4.5. Three Field Plot (Sankey) Diagram

The most important results are shown in Figure 5 in the three-field plot graph created by selecting country, author and keyword parameters.
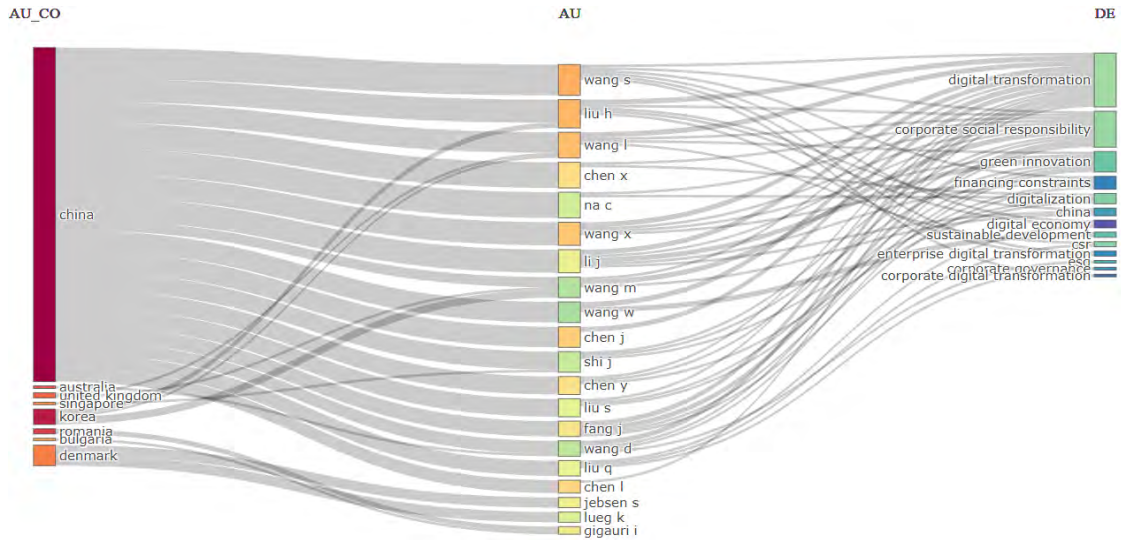
Figure 5. Sankey Diagram based on country, author and keyword parameters

The largest boxes indicate the magnitude of the relationship among these parameters in Figure 5. The most important keyword in the studies is digital transformation, the leading country is China and Wang S is the leading author according to the author parameter.

4.6. The Most Productive Journals in CSR and Digital Transformation Studies

The ranking of the 20 most productive journals based on the h-index in CSR and digital transformation studies is given in Table 1.

Table 1. The 20 Most Productive H-Index-Based Resources for CSR and Digital Transformation Studies

Source	h_index	TC	NP	PY_start
Sustainability (Switzerland)	7	119	11	2020
Technological Forecasting And Social Change	3	36	3	2019
Journal Of Business Research	2	97	2	2021
International Journal Of Environmental Research And Public Health	2	63	2	2022
Journal Of Cleaner Production	2	47	4	2023
Emerging Markets Finance And Trade	2	46	2	2023
Economic Analysis And Policy	2	13	2	2023
Frontiers In Environmental Science	2	10	3	2022
Journal Of World Business	1	109	1	2022
Business Strategy And The Environment	1	88	1	2022

Journal Of Business Ethics	1	75	1	2019
Meditari Accountancy Research	1	65	1	2020
Journal Of Theoretical And Applied Electronic Commerce Research	1	61	1	2021
International Journal Of Innovation And Technology Management	1	42	1	2017
Frontiers In Psychology	1	30	1	2022
Scientific Reports	1	30	2	2023
International Journal Of Lean Six Sigma	1	23	1	2023
International Review Of Economics And Finance	1	23	1	2023
Plos One	1	21	1	2022
Amfiteatru Economic	1	19	1	2022

According to Table 1, Sustainability (Switzerland) ranks first with 7 h-index citations. Technological Forecasting and Social Change ranks second. According to the total number of citations, Sustainability (Switzerland-119), Journal of World Business (109), and Journal of Business Research (97) rank in the top three.

4.7. Most Productive Authors

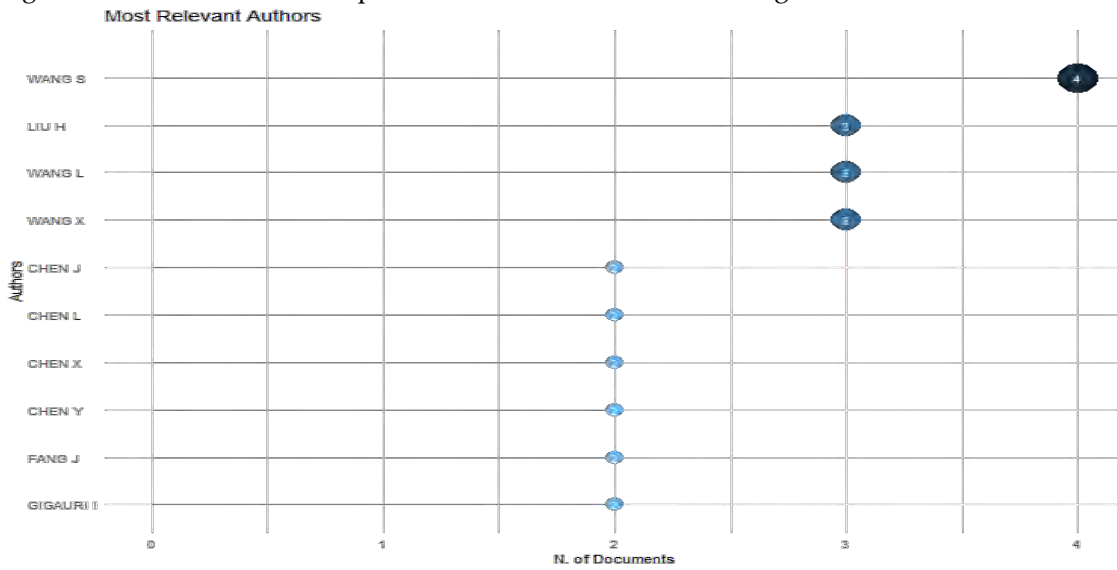Figure 6 shows the most prolific authors in CSR and digital transformation studies.

