

Digital Transformation and Corporate Social Responsibility: A Systematic Literature Review and Bibliometric Analysis

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Abstract

The article studies the impact of the influence of digitalization on corporate social responsibility (CSR), based on literature and a systematic and bibliometric analysis. CSR is a key element for success in the business world, it is the strategy to achieve sustainable commercial development. A socially responsible organization bases its activities on the commitment and responsibility to satisfy the needs of stakeholders, without causing negative impacts, achieving maximum commercial profit and minimizing costs (total customer satisfaction by exceeding their expectations). It is necessary that companies adopt technological advances to boost communication, facilitate access to information, improve decision-making and optimize the management of the company. The applied methodology is PRISMA, through the analysis of scientific/academic bibliographic information. Finally, the digital transformation has advantages and disadvantages; while CSR faces several challenges regarding the implementation of this transformation (Big Data, artificial intelligence, robotics, blockchain, Internet of Things, etc.), as it constitutes a vast field, which presents certain ambiguities and it is necessary to develop cybersecurity to ensure transparency, the quality of information, and the safety of all.

In this context, we will first examine the basic definitions of technological innovation and CSR. We will then analyse the relationship between these two concepts. Finally, we will propose a synthesis of the empirical research on the subject and study the results obtained.

Keywords: Digital transformation, Corporate social responsibility, Technology, Business technology development,

Introduction

Digital transformation has become a key driver of change for businesses, profoundly changing organizational processes, business models and stakeholder interactions. In this context, the Corporate Social Responsibility (CSR) is also influenced by this technological evolution. Digital tools, such as collaborative platforms, artificial intelligence and blockchain technologies (blockchain), enable companies to better measure, manage and communicate their social and environmental performance. They increase the transparency of supply chains, optimize energy efficiency and facilitate stakeholder engagement.

Nowadays, research on CSR is constantly increasing in different fields but many are interested in the digital sphere (Igalens and Tahri, 2012). Business CSR is at the heart of management science research. The development of corporate social responsibility (CSR) is one of the most significant trends in the last decade (Jo & Harjoto, 2011), it is part of a continuation of the efforts undertaken by companies to promote effective and ensure sustainability through technological practices that encourage accountability and transparency (Jo & Harjoto, 2011). We will start from this observation to focus on the CSR perceived by digitalization and its supposed relationship with values. It should be noted that there is a great deal of work on CSR and most of it focuses on the effects of the constituent elements of CSR on technological tools within organizations.

In the light of digitalization, CSR and digital transformation are becoming critical factors for a company's competitiveness (Orbik and Zozulakova, 2019). CSR is one of the components for improving the image of enterprises (Yoon et al, 2006). The digital transformation is the business environment affecting the sustainable trend of business models (Chandola, 2015) and is the most important element of the fourth industrial revolution (Vey, 2017). This fourth revolution has affected the overall structure of production systems by reducing transaction costs due to the digital economy and responding to personalized consumption trends (Park and Ko, 2018). Digital technologies affect all economic activities and value chains (from design to distribution to procurement) and are the source of new services and business models (Litan and Rivlin, 2001). Digitalisation also has important effects on jobs and working conditions (Rieffel, 2014). It allows for the automation of certain tasks and the elimination of certain posts, which leads to difficult changes in production methods and in companies (Frey and Osborne, 2017). Companies can only benefit from these changes if they are fully integrated into the dynamics of the technological and organisational models of this fourth industrial revolution. This is the price they will be able to take advantage of productivity gains and an increase in their turnover.

This research is also justified by the recent developments of meta-models on attitudes towards digital transformation and CSR. Indeed, understanding the digital transformation, in connection with CSR issues, is an essential step for any strategy aimed at integrating these dimensions into corporate management policies.

The objective of this study is to systematically map and critically synthesize the literature examining the relationship between digital transformation and corporate social responsibility. More specifically, the study combines bibliometric analysis with a PRISMA-guided systematic literature review to identify publication trends, influential sources and authors, conceptual clusters, intellectual structures and research gaps. The guiding research question is therefore: How does digital transformation influence CSR practices and the scholarly understanding of their relationship?

1. Digital transformation : Literature Review

Digitalization is a phenomenon linked to new consumer uses and new objects that directly impact current business and organization models (Digital Conseil, 2013). It has brought about massive changes in business and contemporary society with the advent of new business models and the destruction of existing systems, production modes (Choi, Shin and Baek, 2018). Innovative companies in existing services by combining their products with various information and communication technologies (ICT), such as the Internet of Things (IoT), artificial intelligence (AI). All these actions are called “digital transformation”. Digital transformation is the integration of digital technology in all areas of a company to change how it works and provides added value to its customers” (Mignot, 2019). It is therefore the adaptation of digital technology to business models. Moreover, digital transformation is the set of actions that will be adopted within companies in order to integrate digital technologies into their processes. This adoption and integration can result in the automation of repetitive tasks (...), the improvement of information circulation within the company (...), dynamic management of the client’s portfolio and prospects (...), or improvement of production processes (product or service) » (Timsit, 2018). The digital transformation process addresses change within companies and is guided by their strategy. This transformation is therefore part of a company’s digital strategy. In order to better differentiate them, it is said that the digital strategy manages the positioning of competitive advantage, while the digital transformation improves and manages organizational processes through the integration of digital technologies (Timsit, 2018).

