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Research Article

Digital Transformation in SMEs: A Bibliometric Analysis

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ABSTRACT

Introduction: The swift advancement of technology has made digital transformation essential for firms to sustain competitiveness and ensure long-term survival, particularly for SMEs that are integral to many economies. Although identifying essential components in a particular area of interest is valuable, bibliometric analyses in the domain of SMEs digital transformation are limited.

Objectives: The objective of this study is to identify research trends, highly cited publications, key authors, and major thematic areas in the field of SMEs' digital transformation through a comprehensive bibliometric analysis.

Methods: This paper provides a comprehensive bibliometric analysis of 1,204 scholarly publications on SMEs' digital transformation from 2014 to 2024, utilizing the Scopus database and visualized through VOS viewer.

Results: Findings indicate that academic interest has increased significantly since 2014, especially following the COVID-19 pandemic. China, Italy and Indonesia are the most influential nations in this area of research. European and Malaysian institutions possess a substantial volume of publications and exhibit a wide array of academic impact. The subject distribution highlights the multidisciplinary nature of this topic. However, co-authorship network indicates that collaboration within researchers is inadequate, which reflects the fragmented nature of research in this field, thus additional advancement is necessary. Müller, Matarazzo, Coreynen, Cenamor, Eller, Priyono, Bouwman Myovella, Nasiri, Sommer are the top 10 most influential scholars in digital transformation of SMEs. Digital technologies, digital capabilities, economic business model, social-economic sustainability and Industry 4.0 are the five main themes in this field.

Conclusions: This paper presents a thematic map that delineates the primary antecedents and effects of digital transformation in small and medium-sized enterprises. This research also synthesizes critical trends and insights, providing a foundational overview to inform future advancements in the rapidly evolving digital transformation landscape for SMEs.

Keywords: Digital technology, Co-authorship, Co-occurrence, Vosviewer

INTRODUCTION

Digital transformation (DT) is an established research domain that has arisen owing to the widespread implementation of digital technology across society, industry, and business management [1-4]. Research underscores the necessity of integrating digital transformation into current business paradigms, as this subject encompasses far more than mere technology advancements [5] and influences numerous, if not all, facets of company. Successful company transformation is accomplished by concurrently leveraging and investigating its potential to attain agility within the organization [6]. Consequently, as the significance of digital transformation becomes increasingly evident, it is concurrently accompanied by elevated expectations [7].

Digital transformation is inherently multidisciplinary. It is the most complex and extensive stage since it involves changes in marketing, strategy, organization, IT, and supply chains [3]. It is the process of reconfiguring the way a business operates through the embrace and effective use of digital technologies, facilitating new opportunities and value generation [8]. Businesses should adjust their models to leverage the profound transformations initiated by the complete onset of the digital age, enabling them to respond swiftly and adapt promptly to the swiftly evolving landscape [9].

SMEs have been undergoing digital transformation due to technological advancements, deregulation, globalization, and severe competition [10]. Digital transformation (DT) is crucial for SMEs to improve their operational effectiveness, foster innovation, and tackle impending challenges [11-15]. Nevertheless, SMEs encounter numerous problems, including a deficiency of talent, funds, technology, and innovative resources, which substantially hinder their competitiveness [16]. Furthermore, large firms are the primary focus of academic research on DT, while SMEs are under-researched [17, 18].

Researchers typically underscore the significance of categorizing the literature within a study domain according to predominant patterns [19]. Bibliometrics is among the most often employed methodologies for this objective. It observes a scientific domain, defines its cognitive framework and development, and acts as a spatial representation of the interrelations among fields, subjects, investigators, and individual papers [20]. Although identifying essential components in a particular area of interest is valuable, bibliometric analyses in the domain of SMEs digital transformation are limited. Consequently, this paper aims to present an overview of SMEs digital transformation research using bibliometric mapping.

This study aims to address the subsequent questions on digital transformation in SMEs: RQ1: What have been the publication trends about digital transformation in SMEs from 2014 to 2024? RQ2: Which countries and institutions demonstrate productivity in writing publications on digital transformation in SMEs? RQ3: What is the current state of collaboration among scholars and nations? RQ4: Which researchers own the highest citation counts? RQ5: What are the key themes of digital transformation in SMEs from 2014 to 2024? RQ6: What issues may serve as future study themes?