Figure 6. Most Relevant Authors

As seen in Figure 6, WANG, S. ranks first with 4 studies, while LIU, H., and 'WANG, L. & WANG, X.' are the second most productive authors with 3 studies.

4.8. Most Productive Countries and Intercountry Cooperation

In CSR and digital transformation studies, China ranks first with 139 articles, India ranks second with 13 articles and Indonesia and South Korea rank third with 10 articles. These countries are followed by Germany with 9, France with 8, USA with 8, Romania with 7, Spain with 7 and Italy with 6 articles. The cooperation map of countries in CSR and digital transformation studies is shown in Figure 7 below.
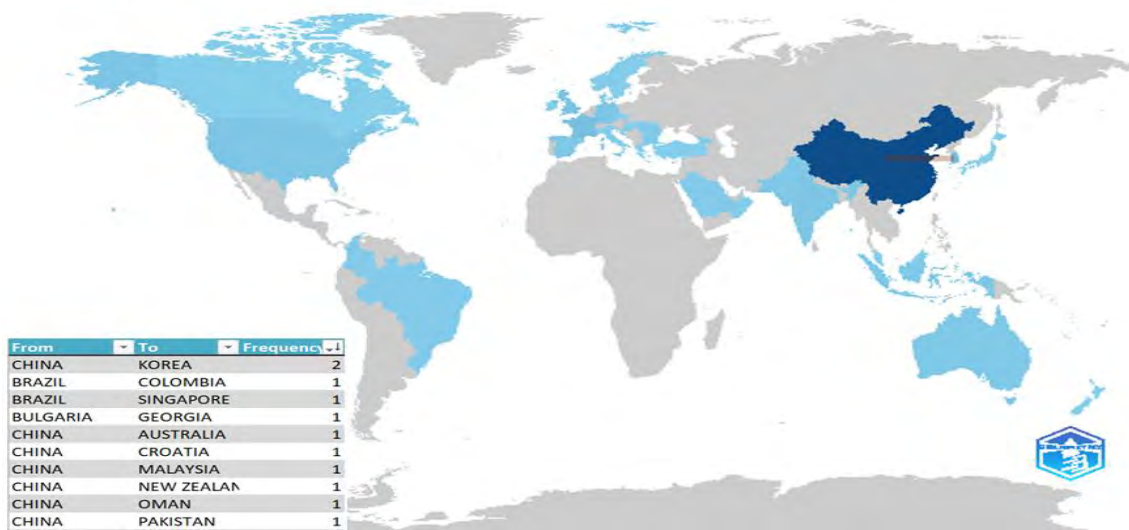
Figure 7. Most Cooperating Countries

According to the world cooperation map given in Figure 7, China and Korea, shown in dark blue, are the countries that cooperate the most with 2 studies. Brazil-Colombia, Brazil-Singapore and Bulgaria-Georgia follow these countries with 1 article.

4.9. Most Effective Articles

The ten most influential scientific articles about CSR and digital transformation according to the highest total number of citations (TC)are shown in Table 2.

Table 2. Top Ten Most Influential Scientific Articles According to Total Number of Citations

Paper	DOI	TC	TC per Year	Norm. TC
George G, 2022, J World Bus	10.1016/j.jwb.2022.101326	109	36,33	5,29
Nayal K, 2022, Bus Strategy Environ.	10.1002/bse.2921	88	29,33	4,27
Etter M, 2019, J Bus Ethics.	10.1007/s10551-019-04212-w	75	12,5	3,78
Lombardı R, 2020, Meditari Account Res.	10.1108/MEDAR-04-2020-0870	65	13	3,03
Gupta S, 2021, J Theor Appl Electron Commer Res.	10.3390/jtaer16050068	61	15,25	4,82
Mazzucchellı A, 2021, J Bus Res.	10.1016/j.jbusres.2020.11.055	59	14,75	4,66
Su R, 2022, Int J Environ Res Public Health	10.3390/ijerph19031592	46	15,33	2,23
Kong D, 2023, Emerg Mark Financ. Trade	10.1080/1540496X.2023.2199122	44	22	5,06
Lıchtenthaler U, 2017, Int J Innov. Technol. Manage.	10.1142/S0219877017500183	42	5,25	1
Zhong X, 2023, J Bus. Res.	10.1016/j.jbusres.2022.113478	38	19	4,37

As Table 2 shows, the most cited article with (109) citations is the article titled 'Digital transformation, sustainability, and purpose in the multinational enterprise' by George & Schillebeeckx (2022), published in the Journal of World Business. This article is followed by the article titled 'The impact of sustainable development strategy on sustainable supply chain firm performance in the digital transformation era' by Nayal et al. (2022) and published in Business

Strategy and the Environment with 88 citations. In third place with 75 citations is the article titled 'Sharing economy, sharing responsibility? Corporate social responsibility in the digital age.' These three most influential articles emphasized the following topics:

George & Schillebeeckx (2022) examined developments in multinational enterprises and how they face organizational, geopolitical and market tensions, combining digitalization with environmental and pandemic-driven changes. Nayal et al. (2022) examined the role of collaboration and coordination in a digitally enabled supply chain (SC) to ensure sustainability. Etter et al, (2019) examined the moral and ethical dimension and major problems of the sharing economy, which promises a more sustainable and democratic economic environment.