Digital transformation is about driving change in business models and the business ecosystem by leveraging digital technologies (Whalen, 2015). The goal of digital transformation for companies is to do better than their competitors, to satisfy their customers, and in the end, not to be overseen to ensure the sustainability of enterprises even if they are forced to change their strategic areas of activity. The challenge is to survive the disruption imposed by new entrants and gradually across all sectors of activity. In fact, disruption is induced by the combination of mobile, social networks, cloud and big data (Wang, 2015). Digital transformation is a strategy for companies to integrate digital and physical components in order to change business models and set new directions in their industry (Vial, 2019). It generally refers to the process of creating new value and building business models using digital technology to dismantle and reorganize existing value chains (World Economic Forum, 2016).

In addition, businesses can promote their economic interests while creating social value (Porter and Krämer, 2006, 2011). Digital transformation is important for businesses through the connection of objects to objects, real-time information accumulation and analysis, product maintenance and service production (Kim, 2018). In particular, this digital transformation is criticized for the flexibility it offers. In terms of business, digital transformation does not only mean achieving commercial performance through the application of digital technology, rather to create new added value, new business models and changes in the company (Lee, 2019).

2. Corporate Social Responsibility: Theoretical Foundations

2.1. Evolution of the term CSR

The concept of CSR is not a new paradigm or a new managerial mode, as some claim, the idea of CSR as a practice is quite old and has its origins in centuries-old business practices. Indeed, the responsibility of entrepreneurs towards society has been addressed in the writings of historians and economists since the 14th century. The modern concept of CSR began to see the light towards the end

of the 19th century in a context marked by the transformation of American capitalism, characterized by the debate on the status of the company and the criticism made following the deviations observed in the system freedom of enterprise (Epstein, 2002; Heald, 1970).

Nevertheless, the evolution of CSR as an academic concept is contemporary and is first presented in the work of Bowen (1953), considered the «founding father» of CSR. His book testifies to the religious anchoring of CSR and marks the entry of the concept of CSR into the academic world (Gendron et AL, 2004). Since then, this concept has evolved both theoretically and conceptually. Davis (1960) and Walton (1967) will open the debate on the question of corporate responsibility for the social and environmental impacts of its activities. The 1960s were a turning point in the evolution of the concept of CSR. Indeed, the emergence of the welfare state will lead to the disappearance of the social role of the enterprise as defined in the paternalistic model, reducing it to the sole activity of production for consumption. The firm's main vocation now is to play its economic role, namely the obligation of maximising profit for the shareholder, the creation of jobs and consumer goods (Friedman, 1970).

Under this minimalist angle of the responsibility of the company, it will be concealed by claims with respect to its economic role, fed by questions relating to the remuneration of employees, the quality of products etc., but also by the increasingly preponderant role of enterprises. Thus, the massive multinational nature of companies following globalization will inflame these demands in the early 1980s. The power of companies, sometimes exceeding that of states, allows them to set the rules of the game of the international economy. To mitigate this state of affairs, CSR will be deployed as a mechanism to overcome the lack of national or international regulation capable of supervising and limiting the impact of industrial activity on society. Today, CSR is presented as a model that questions the legitimacy of the economic activity of the company in its social environment entangled by digitalization. Multiple interpretations are therefore attributed to CSR, following the diversity of actors and the development of technology.

2.2. Theoretical framework of CSR

Carroll's (1991) model proposes four fundamental dimensions of corporate social responsibility (CSR): economic, legal, ethical and philanthropic. Under this framework, companies must first meet economic responsibility by generating profits and then comply with legal obligations by complying with laws and regulations. The ethical dimension involves acting in a fair way, while the philanthropic responsibility concerns actions aimed at improving the well-being of society.

This model helps companies understand the diversity of their responsibilities to stakeholders, thus promoting a more structured approach to CSR.

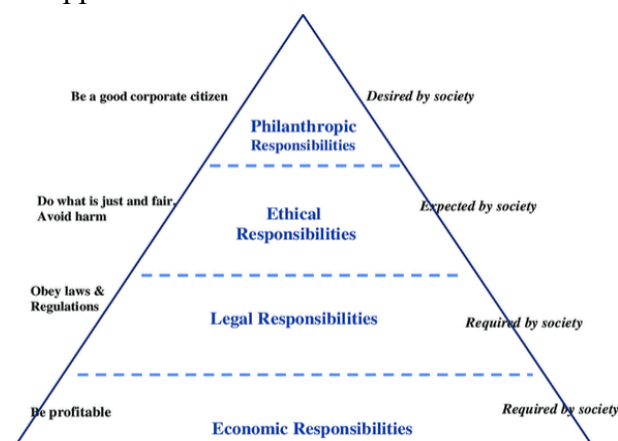


Figure 1: The CSR pyramid.

Source: Carroll's pyramid of CSR

In short, the Carroll (1991) model provides a framework for defining and assessing the social and environmental impact of businesses, helping them to align their practices with the expectations of stakeholders and society as a whole.