The structure of this paper is as described below. Initial, the paper provides a description of the approach that was utilized in the present analysis. Following that, this paper provides a description of the findings that were obtained from bibliometric analyses and mapping. Lastly, a discussion of the primary conclusions is presented.

METHODS

A. Research Design

This study utilized bibliometric analysis to thoroughly examine the conceptual framework of academic discourse concerning the digital transformation of SMEs. Bibliometrics, initially introduced by Paul Otlet in 1934, is a statistical technique frequently employed in academic literature reviews to quantify the evaluation of researched outputs [21, 22]. The interest in bibliometric study is increasing due to ICTs, which facilitates analysis utilizing substantial data through distance-based methodologies [23]. Bibliometric analysis is appropriate for extensive datasets, other than a systematic literature review is more suitable for limited datasets [24]. It methodically analyses the volume of publications, citation frequencies, and diverse metrics to reveal recurring trends and patterns within a certain academic discipline. This approach utilizes bibliographic data, including the authorship, release year, and article impact, to evaluate the influence and relationships among scholars, organizations, and subjects [25].

B. Data and search strings

The dataset for analysis was collected and assembled utilizing the online Scopus database. Besides being the largest database globally, Scopus offers more comprehensive information regarding publications than other databases. The research was conducted on items published or approved for publication from 2014 to December 2024. The search phrases employed for the research included: "digiti?ation" OR "digitali?ation" OR "digital transformation" AND sme* OR "micro, small and medium enterpri*" OR "small and medium enterpri*" inside titles, abstracts, or keywords. Furthermore, we implemented various automated checklists, including the requirement for documents to be in English. The study exclusively examines articles, omitting other research publications, as articles offer a theoretical insight into the field's evolution (Di Stefano, Peteraf, & Verona, 2010; Ennas & Di Guardo, 2015). Articles often undergo

stringent peer review, guaranteeing the reliability and academic significance of the results. The final dataset had a total of 1204 articles. Table I shows the search strings.

TABLE I. SEARCH STRINGS

Database	Search Strings
Scopus	TITLE-ABS-KEY (("digiti?ation" OR "digitali?ation" OR "digital transformation") AND (sme* OR "micro, small and medium enterpri*" OR "small and medium enterpri*")) AND PUBYEAR > 2013 AND PUBYEAR < 2025 AND (LIMIT-TO (DOCTYPE,"ar")) AND (LIMIT-TO (LANGUAGE,"English"))

C . Data analysis and visualization

The retrieved data were used typical visualization from Scopus to present demographic publication trends, distribution of nations, organizations and subjects, then subsequently performed analysis utilizing VOS viewer software (Van Eck & Waltman, 2010), which graphically represented the information node network (Donthu, Kumar, & Pattnaik, 2020). VOS viewer facilitates the analysis of bibliometric maps, even for extensive maps (Castillo-Vergara, Alvarez-Marin, & Placencio-Hidalgo, 2018; Mas-Tur et al., 2021). The authors examined the subsequent facets of the data: a). Co-authorship analysis to investigate the relationships across researchers and nations. b). Citation analysis to ascertain prominent authors and the themes of their study. c). Cooccurrence analysis to discover prominent subjects in digital transformation and a longitudinal study to illustrate temporal changes in the area and forecast future research tendencies.

RESULTS

A. Publication Trends and Distributions

Figure 1 illustrates the data distribution by year of publication. The research trends imply a constant growth in the number of publications published on the issue from 2014 to 2024. Starting from a relatively modest base of 3 documents in 2014, the annual production climbed steadily to 48 documents by 2019, demonstrating increasing scholarly interest. This rising trajectory accelerated between 2019 and 2021, with the number of documents more than doubling to 116. The trend continued to climb, reaching 223 papers in 2022 and an anticipated 259 in 2023. Notably, the data indicates a considerable jump in 2024, hitting 424 papers, which would mark the highest level in the investigated duration. These findings demonstrate the persistent and expanding research effort being put towards the issue of interest among academics.