4.10. Most Important Organizations in the Study Field

Information on the scientific studies of the organizations of the authors who contributed to CSR and digital transformation studies is given in Table 3.

Table 3. Organizations with the Most Broadcasts

Affiliation	Articles
Yunnan University of Finance and Economics	10
School Of Economics and Management	7
University Bosowa	6
Bucharest University of Economic Studies	5
China Unıversity Of Mining and Technology	4
Gachon University	4
Guangdong University of Foreign Studies	4
Henan University of Economics and Law	4
Huazhong Unıversıty Of Sıience and Technology	4
Indian Institute Of Management Shillong	4

According to Table 3, the most productive institutions are Yunnan University of Finance And Economics which is ranked first with 10 articles, School of Economics And Management second with 7 papers and University of Bosowa third with 6 papers.

4.11. Keyword Cloud and Tree Map

Figure 8 shows the word cloud created according to the keyword plus and the tree map created according to the keywords of the authors in the studies on CSR and digital transformation.

Figure 8. Keyword Cloud and Tree Map

According to Figure 8, corporate social responsibility (34), China (24) and digital transformation (18) are the most frequently repeated words in the word cloud map. These words are followed by digitization, social aspects, human, innovation, economic and social effects, social responsibility, manufacturing, sustainability and business. The size of the rectangles in the treemap points out that the most common keywords used by the authors are digital transformation 28% (blue), corporate social responsibility 17% (orange), CSR 4% (green), digitalization 3% (red), and sustainability 3% (magenta).

4.12. Conceptual Structure Map

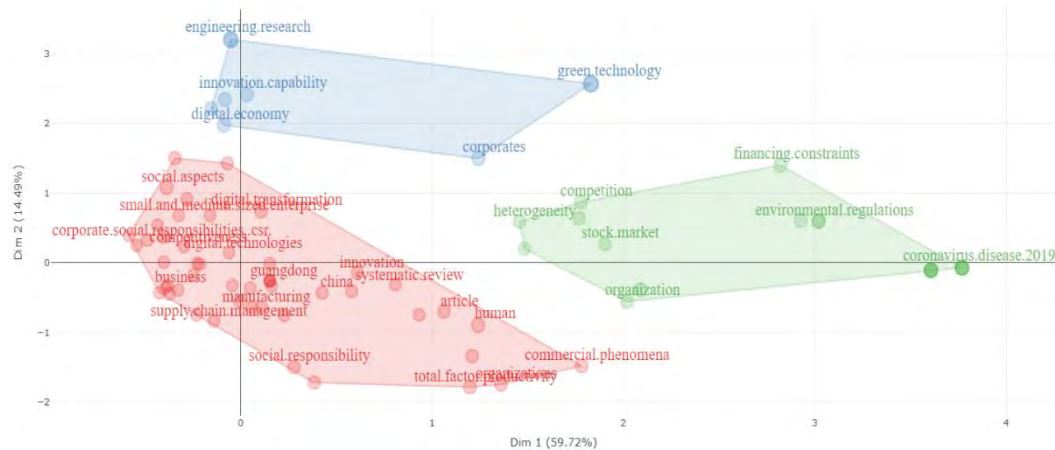The conceptual structure map of CSR and digital transformation studies is shown in Figure 9.

Figure 9. Conceptual Structure Map

As shown in the conceptual structure map in Figure 9, it was determined that the keywords in the studies on CSR and Digital transformation consist of 3 clusters.

The first cluster (red), consists of words such as corporate social responsibility, China, digital transformation, sustainable development, social aspects, social responsibility, sustainable development goal, strategic approach and total factor productivity. The studies in this cluster focus on CSR, digital transformation and sustainable development.

The second cluster (blue) consists of words such as corporates, digital economy, green technology, technology innovation, empirical analysis, engineering research, green technology innovation, innovation capability and regression analysis. The studies in this cluster focus on digital economy and innovation.

The third cluster (green) consists of words such as heterogeneity, competition, environmental policy, government, investments, stock market, commerce, conservation of natural resources, coronavirus disease 2019, digital technology, environmental regulations, financial management and financing constraints. It can be said that the studies in this cluster focus mostly on environmental changes and policies due to the impact of COVID 19.

4.13. Trend Topics

Trend topics related to CSR and digital transformation, determined as a result of the analysis of studies conducted in the literature between 2017 and 2024, are presented in Table 4.

Table 4. Trend Topics

item	freq	year_q1	year_med	year_q3
Esg	4	2024	2024	2024
Enterprise digital transformation	3	2024	2024	2024
Green innovation	5	2023	2024	2024
Sustainable development	5	2022	2022	2024
Corporate governance	3	2022	2022	2022
Corporate social responsibility	33	2022	2023	2023
China	3	2021	2021	2022
Digital transformation	55	2021	2023	2024
Csr	7	2021	2023	2023
Artificial intelligence	4	2020	2020	2021
Sustainability	6	2020	2021	2021

According to Table 4, the word 'esg (environmental, social and governance)' ranked first with 4 citations and the word 'enterprise digital transformation' with 3 citations as the most trending topics in all periods of 2024. The word 'green innovation' became a trending topic in the first quarter of 2023 and the second and third quarters of 2024, with 5 references. Between 2020 and 2024, the words of digital transformation (55 times), corporate social responsibility (33 times), CSR (7 times), sustainability (6 times), sustainable development (5 times) were repeated several times and became the most frequently studied trend topics.