We can redefine Bowen's original vision of CSR in the digital age as a requirement to synchronize companies' decisions not only with society's values, but also with the transparency and accentuability amplified by digital technological advances. Stakeholders can now scrutinize companies' performance faster and more accurately with live dashboards, social media, digital reporting platforms, and information-laden supply chains. Thus, the digital transformation does not remove the traditional CSR framework; rather, it changes the speed, level of detail, and verifiability through which corporate responsibilities are tracked, judged, and questioned.

In general, CSR is closely associated with the development of technology today and consists of three main dimensions: economic, social and environmental. It also requires consideration of the various stakeholders in the company, such as employees, customers, suppliers, shareholders and non-governmental organizations. Developing social and environmental responsibility is of great interest to companies, as it allows them to improve their overall performance, to reduce the environmental and industrial risks associated with their activities and to strengthen their long-term competitiveness.

3. The impact of digital transformation on CSR

Digital transformation has a significant impact on Corporate Social Responsibility (CSR), changing both internal practices and stakeholder interactions. On the one hand, digital tools enable more efficient management of resources and processes, thus contributing to a reduction in the ecological footprint of companies. For example, the adoption of cloud solutions, energy management software or even the optimization of logistics chains through advanced technologies can reduce energy consumption and greenhouse gas emissions (PwC. 2019). On the other hand, digitalisation offers new opportunities to improve the transparency and traceability of CSR actions, by facilitating the communication of commitments and results on publicly accessible digital platforms. This strengthens the credibility and trust of stakeholders, while providing tools to measure social and environmental impact more accurately (Capgemini, (2020).

In addition, digitalization is transforming relationships with employees, customers and local communities by enabling better access to information and fostering more flexible and inclusive working practices such as telework or online collaboration (KPMG 2021). It can also facilitate the implementation of responsible consumption practices, such as through awareness platforms or online services that encourage sustainable behaviour.

CSR and digital transformation are two of the most important factors in global competitiveness in the modern world (Orbik and Zozulakova, 2019). Global companies have strengthened their CSR activities by implementing an emergency management system to respond to crises and participating in national emergency relief efforts. In addition, these companies are further strengthening their dominance in the online platforms market using digital transformation. These new digital technologies are likely to change consumer behaviour and recognition structurally (Hoffffman and Novak, 2017). Digital transformation therefore reduces the information asymmetry between companies and stakeholders (including consumers) by broadening information channels, as well as CSR activities.

The digital transformation has already made a significant contribution to reducing pollutant emissions and improving environmental protection (Orbik and Zozulakova, 2019). There are several cases of

pursuing environmental sustainability through digital transformation. Tesco (2020) uses artificial intelligence analysis to measure the environmental impact of sales activities and achieve carbon reduction targets (Watson, 2020). As a result, it becomes the first global company to align scientific goals. Using digital technology to reduce environmental impacts and the diversity of talent can improve companies' financial performance. Reducing carbon emissions or consuming resources can save costs. For example, Maersk, a global carrier, has reduced its fuel costs by 13% in the last two years by optimizing speed and routes through analysis of sensor data installed on ships (Kemp, 2015). Therefore, digital transformation can also play a role as an intermediary in strengthening CSR. Given the number of successful cases in CSR, its competitiveness can be achieved simultaneously with digital transformation.

Previously, technological innovation was seen as one of the main causes of economic non-sustainability, particularly in environmental terms, generating negative externalities such as pollution or undesirable social impacts, The European Commission has published a report on the European Union's work programme for the next five years. However, today, technological innovation is increasingly recognized as an opportunity for companies to contribute to sustainable development, that is to say CSR (Commission of the European Communities, 2002), while strengthening their competitiveness.

Finally, beyond innovation oriented towards environmental, social or societal objectives, some work has focused on the links between digital and CSR without trying to merge these two concepts.

4. Method and material

In line with the objective of this review, this document is based on a two-pronged approach: bibliometric analysis and systematic literature review (Donthu et al., 2021; Page et al., 2021; Prisma checklist, 2020). Both methodologies provide a comprehensive overview of a research area, while identifying emerging trends and existing gaps.

Bibliometric analysis is a powerful method for exploring large amounts of data from bibliographic databases such as Scopus, Web of Science or PubMed. Using visualization tools, such as VOSviewer, this method allows you to analyze metrics such as keyword co-occurrences, collaborations between authors, or article citations.

In addition, using the visualization tools of the Bibliometrix software integrated into R Studio, bibliometric analysis allows to process and summarize large quantities of bibliometric data. This software, known for its advanced features, offers powerful tools to analyze keyword co-occurrences, identify collaborative networks between authors and explore the relationships between cited articles (Aria & Cuccurullo, 2017). With its visualization capabilities in the form of matrices, graphs and cluster diagrams, Bibliometrix facilitates the presentation of the state of the art and emerging trends in a given subject or research area (Donthu et al., 2021). The systematic review is based on a rigorous and reproducible approach to identify, select, evaluate and synthesize relevant results from existing literature on a specific topic or research area. Using the guidelines proposed by PRISMA Checklist (2020), this approach ensures transparency and methodological quality of literature reviews, based on

a comprehensive selection of publications. The objective is to provide a coherent and critical synthesis of current knowledge, while highlighting gaps that could inform future research.