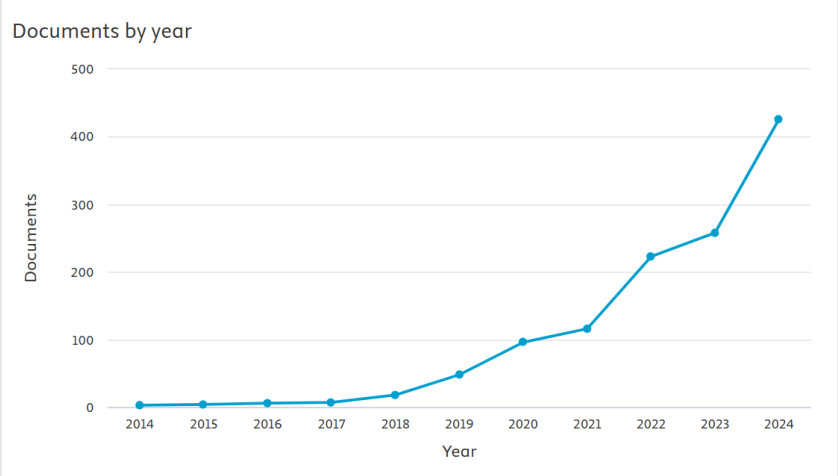

Fig. 1. Research Trends in SMEs digital transformation (2014-2024)

Figure 2 shows 2014–2024 SMEs digital transformation publications by country or territory. The most prolific country is China, with 149 documents released, demonstrating the research input and influence of Chinese scholars in this field. Italy follows closely with 120 documents, indicating strong research. Indonesia ranks third with 100 documents, indicating expanding digital transformation in SMEs. With 97 and 83 documents, the UK and Germany also contribute heavily. Spain and India follow with 71 and 70 documents. With 69 and 54 documents, Malaysia and the US round out of the top contributors. Regional distribution shows that SMEs digital transformation research is global, with large contributions from developed and developing economies.

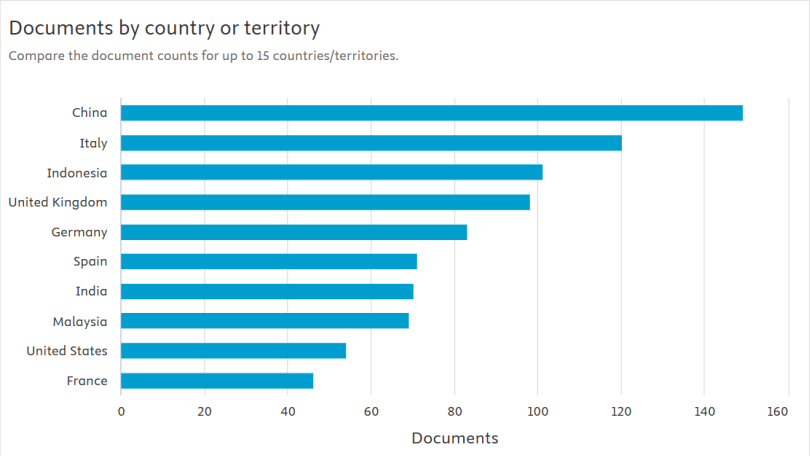

Fig. 2. Documents by country (2014-2024)

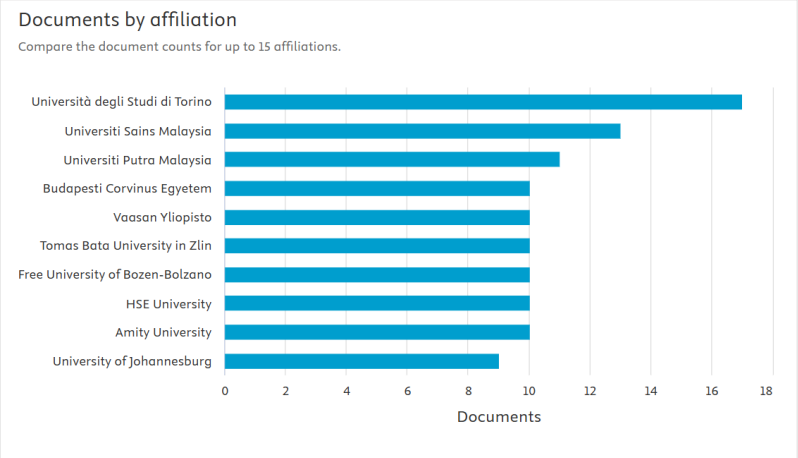

Fig. 3. Documents by affiliation (2014-2024)

Figure 3 shows the top affiliations for 2014–2024 SMEs digital transformation publications. The most productive institution is the Università degli Studi di Torino, providing 17 documents. Universiti Sains Malaysia and Universiti Putra Malaysia follow with 13 and 11 documents. Budapesti Corvinus Egyetem, Vaasan Yliopisto, and Tomas Bata University in Zlin have 10 documents apiece. This group includes the Free University of Bozen-Bolzano and HSE University, which produce similar results. Interestingly, although most of the top affiliations are based in Europe, Malaysia stands out with two universities ranked among the most productive. This highlights a notable emphasis on SMEs digital transformation within the Malaysian higher education system. The data shows that European and Asian institutions lead this domain's research activities.