4.14. Co-Occurrence Keyword Analysis

Common research themes across studies are shown in Figure 10. For the co-occurrence analysis of keywords in corporate social responsibility and digital transformation studies, at least two keyword criteria were selected in the VOSviewer software with the co-occurrence and author keywords options, and 31 items, 9 clusters, 90 networks, and 152 total relationship networks were determined.
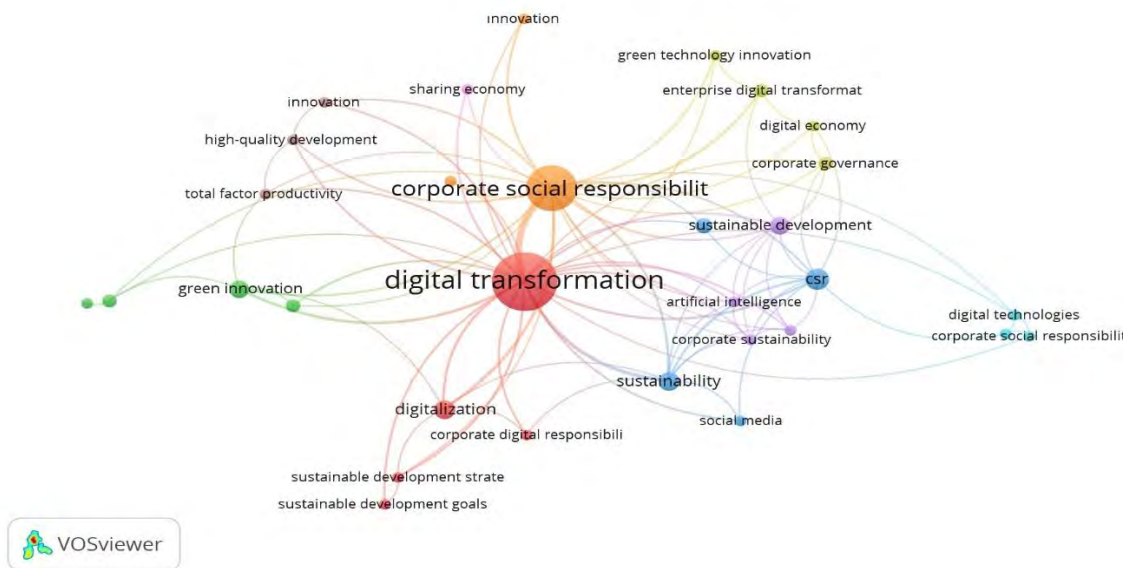

Figure 10. Network Map of Most Used Keywords

Figure 10 shows that, according to the co-occurrence analysis, the keywords most used by the authors consist of a total of nine clusters.

The 1st cluster includes the keywords sustainable development strategy, sustainable development goals (sdgs), digital transformation and corporate digital responsibility. These words focus on sustainable digital strategies.

The 2nd cluster includes the keywords green innovation, financing constraints, corporate digital transformation and China. These words focus on green innovation and digital transformation.

The 3rd cluster includes the keywords sustainability, social media, esg and CSR. These words focus on sustainability and social media efforts.

The 4th cluster includes the keywords green technology, innovation, enterprise digital transformation, digital economy and corporate governance. These words focus on green technology and digital economy.

The 5th cluster includes the keywords artificial intelligence, corporate sustainability, sustainable development and supply chain management. These words focus on artificial intelligence and sustainable development.

The 6th cluster includes the keywords digital transformation, digitalization, digital Technologies and corporate social responsibility. These words focus on digital transformation and corporate social responsibility.

The 7th cluster includes the keywords innovation, corporate social responsibility, artificial intelligence. These words focus on innovation and corporate social responsibility.

The 8th cluster includes the keywords total factor productivity, innovation and high-quality development. These words focus on total factor productivity and high-quality development.

The word sharing economy is included in the 9th cluster. It focuses on sharing economy issues.

In Figure 11, the result obtained by the co-occurrence analysis of keywords is given with an overlay visualization to show how keywords are used in studies over time.
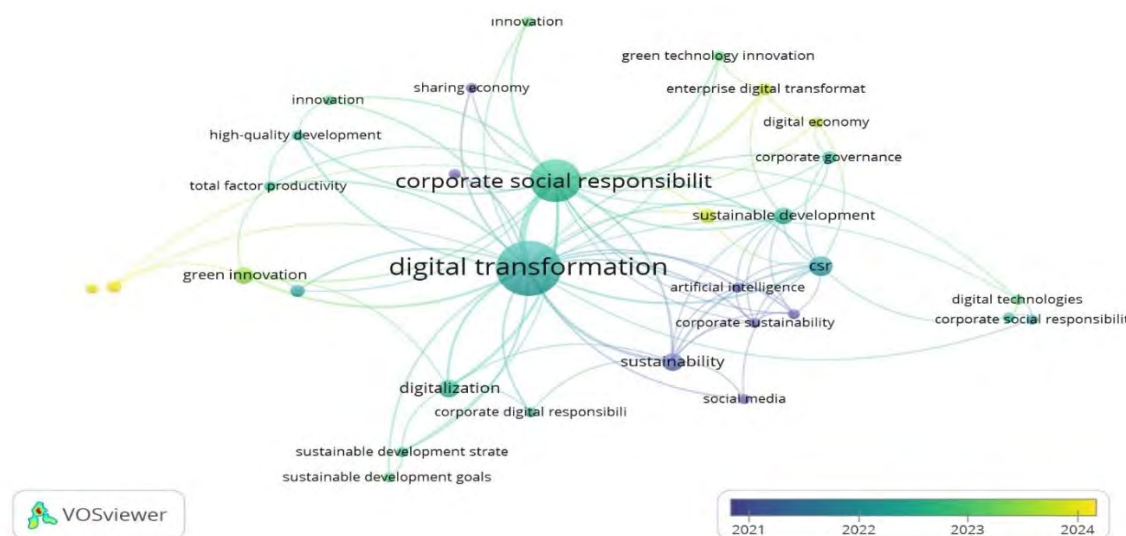