Script	Filters	Refine : Select based on years Title and key-Words
☐	☐	☐
☐ String : Corporate AND Social AND Responsibility AND Digital AND Transformation	☐ Database: Scopus	☐ Operation research
	☐ Language: English	☐ Data Science
	☐ Type : Journal, Article, Review	☐ Graphs
	☐ 576 Papers Found	☐ 220 Papers selected for bibliometry

Source: Scopus

4.1. Criteria documents

Pre-established inclusion criteria regarding the type of document, language, publication period and timeliness were used by the journal. The documents concerned were to be academic articles referenced in Scopus, written in English, published between 2010 and 2023. They had to explicitly address corporate social responsibility and digital transformation in the title, summary or keywords. Non-academic records, publications outside the study period, studies addressing only one of the two core concepts, duplicate records and bibliographically incomplete or clearly irrelevant entries were excluded. The initial Scopus export contained 576 records.

Data preparation was conducted in Zotero before export to Bibliometrix/RStudio and VOSviewer. Zotero's duplicate-detection function was first applied, followed by manual verification using DOI, title, authorship and publication year in order to avoid deleting distinct publications with similar titles. This first step removed 45 duplicate records. The remaining records were screened sequentially by title and abstract: 187 records were excluded because they did not substantively address CSR, and 78 were excluded because they did not substantively address digital transformation. A final eligibility check removed 46 additional records: 12 for insufficient thematic specificity to the CSR–digital transformation nexus, 7 residual duplicates detected during metadata harmonization, and 27 non-English records identified during final verification. The screening process resulted in 220 publications retained for the systematic review.

To clarify the analytical samples, the 576-record Scopus dataset was retained for the descriptive bibliometric indicators reported by Bibliometrix, while the relevance-screened corpus of 220 publications formed the basis for the systematic synthesis and the interpretation of the thematic and network structures. This distinction prevents the identification corpus from being conflated with the final review corpus and makes the screening logic reproducible.

For network visualization, VOSviewer was configured using full counting and association-strength normalization.

4.2. Research analysis

The PRISMA statement is a guide on research publishing designed to improve the integrity of reporting systematic reviews and meta-analyses. Since its publication in 2009, authors and researchers around the world have used the PRISMA statement to plan, prepare and publish systematic reviews and meta-analyses. Dissemination and implementation of the PRISMA statement seems to indicate

improvements in the quality of the publication of methods and results obtained from systematic reviews and meta-analyzes.

The database Scopus was searched it's the biggest online library, we usz the query “Corporate AND Social AND Responsibility AND Digital AND Transformation”. The search was limited to the 2010–2023 period and was closed in 2023. The PRISMA flow diagram reports each identification, deduplication, screening, eligibility and inclusion step.

The analysis was carried out in two complementary phases. Initially, we used Bibliometrix within RStudio to illustrate the progress of publications, the distribution of sources, editorial trends and thematic evolution. Secondly, the VOSviewer was used to analyze the co-occurrence of keywords, collaboration and cocitation structures.

we have represented the article plan as follows:

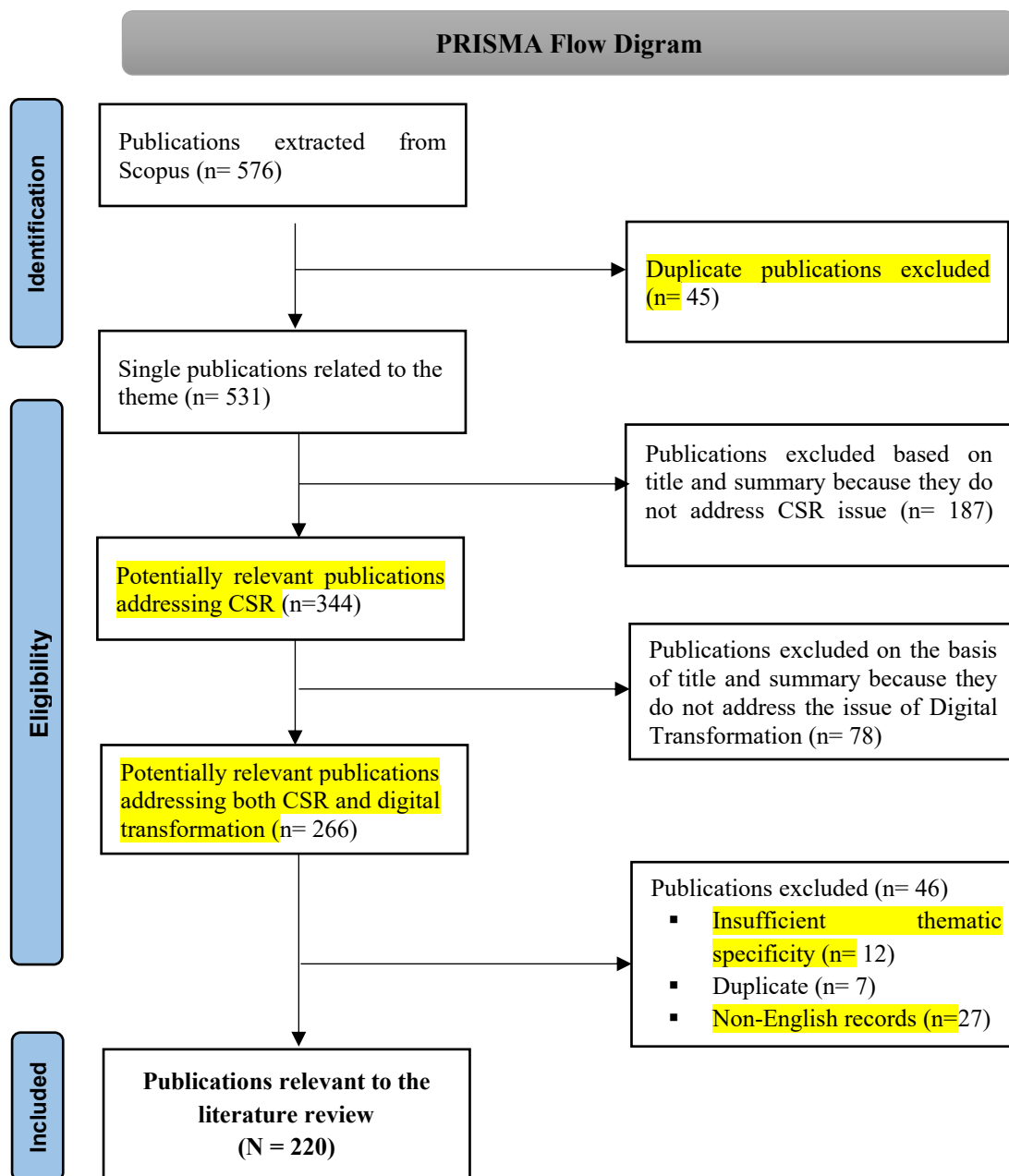


Figure 2: Diagram flow PRISMA

5. Results of bibliometric review

The bibliometric analysis highlights a marked expansion of research at the intersection of digital transformation and corporate social responsibility. The Scopus search identified 576 records between 2010 and 2023, with a clear acceleration in scientific output after 2019 and a pronounced concentration of publications between 2020 and 2023. Rather than reflecting a simple increase in volume, this trend signals the consolidation of a research agenda linking digital capability, sustainability, stakeholder accountability and responsible business practices.

The R Studio interface allows for extensive customization of analyses and graphics, thus meeting the specific needs of researchers (Aria & Cuccurullo, 2017; Cheng et al., 2022). The 576 publications included in this review were analyzed and synthesized. This section presents and discusses the results of the study.

The publications are predominantly distributed across interdisciplinary journals spanning management, business ethics, sustainability, information systems and environmental research. This distribution shows that the CSR–digital transformation relationship is not confined to a single discipline; instead, it is developing at the intersection of technological innovation, organizational change, governance and sustainable development.

The results will be presented in three different sections: (1) descriptive analysis, (2) conceptual structure, and (3) intellectual structure.

5.1.Descriptive analysis

The objective of this subsection is to provide a preliminary overview of publication distribution from two perspectives, by year and by journal. Based on the distribution of articles over time, as shown in Table 1. Between 2010 and 2023, the scientific output analysed shows a significant growth rate of 38.85% per year, totalling 576 documents from 381 sources. The publications have an average age of 4.5 years and were cited on average 14.24 times each, which demonstrates their academic relevance. The corpus is rich, with 28,979 references, 1,360 automatic keywords (Keywords Plus) and 1,678 author's keywords (Author's Keywords), reflecting a significant thematic diversity. Out of the 1289 identified authors, 131 produced solo papers, representing 23.8% of publications, while collaborations dominate with an average of 2.49 co-authors per paper and an international co-publication rate of 20,99%. The types of documents are varied: articles (294), book chapters (112), conferences (76) and journals (27), demonstrating a multidimensional and booming production.

Description	2010 :2023
Sources (Journals, Books, etc)	381
Documents	576
Annual Growth Rate %	38.85
References	28979
DOCUMENT CONTENTS	
Keywords Plus (ID)	1360
Author's Keywords (DE)	1678
AUTHORS	
Authors	1289
Authors of single-authored docs	131
International co-authorships %	20.99
DOCUMENT TYPES	
Article	294
Book	30