Figure 4 indicates that the most prevalent subject area for publications on SMEs digital transformation is Business, Management, and Accounting, accounting for 26.4% of the total documents. This demonstrates a significant emphasis on the fundamental business elements of SMEs digital transformation in the academic arena. Subsequently, the Social Sciences account for 13.6% of the total, while Computer Science accounts for 12.7%. The fields of engineering, decision sciences, economics, and econometrics and finance are also noteworthy topic areas. This diversity of subject areas underlines the multidisciplinary nature of digital transformation in SMEs, which draws contributions from a wide range of specialist domains.

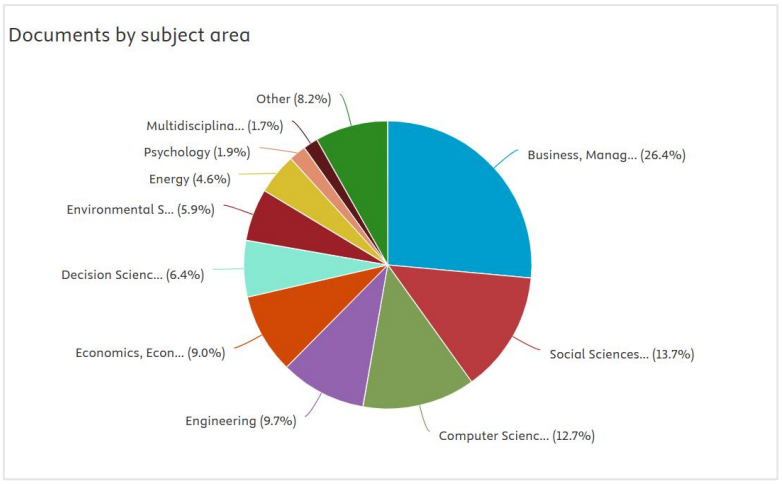

Fig. 4. Distribution of subject areas (2014-2024)

B. Co-authorship analysis

This co-authorship network visualization, which includes researchers with at least two publications on digital transformation in SMEs, provides insights into the collaborative relationships among authors in this research domain. In the initial data set, 331 researchers met the criteria and were chosen for network analysis. Of the 331 researchers, merely 11 engaged in direct or indirect collaboration. Figure 5 depicts the collaborative authorship network, which has 11 nodes, 18 links, and a total strength of links of 23, indicating a limited extent of collaboration with different scholars in the domain of digital transformation in SMEs. The authors categorized these 11 researchers into 4 clusters to establish a co-authorship network. Figure 5 illustrates that the dimensions of majority of nodes in the blue and yellow clusters exceed those in the other clusters.

This image demonstrates that majority of the chosen scholars within these clusters have authored more publications than their counterparts. The yellow cluster is centrally located among all the clusters. Within the blue cluster, Scuotto has authored the most articles. Del Giudice, Manlio, in the yellow cluster, and Papa, Armando, in the green cluster, closely follow them. Furthermore, scholars in the blue cluster primarily originate from France and Italy, while those in the yellow and green clusters are affiliated with Italian institutions. Researchers in the red cluster are mainly associated with UK institutions. This distribution suggests that cross-border collaboration in digital transformation research remains relatively limited.