Figure 11. Use of Keywords Overtime

According to Figure 11, the most used keywords are digital transformation (55), corporate social responsibility (33), CSR (7), sustainability (6) and digitalization (6) respectively. The most used keyword by authors in 2024 is 'corporate digital transformation'. In 2023, the words sustainable development goals, innovation, green technology innovation, esg, enterprise digital transformation, digital technologies, digital economy and green innovation were most used.

4.15. Thematic Map Analysis

Figure 12 shows thematic analysis findings based on the keywords used by authors in CSR and digital transformation studies.
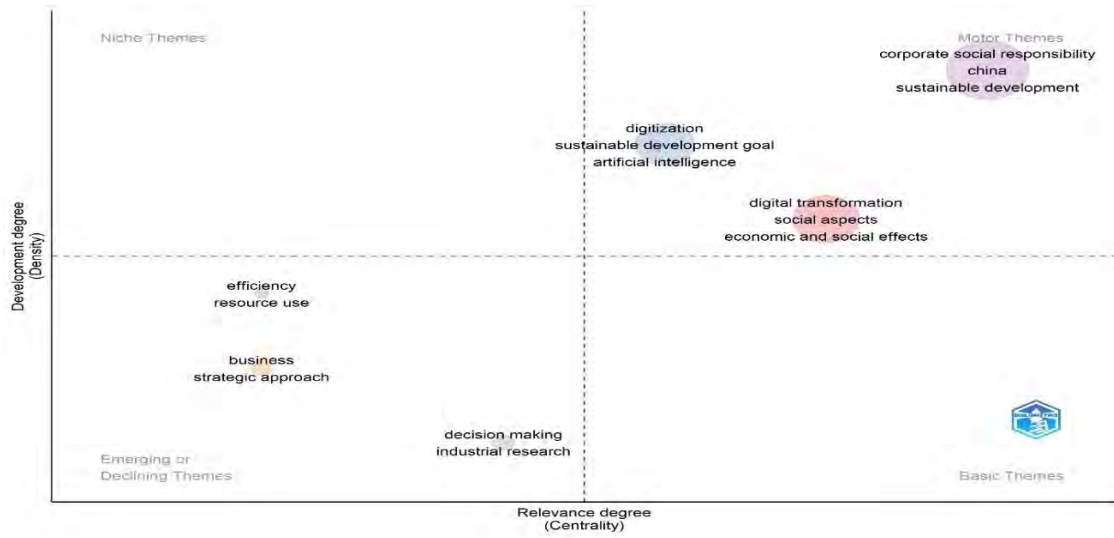
Figure 12. Thematic Map by Keywords

Figure 12 shows that in the thematic analysis regarding corporate social responsibility and digital transformation, no clusters were formed in the basic and niche theme groups. Three different clusters emerged in the motor theme group, which includes both central and common keywords that are most used in scientific studies and citations. The three clusters in the motor theme group are as follows:

The first cluster is the digital transformation cluster. This cluster includes the words digital transformation, social aspects, economic and social effects, corporate social responsibilities, corporates, metadata, social responsibilities, climate change, e-learning, empirical analysis, engineering research, green technology innovation, knowledge, non-profit organization, public relations, regression analysis and systematic review.

The second cluster is the digitization cluster and composed of digitization, sustainable development goal, artificial intelligence, competitiveness, digital economy, theoretical study, digital technologies, governance approach, green innovations, Guangdong, industrial performance, innovation capability, numerical model, Shanghai, Shenzhen, small and medium-sized enterprise words.

The third cluster is the corporate social responsibility cluster. This cluster consists of the words corporate social responsibility, China, sustainable development, human, innovation, social responsibility, article, manufacturing, sustainability, heterogeneity, investment, organization, competition, covid-19, environmental policy, environmental protection, government, green technology, humans, investments, stock market, technology innovation, capital market,

commerce, commercial phenomena, conservation of natural resources, digital technology, environmental regulations, environmental technology, epidemic, financial management, financing constraints, organizations, productivity, social problems, supply chain management and total factor productivity.

Three clusters emerged in the newly emerging or disappearing theme group with low density and low centrality characteristics. The first cluster of this theme group includes decision making and industrial research, the second cluster business and strategic approach and the third cluster efficiency and resource use concepts.

5.DISCUSSION

In this study, scientific studies conducted worldwide on corporate social responsibility and digital transformation research were examined using bibliometric analysis. The relationship between corporate social responsibility and digital transformation was examined, and the performances of the studies included in these studies, such as the best authors, countries, most influential studies, trending topics and citations, were examined. Regarding the subject, a bibliometric analysis was carried out by examining a total of 107 documents in the Scopus database published between 2017-2024.