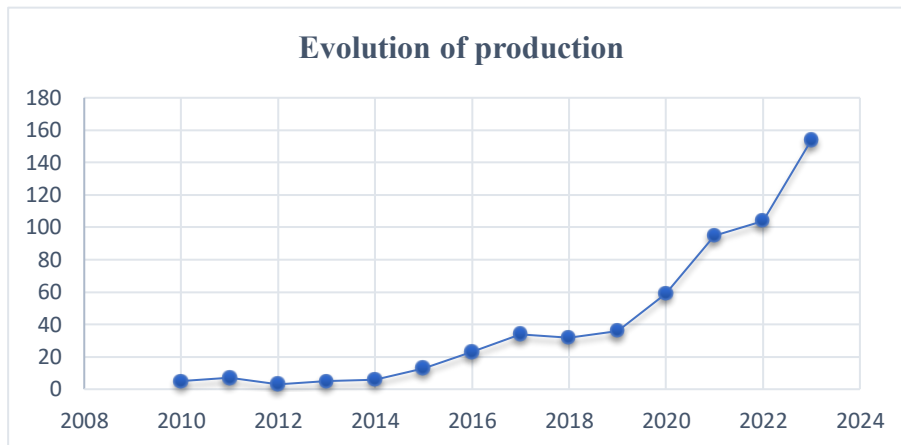
Book chapter	112
Conference paper	76
Conference review	23

Table 1: Descriptive statistics

Source: Scopus

5.1.1. Evolution of scientific production

The graph shows a moderate level of scientific production between 2010 and 2018, followed by a clear acceleration from 2019 onward and a pronounced peak between 2022 and 2023. The post-2020 increase can be interpreted through several converging developments. The COVID-19 pandemic accelerated the adoption of remote work, cloud services, digital platforms and data-driven coordination, turning digital transformation from a gradual modernization process into an operational necessity for many organizations. At the same time, growing attention to sustainability, ESG disclosure, supply-chain resilience and stakeholder transparency made the social and environmental consequences of digitalization more visible. The maturation of AI, IoT, blockchain and advanced analytics further expanded the range of questions that could be studied. The publication surge therefore reflects a shift from treating digitalization and CSR as parallel topics toward examining how digital capabilities can support, reshape or complicate responsible business practices.



Source: Scopus

Figure 3: Evolution of scientific production

5.1.2. Location and affiliation statistics

The figure shows that the UK, the US and China are central positions, highlighting their dominant role in international research and collaboration. These countries are strongly connected to other regions, indicating extensive scientific cooperation. For example, the UK works closely with European countries such as Germany and Italy, while China has partnerships with Asian countries such as Malaysia and South Korea.

In terms of chronology, the colour gradient shows the temporal evolution of research, where the most recent collaborations (2022) are represented in yellow. This highlights the growing research activity in some countries, such as China and other Asian countries, over the past few years.

The central position of the United Kingdom, the United States and China can be interpreted as the combined effect of large research systems, strong digital-innovation ecosystems and sustained scholarly attention to sustainability and corporate governance. The UK and US act as highly connected bridges across international collaboration networks, while China provides a major empirical setting in

which rapid industrial digitalization coexists with substantial environmental, governance and supply-chain challenges. The more recent visibility of Asian partners such as Malaysia and South Korea suggests that the field is diffusing beyond its early centres. Nevertheless, this geographic concentration also indicates a potential bias: findings derived mainly from large or technologically advanced economies may not fully capture the institutional constraints faced by firms in less represented regions. Future research should therefore test whether the identified mechanisms remain stable across different regulatory, technological and socioeconomic contexts.

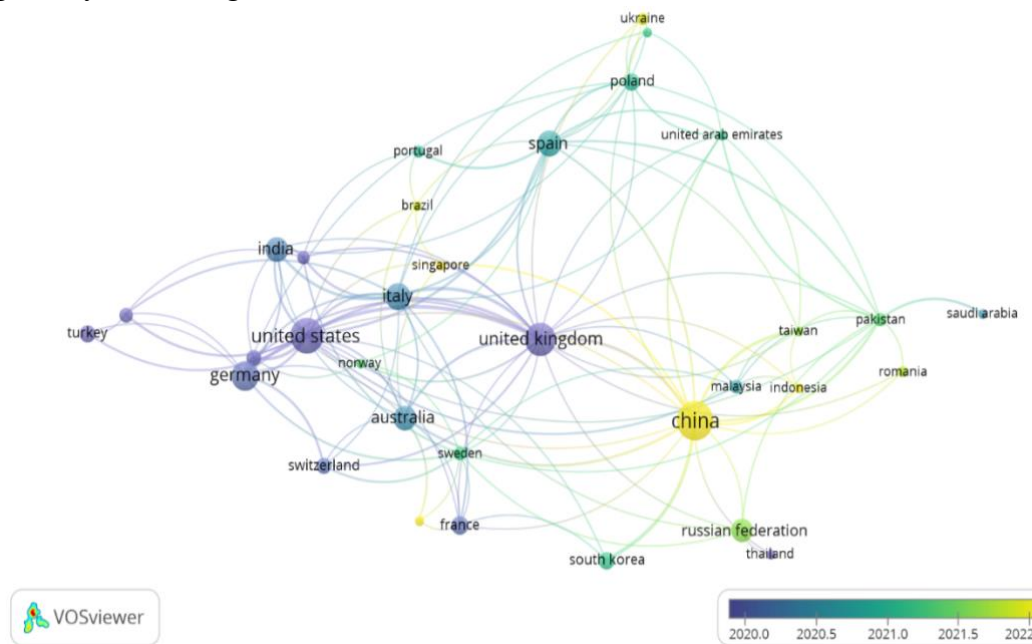


Figure 4: Location and affiliation statistics

Source: VOSviewer

5.1.3. The most influential journals

The table highlights the main scientific journals and their contributions in the areas of digital transformation and corporate social responsibility (CSR). Journals such as the *Journal of Cleaner Production* and the *Journal of Business Research* are distinguished by their high impact, with respective scores of 20.4 and 20.3, demonstrating their central role in disseminating innovative research. The most cited article, published in the *Journal of Business Research*, entitled “How to conduct a bibliometric analysis: An overview and guidelines”, totals 4881 citations, highlighting the importance of bibliometric methodologies in these areas.