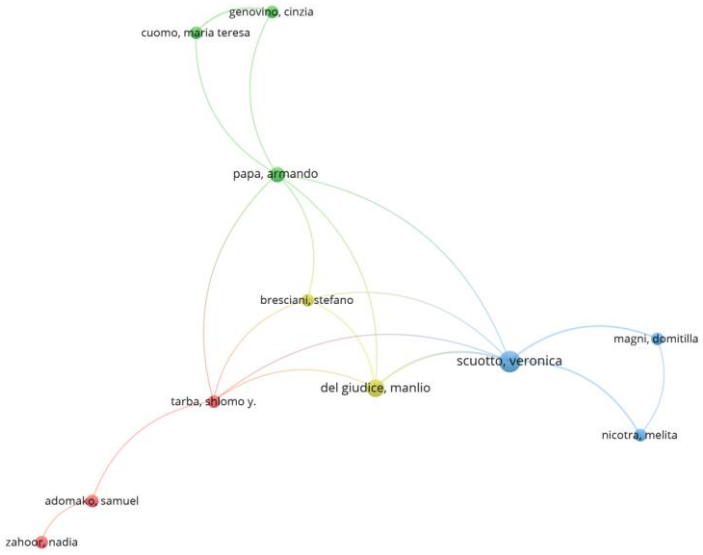

Fig. 5. Co-authourship analysis

A further analysis of collaboration among researchers from different nations in the field was conducted. 61 of the 113 countries met the requirement of having at least five publications, making them eligible for consideration. As can be

seen in Figure 6, these results were incorporated into the subsequent analysis. China (149), Italy (121), Indonesia (100), the United Kingdom (97), and Germany (83) are the countries that lead the pack in terms of the publications number in this field. The United Kingdom (UK) occupies a central position in the network, with 41 collaborative links and a total link strength of 137, followed by Italy, with 35 links between countries and a total link strength of 128. In contrast, China exhibits a more limited collaborative network, with only 25 links between countries and a total link strength of 77. Germany also shows a relatively limited collaborative network, with 26 links between countries and a total link strength of 64. Indonesia has the most limited collaborative network among the highlighted countries, with 19 links and a total link strength of 42. Compared to the number of articles that are published by each nation, the level of cooperation between nations is rather modest.

The color bar in the bottom-right corner of the map illustrates the timeline of researchers' involvement in this field, with darker green colors indicating countries that engaged in research and development earlier, and lighter shades indicating those that participated later. The map indicates that researchers from Morocco, Kazakhstan, and the Czech Republic are initial organizations to investigate the field, succeeded by those from Poland, France, Italy, Germany, and the United Kingdom. Researchers in China, Brazil, and Vietnam are the most recent to engage in the field relative to the other nations illustrated. The range of these relationships also underlines the worldwide aspect of the discipline, with considerable efforts coming from across developed along with developing economies.

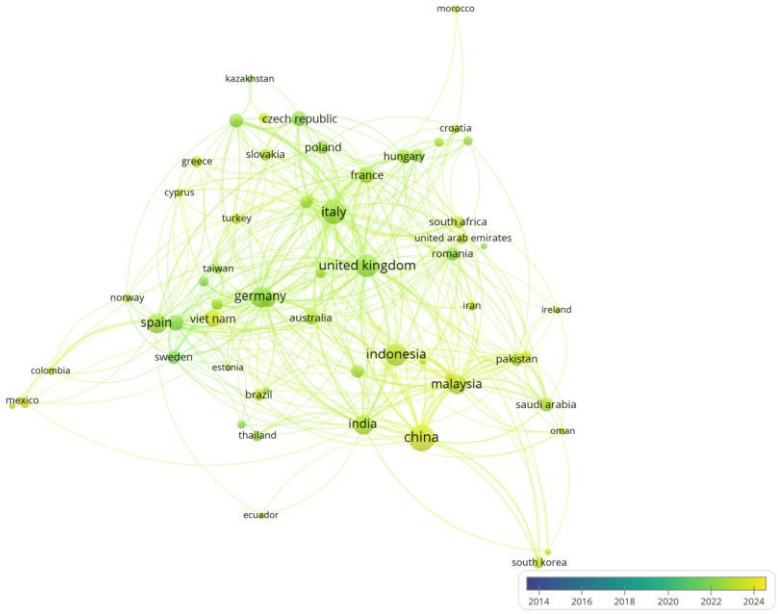

Fig. 6. Collaboration among researchers from different countries

C. Citation analysis

Based on the VOS viewer citation analysis shown in the image, a threshold of a minimum of 300 citations per document was applied. Out of the 1,204 documents analyzed, 10 researchers met this threshold. Table II reveals that the following authors possess the most often cited publications on digital transformation in SMEs.