In this field, the highest percentage of studies were conducted in the subject areas of Business, Management and Accounting (22%), Social Sciences (14.4%), Environmental Science Economics (14%), and Econometrics and Finance, respectively. 12 of the total 281 authors published as a single author. The studies have a very high annual growth rate of 60.13%. The average age of the documents is 1.58 years and each document is cited at a high average rate (10.98). The number of publications in this field has been increasing over the years worldwide. The highest increase in the number of publications occurred in 2023. In the years of increasing trend, it seems that the fields of corporate social responsibility and digital transformation have received high attention from authors.

In the Sankey diagram created according to the country, author and keyword relationship, the most important keyword is "digital transformation". The most prominent country is China and the most prominent author is Wang, S.. In this field, "Sustainability (Switzerland)", "Journal of Cleaner Production" and "Frontiers in Environmental Science" are the most productive journals, and Wang S, Liu H, Wang L and Wang X are the most productive authors. "Sustainability (Switzerland)" and "Technological Forecasting and Social Change" magazines are the most cited sources in h-index. According to the total number of citations, "Sustainability (Switzerland)", "Journal of World Business" and "Journal of Business Research" are the journals with the most total citations.

China, India, Indonesia and South Korea are the most productive countries in CSR and Digital transformation studies. China and Korea are the countries that cooperate the most in the studies. Yunnan University Of Finance And Economics, School of Economics And Management and University Bosowa are the most productive institutions in studies in this field.

Corporate social responsibility, China and digital transformation are the most frequently used words in the keyword plus option. According to the keywords used by the authors in the research, the most used words were digital transformation (28%), corporate social responsibility (21%), digitalization (3%) and sustainability (3%).

Conceptual structure analysis showed that scientific studies consist of three clusters as studies on "CSR, digital transformation and sustainable development", "digital economy and innovation" and "environmental changes with the impact of COVID-19 and policy". The COVID-19 pandemic has changed working styles and increased efforts to develop a more agile and flexible workforce,

(Hamouche et al., 2023). This process has promoted the digitalization of businesses (Amankwah-Amoah et al., 2021).

Trending topics in the field of CSR and digital transformation include esg, enterprise digital transformation, green innovation, sustainability and sustainable development, respectively. In the co-occurrence analysis of keywords, it was determined that the common research themes consisted of nine clusters and the authors focused more on these studies. It can be said that these issues are important issues for researchers in the future. Current research shows that digital transformation has recently focused on benefits such as corporate governance, social responsibility and corporate image, as well as positive effects such as company efficiency and financial performance (Dai & Zhu, 2024). It has been determined that corporate digital transformation has a significant impact on green innovation in sectors where the digital economy is weak and competition is low and in large-scale companies (Zhang et al., 2021). As the core component of the digital economy, enterprise digital transformation plays an important role in advancing green technological innovation and sustainable economic model (Liu et al., 2024). Artificial intelligence has led to significant advances in the development of enterprise digital transformation (Ruzsa, 2020). Businesses improve their economic power by encouraging digital transformation. It is inevitable for businesses to undertake social responsibility by supporting the ecological and environmental structure for long-term development. Green innovation is recognized as an important tool that combines these environmental and economic benefits (She & Zhang, 2024).

In the co-occurrence analysis of keywords, corporate digital transformation, sustainable development goals, innovation, green technology innovation, esg, enterprise digital transformation, digital technologies, digital economy, green innovation were the most used words by the authors in the 2023 and 2024 studies. In general, the research results reveal that digital technology has a positive contribution to green innovation, reducing production costs and providing a competitive advantage against other institutions (Zhang et al., 2021). Green innovation promotes the digital transformation of businesses by ensuring that businesses have stable resource bases in the long term and eliminate environmental problems. For this reason, governance strategies should be implemented while increasing and developing production through innovation and the establishment of a green + digital economy ecosystem in enterprises should be encouraged (She & Zhang, 2024).

In thematic map analysis, three motor theme clusters were identified as the most studied topics in the studies: digital transformation, digitization and corporate social responsibility. Concepts in these motor themes have been the most frequently investigated topics by researchers. In the thematic analysis, three clusters emerged as newly emerging or disappearing theme group. Emerging theme groups are composed of the concepts of "decision making and industrial research", "business and strategic approach", and "efficiency and resource use". These topics are more focused on CSR issues. It can be said that for the development of the global economy and sustainable society, the strategy of implementing ESG principles is an inevitable necessity (Li et al., 2021; Dai & Zhu 2024).

Numerous studies in the literature show that digitalization positively affects CSR elements (Zhang et al., 2021; George & Schillebeeckx, 2022; Jiang et al., 2023; She & Zhang, 2024; Li et al., 2021; Dai & Zhu 2024). Corporate digitalization strengthens corporate social responsibility activities (Jiang et al., 2023, p.25). In a study conducted in China between 2010 and 2020, it was determined that corporate digitalization increased corporate social responsibility performance in businesses and had a strengthening effect, and as a result of this interaction, the level of business R&D innovation increased (Jiang et al., 2023).

Digitalization also imposes the responsibility to businesses of using data and digital technology in a social, economic, technological and environmentally sensitive way (Muzykant et al., 2020). Digital technologies help sustainable development by creating flexibility, agility and transparency, enabling efficiency, productivity, cost reduction and delivery time reduction (Nayal et al., 2022). CSR responsibilities of multinational companies increase especially with the increase in digitalization. This situation puts multinational companies in a disadvantaged position against their local competitors at the same level due to increases in associated costs (George & Schillebeeckx, 2022).

This study is limited to the Scopus database within the framework of corporate social responsibility and digital transformation studies. Future studies could use different databases and may focus on trending topics and emerging research themes.