Nº	Journal	TP	TC	Cite score	The most cited article	Times cited	Years	publisher
1	Sustainability (Switzerland)	381357	55991	6.8	A Global Assessment: Can Renewable Energy Replace Fossil Fuels by 2050?	556	2022	Springer Nature
2	CSR, Sustainability, Ethics and Governance	324	518	0.6	Corporate Social Responsibility and Tourism	26	2015	Springer Nature

3	Lecture Notes in Networks and Systems	35811	41485	0.9	Deep Model Trained for Sarcasm Detection	Hybrid with Weights for Multimodal	95	2023	Springer Nature
4	Journal of Business Ethics	12276	1273	12.8	Corporate Social Responsibility as a Conflict Between Shareholders		1394	2010	Springer Nature
5	Developments in Marketing Science: Proceedings of the Academy of Marketing Science	147	1029	0.1	What Drives Anti-brand Behaviours: An Examination of Online Hate of Technology Brands		19	2016	Springer Nature
6	International Journal of Environmental Research and Public Health	339831	46693	7.3	Digital Economy Development, Industrial Structure Upgrading and Green Total Factor Productivity		252	2022	Multidisciplinary Digital Publishing Institute (MDPI)
7	Journal of Business Research	77115	3511	20.3	How to conduct a bibliometric analysis: overview and guidelines	An and	4881	2021	Elsevier
8	Journal of Cleaner Production	394597	19382	20.4	Industry 4.0, digitization, and opportunities for sustainability		1238	2020	Elsevier
9	International Journal of Environmental Research and Public Health	339831	46693	7.3	Environmental Sustainability Impacts of Solid Waste Management Practices in the Global South		221	2022	Multidisciplinary Digital Publishing Institute (MDPI)
10	Journal of Business Research	71115	3511	20.3	Big Data consumer analytics and the transformation of marketing		935	2016	Elsevier

Table 3: Top 10 most productive and influential sources in research on digital transformation and CSR (TC: total citations; TP: total publications). Source: Author, Scopus

5.1.4. Authors' production over time

The authors' analysis in the field of research reveals significant contributions from various countries, illustrating a global interest in the subject. Among the most influential authors, Stieglitz, Stefan (Germany) stands out with an h-index of 35 and an impressive total of 7,010 citations, underlining the

impact of his work. Jones, Peter (UK) is closely followed with an h-index of 33 and 3,887 citations, while Camilleri, M.A. (Malta) ranks with an h-index of 34 and 3,485 citations. These figures reflect a high-quality scientific output and strong recognition by the academic community.

In terms of geographical distribution, authors such as Ahmad, N. (Pakistan) and Buttigieg, S.C. (Malta) make notable contributions with respective h-indices of 33 and 21, highlighting the growing involvement of developing and emerging countries. Conversely, countries such as China, represented by Chen, X., show low recognition with an h-index of 1, despite a high number of documents produced (2,323), which may reflect low impact or limited audience.

Finally, the analysis shows a concentration of publications in developed countries such as the UK, Germany and Malta, while other nations such as Russia and Finland remain relatively under-represented in terms of citations and impact. These results indicate a disparity in global scientific influence and highlight the importance of international collaborations to strengthen research in less represented regions.