6. CONCLUSION AND IMPLICATIONS

In this study, a bibliometric analysis of data obtained from scientific studies published in Scopus between 2017 and 2024 on corporate social responsibility and digital transformation was carried out. The study provides comprehensive information on CSR and digital transformation literature.

According to the results of the research, China is the most productive and most collaborative country in CSR and digital transformation studies, Yunnan University of Finance and Economics is the most productive organization, and Wang S is the most productive author. Sustainability (Switzerland) journal is the most published and most cited journal. The most important keywords used by the authors on this subject are "digital transformation", "corporate social responsibility" and "sustainability". Studies are carried out under three conceptual clusters: "Sustainable development", "digital economy and innovation", and "environmental changes and policy". Among trending topics, ESG (environmental, social and governance) is the most popular topic. "Decision making and industrial research", "business and strategic approach" and "efficiency and resource use" are the clusters that formed the newly emerged theme group. It has been determined that China has made significant contributions to studies in this field, but the cooperation of other countries is quite low.

Scientific studies in the field of CSR and digital transformation tend to increase rapidly around the world. The findings of this study confirmed the strong positive relationship between CSR and digital transformation through bibliometric analysis. The rapid increase in digital transformation has a significant contribution to increasing the corporate social responsibility efforts of businesses. Environmental and technological changes lead to changes in working styles and require businesses to adapt. In ensuring this harmony, innovation and studies on fulfilling the requirements of CSR, ESG, governance strategies, green technology and green digital economy concepts for a sustainable future have become important. This study can contribute to researchers and practitioners around the world developing an understanding of how businesses can further improve their CSR activities with digital transformation. In addition, the study can contribute to the development of new perspectives on potential research areas for business executives and researchers and increase the collaboration of authors for joint studies.

References

Aktan, C. C., & Börü, D. (2007). Kurumsal sosyal sorumluluk: *İşletmeler ve sosyal sorumluluk*, 11-36. İGİAD Yayını.

Alparslan, A. G. A., & Aygün, M. (2013). Kurumsal Sosyal Sorumluluk ve Firma Performansı. *Süleyman Demirel Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, *18*(1), 435-448.

Amankwah-Amoah, J.; Khan, Z.; Wood, G.; Knight, G. COVID-19 and digitalization: The great acceleration. J. Bus. Res. 2021, 136, 602–611. https://doi.org/10.1016/j.jbusres.2021.08.011.

Argüden, Yılmaz (2007). "Kurumsal Sosyal Sorumluluk". (Ed.: C. C. Aktan), *Kurumsal Sosyal Sorumluluk:İşletmeler ve Sosyal Sorumluluk* (s. 37-44). İstanbul: İGİAD Yayınları.

Aria, Ma., Cuccurullo, C. (2017). Bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics*, 11(4), 959-975. https://doi.org/10.1016/j.joi.2017.08.007

Bocken, N. M., & Short, S. W. (2021). Unsustainable business models – Recognising and resolving institutionalised social and environmental harm. *Journal of Cleaner Production*, *312*, 127828. https://doi.org/10.1016/j.jclepro.2021.127828

Büyükyılmaz, O., & Fidan, Y. (2015). Kurumsal Sosyal Sorumluluk: Kavramsal Bir Bakış. *Business & Management Studies: An International Journal*, *3*(3), 364-381. https://doi.org/10.15295/bmij.v3i3.127

Carroll, A. B. (2015). Corporate social responsibility: The centerpiece of competing and complementary frameworks. *Organizational Dynamics*, 44(2), 87-96. https://doi.org/10.1016/j.orgdyn.2015.02.002

Chen, H., Chiang, R. H., & Storey, V. C. (2012). Business intelligence and analytics: From big data to big impact. *MISQuarterly*, 1165-1188. https://doi.org/10.2307/41703503

Crane, A., Matten, D., & Spence, L. J. (2013). Corporate Social Responsibility in a Global Context (September 1, 2013). Chapter in: Crane, A., Matten, D., and Spence, L.J., 'Corporate Social Responsibility: Readings and Cases in a Global Context', 2/e. Abingdon: Routledge, pp. 3-26 , Available at SSRN: https://ssrn.com/abstract=2322817

Dai, J., & Zhu, Q. (2024). ESG performance and green innovation in a digital transformation perspective. *American Journal of Economics and Sociology*, *83*(1), 263-282. https://doi.org/10.1111/ajes.12541

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, *133*, 285-296. https://doi.org/10.1016/j.jbusres.2021.04.070

Engin, E., & Akgöz, B. (2013). Sürdürülebilir Kalkinma Ve Kurumsal Sürdürülebilirlik Çerçevesinde Kurumsal Sosyal Sorumluluk Kavraminin Değerlendirilmesi. *Selçuk İletişim*, *8*(1), 85-94. https://doi.org/10.18094/si.78508

Etter, M., Fieseler, C., & Whelan, G. (2019). Sharing economy, sharing responsibility? Corporate social responsibility in the digital age. *Journal of business ethics*, *159*, 935-942. https://doi.org/10.1007/s10551-019-04212-w

George, G., & Schillebeeckx, S. J. (2022). Digital transformation, sustainability, and purpose in the multinational enterprise. *Journal of World Business*, *57*(3),1-8. https://doi.org/10.1016/j.jwb.2022.101326

Goyal, R., Sharma, H., & Sharma, A. (2023). A thorough examination of organizations from an ethical viewpoint: A bibliometric and content analysis of organizational virtuousness studies. *Business Ethics, the Environment & Responsibility*, *33*(1), 129-144. https://doi.org/10.1111/beer.12597

Hamouche, S., Koritos, C. and Papastathopoulos, A. (2023), "Quiet quitting: relationship with other concepts and implications for tourism and hospitality", *International Journal of Contemporary Hospitality Management*, 35(12), 4297-4312. https://doi.org/10.1108/IJCHM-11-2022-1362

Henriette, E., Feki, M. & Boughzala, I. (2016). Digital Transformation Challenges. Proceedings Mediterranean Conference on Information Systems (MCIS): 33. https://aisel.aisnet.org/mcis2016/33

Holcomb, J. L., Upchurch, R. S., & Okumus, F. (2007). Corporate social responsibility: what are top hotel companies reporting?. *International Journal of Contemporary Hospitality Management*, 19(6), 461-475.

Huang, G., & Shen, L. (2023). The Bidirectional Relationship between Digital Transformation and Corporate Social Responsibility: A Legitimacy Perspective. *Sustainability*, *16*(7), 3029. https://doi.org/10.3390/su16073029

Jiang, W., Wu, J., & Yang, X. (2023). Does digitization drive corporate social responsibility? *International Review of Economics & Finance*, *88*, 14-26. https://doi.org/10.1016/j.iref.2023.06.010

Kane, G. C., Palmer, D., Phillips, A. N., Kiron, D., & Buckley, N. (2015). Strategy, not technology, drives digital transformation. *MIT Sloan Management Review*.

Kannan, P., & Hongshuang, A. L., (2017). Digital marketing: A framework, review and research agenda. *International Journal of Research in Marketing*, *34*(1), 22-45. https://doi.org/10.1016/j.ijresmar.2016.11.006

Klein, M. (2020). İşletmelerde dijital dönüşüm ve etmenleri. *Journal of Business in The Digital Age*, *3*(1), 24-35. https://doi.org/10.46238/jobda.729499

Li, T. T., Wang, K., Sueyoshi, T., & Wang, D. D. (2021). ESG: Research progress and future prospects. *Sustainability*, *13*(21), 1-28. https://doi.org/10.3390/su132111663

Liu, K., Liu, X., & Wu, Z. (2024). Nexus between Corporate Digital Transformation and Green Technological Innovation Performance: The Mediating Role of Optimizing Resource Allocation. *Sustainability*, *16*(3), 1-21. https://doi.org/10.3390/su16031318

Muzykant, V., Komarov, V., Shalnova, O., Grinberg, T., & Muqsith, M. A. (2020). Corporate social responsibility in the digital transformation of business ecosystems. *Int J Innov Creativity Change*, *14*(5), 1295-1313.

Nayal, K., Raut, R. D., Yadav, V. S., Priyadarshinee, P., & Narkhede, B. E. (2022). The impact of sustainable development strategy on sustainable supply chain firm performance in the digital transformation era. *Business Strategy and the Environment*, *31*(3), 845-859. https://doi.org/10.1002/bse.2921

Orbik, Z., & Zozulakova, V. (2019). Corporate social and digital responsibility. Management Systems in Production Engineering, 27(2), 79-83. DOI 10.1515/mspe-2019-0013

Özgener, Ş. (2009). İş Ahlakının Temelleri: Yönetsel Bir Yaklaşım. (2. Baskı). *Ankara: Nobel Yayın Dağıtım*.

Plekhanov, D., Franke, H., & Netland, T. H. (2023). Digital transformation: A review and research agenda. *European Management Journal*, *41*(6), 821-844. https://doi.org/10.1016/j.emj.2022.09.007

Robins, F. (2005). The future of corporate social responsibility. *Asian Business & Management*, *4*, 95-115. https://doi.org/10.1057/palgrave.abm.9200125

Ruzsa, C. (2020). Digital twin technology - external data resources in creating the model and classification of different digital twin types in manufacturing. *Procedia Manufacturing*, *54*, 209-215. https://doi.org/10.1016/j.promfg.2021.07.032

She, J., & Zhang, Q. (2024). Green innovation and enterprise digital transformation: Escape from the "dilemma" of development and governance choices. *PLOS ONE*, *19*(5), e0301266. https://doi.org/10.1371/journal.pone.0301266

Van Beurden, P., & Gössling, T. (2008). The worth of values–a literature review on the relation between corporate social and financial performance. *Journal of Business Ethics*, *82*, 407-424. https://doi.org/10.1007/s10551-008-9894-x

Van Eck, N. J., & Waltman, L. (2017). Citation-based clustering of publications using CitNetExplorer and VOSviewer. Scientometrics, 111(2), 1053-1070. https://doi.org/10.1007/s11192-017-2300-7

Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Qi Dong, J., Fabian, N., & Haenlein, M. (2020). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, *122*, 889-901. https://doi.org/10.1016/j.jbusres.2019.09.022

Wu, W., Wang, H., Lu, L., Ma, G., & Gao, X. (2023). How firms cope with social crisis: The mediating role of digital transformation as a strategic response to the COVID-19 pandemic. *PLoS One,* 18(4), 1-12.

Zhang, Q., Yang, M., & Lv, S. (2021). Corporate Digital Transformation and Green Innovation: A Quasi-Natural Experiment from Integration of Informatization and Industrialization in China. *International Journal of Environmental Research and Public Health*, *19*(20), 13606. https://doi.org/10.3390/ijerph192013606

Zheng, Y., & Zhang, Q. (2023). Digital transformation, corporate social responsibility and green technology innovation- based on empirical evidence of listed companies in China. *Journal of Cleaner Production*, *424*, 138805. https://doi.org/10.1016/j.jclepro.2023.138805