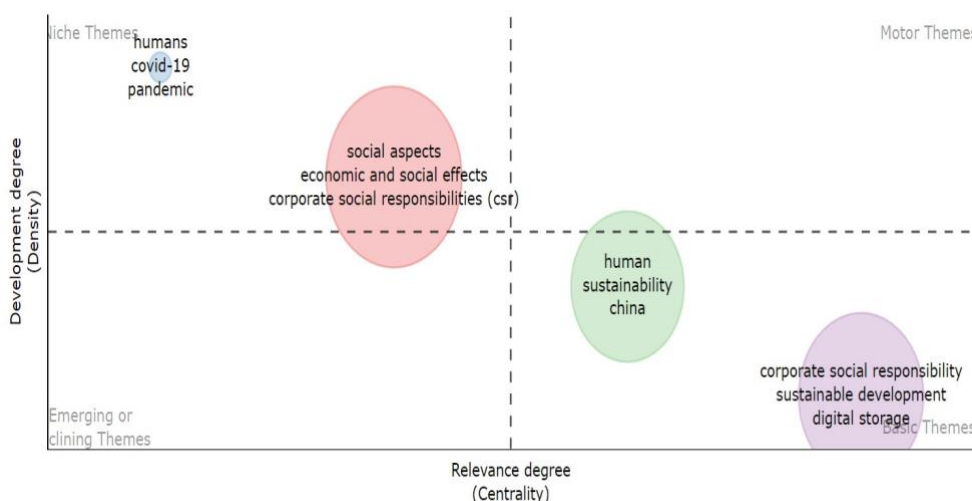
Authors	Doc	*h-index	Citations	Country
Camilleri, M.A.	138	34	3,485	Malta
Grigore, G.	42	9	423	United Kingdom
Garg, L.	161	22	1,902	Malta
Tomaselli, G.	17	6	149	Spain
Adi, A.	197	7	18	Germany
Ahmad, N.	61	33	2,262	Pakistan
Gigauri, I.	33	9	235	Georgia
Gupta, V.	14	6	223	India
Molesworth, Mike	69	21	1,771	United Kingdom
Seele, Peter	68	27	2,596	Switzerland
Aula, P.	23	9	594	Finland
Basova, M.M.	9	3	18	Russian
Buttigieg, S.C.	99	21	2,364	Malta
Cancedda, F.	6	1	4	France
Chen, X.	2323	1	2	China
Heinonen, J	12	2	9	Finland
Iazzi, Antonio	267	9	12	Italy
Jones, Peter	225	33	3,887	United Kingdom
Kasemsap, K	200	16	1,203	Thailand
Muneer, Saqib	26	8	240	Saudi Arabia
Naveed, Rana	27	12	523	Pakistan
Palazzo, M.	103	15	710	Italy
Stieglitz, Stefan	223	35	7,010	Germany

The concentration of influence around a limited number of authors should also be understood as a network effect rather than only as an individual productivity effect. Highly cited researchers occupy bridging positions between established CSR/stakeholder scholarship and newer streams on digital

lower carbon emissions. The yellow cluster encompasses emerging governance issues related to AI, blockchain, and IoT, such as algorithmic accountability, privacy, cyber security, traceability capacity, and unequal access to digital skills. Thus, the map indicates that digital transformation is both an operational lever for corporate social responsibility (CSR) and a new source of responsibilities that companies must manage proactively;

5.1.6. Thematic map

This thematic map illustrates the organization of subjects according to their degree of development (density) and relevance (centrality). At the centre, concepts such as social aspects, economic and social effects, and corporate social responsibility (CSR) show moderate relevance and development, suggesting that they play a key role but could be further developed. In the core themes quadrant, topics such as corporate social responsibility, sustainability and digital storage sustainability" and "China" are relevant but require additional attention to reach a more significant level of development. This map highlights the growing importance of social responsibilities and sustainable development in current technology discussions, while highlighting opportunities for further development in these areas.



Source: Bibliometrix, RStudio

Figure 6: Thematic Map

The thematic map reflects an increased interest in topics related to social responsibilities, digital and human aspects in a context marked by the growth of technology. However, it also reveals a fragmentation of themes, without any subject really dominating as an engine. This creates a space of opportunity for researchers:

- Develop the already central themes, such as social aspects or CSR, to strengthen their influence and integration in the field.
- Further explore the connections between sustainable development and digital storage, especially in the context of digital transformation.
- Examine local specificities and their interaction with global issues, such as those related to human sustainability.

Conclusion

To conclude, and through our documentary study, we can affirm that corporate social responsibility is the voluntary commitment of organizations to do things right at the company level, well beyond what is indicated by the legal and regulatory framework of this sector, it's the desire to forge a win-win relationship. Within CSR, the field of technology is recognized because it is imperative to deepen this aspect; therefore, it would be necessary to specify everything involved in the digital transformation in the systems area and how it impacts stakeholders. Indeed, CSR and digital transformation are processes that must be managed in a gradual, progressive and above all sustained over time, because it is the only way to achieve positive long-term results. When a company is founded in a socially responsible way, it is not only to comply with regulatory standards, but also to seek the common good, which allows it to have a positive perception of society in general. It is therefore important to recognize that the digital transformation is not based solely on technology, but that responsibility and results are based on human power, because the first element is only an instrument used by humans to accomplish tasks. Therefore, to succeed at the professional and commercial level, it is necessary to have people who have the ability and mastery to properly use technology in favor of work.

Before implementing the digital transformation, it is imperative to take into account certain fundamental aspects such as the economic environment and the state of the company; also, to analyze and know the technological tools such as Big Data to process a large volume of information about people, websites, social networks, which allows establishing a direct relationship with users in a digital way, taking advantage in turn to incorporate the online sale of products / services, whether traditional or new, which modifies its business model, obtaining a better position in the market. The digital transformation is shaped by the use of technological systems and equipment, as well as the progress of the internet, but it also encompasses changes in employee attitudes and skills. This process has shown from its inception that it is here to stay, so it is imperative that companies, regardless of their sector, activity, size, whether they are traditional or new-era firms, etc. They will have to face up to this challenge, on pain of being distanced in the market, until disappearing. Despite previous studies on the subject, it is essential to deepen this approach in practical terms, in order to better determine the influence and impact of these technologies not only on companies but also on society. It has been shown that technology has become an indispensable element in the personal and professional sphere (as it facilitates the execution of tasks that could not be carried out in person, since several actions can be performed at the same time), hence the importance of continuing the research.

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