TABLE II. TABLE TYPE STYLES

Authors	Title	Journal	Citation
[32]	Fortune favors the prepared: How SMEs approach business model innovations in Industry 4.0	Technological Forecasting and Social Change	820
[33]	Digital transformation and customer value creation in Made in Italy SMEs: A dynamic capabilities perspective	Journal of Business Research	571
[34]	Boosting servitization through digitization: Pathways and dynamic resource configurations for manufacturers	Industrial Marketing Management	549

[35]	How entrepreneurial SMEs compete through digital platforms: The roles of digital platform capability, network capability and ambidexterity	Journal of Business Research	470
[12]	Antecedents, consequences, and challenges of small and medium-sized enterprise digitalization	Journal of Business Research	394
[36]	Identifying Digital Transformation Paths in the Business Model of SMEs during the COVID-19 Pandemic	Journal of Open Innovation: Technology, Market, and Complexity	360
[37]	Digitalization, business models, and SMEs: How do business model innovation practices improve performance of digitalizing SMEs?	Telecommunications Policy	351
[38]	Digitalization and economic growth: A comparative analysis of Sub-Saharan Africa and OECD economies	Telecommunications Policy	323
[39]	Managing the digital supply chain: The role of smart technologies	Technovation	320
[40]	Industrial revolution-industry 4.0: Are German manufacturing SMEs the first victims of this revolution?	Journal of Industrial Engineering and Management	312

Several studies investigate the influence of digital transformation on the business models and innovation capacities of SMEs. Authors in [32] and [33] demonstrate that SMEs can improve their overall performance by effectively utilizing digital technologies to innovate their business models. Authors in [34] similarly illustrate that various digital transformation trajectories can affect the servitization of SMEs. Moreover, enhancing digital platform capabilities might beneficially influence the financial performance of entrepreneurial SMEs [35].

Nevertheless, some researchers underscore the resource and competence issues encountered by SMEs throughout digital transformation. Constrained resources and capabilities of SMEs may adversely impact their digital transformation efficacy [12]. Authors in [36] demonstrate that the distinct digital transformation trajectories of SMEs are dependent on their internal and external contextual factors, particularly during the COVID-19 pandemic. SMEs should invest additional resources for business model experimentation and actively participate in strategy implementation to tackle these problems [37].

The high-citated studies indicate that the digital transformation of SMEs within the Industry 4.0 context is marked by both opportunities and challenges. Authors in [40] indicates that Industry 4.0 presents considerable hurdles for small and medium-sized manufacturing enterprises, necessitating the improvement of their digitization and automation competencies. The literature highlights that the successful digital transformation of SMEs depends on their capacity to mobilize technological and other resources, together with innovating their business models [37] [12].

D. Co-occurrence analysis

Subsequently, a co-occurrence analysis of keywords was conducted to illustrate the network among journals that publish SMEs digital transformation-related articles. To lessen noise, a minimum occurrence criterion of 15 for a keyword has been designed. Out of 5315 keywords, 67 satisfy the criteria. Initially, authors utilized the thesaurus file in VOS viewer to substitute terms and amalgamate synonyms, so assuring uniformity in the study. Additionally, the terms "SMEs" and their synonyms were omitted as they were included in the search query. Other keyword, such as "article," were omitted due to their lack of practical significance. Ultimately, 51 keywords progressed to the subsequent phase of evaluation. Since consequently, the relevant keywords and dimensions were defined and consolidated into five separate clusters, as is shown in Figure 7.

The results of the study identified five clusters pertinent to digital transformation in SMEs: a) the green cluster (AI, IoT, big data, blockchain, data analytics, machine learning), b) the yellow cluster (digital capabilities, digital strategy, digital innovation, and resilience), c) the blue cluster (innovation, business models, competitive advantages, and performance), d) the red cluster (e-commerce, digital marketing, Covid-19, digital economy, supply chain management, and sustainability), e) the purple cluster (industry research and Industry 4.0). It could be observed that digital transformation in SMEs has been extensively discussed and implemented across numerous areas and levels.

The overlay visualization [Figure 8] captures the multifaceted and interconnected nature of digital transformation. The initial focus was on the developments of digital technology followed by their incorporation into business models, which could enhance financial performance. Moreover, the map depicts the increasing acknowledgement of non-technological resources, including digital capability and dynamic capability. The yellow nodes represent the most nascent theme, sustainable development. The trends demonstrated reflect the comprehensive and widespread characteristics of the digital transformation process.

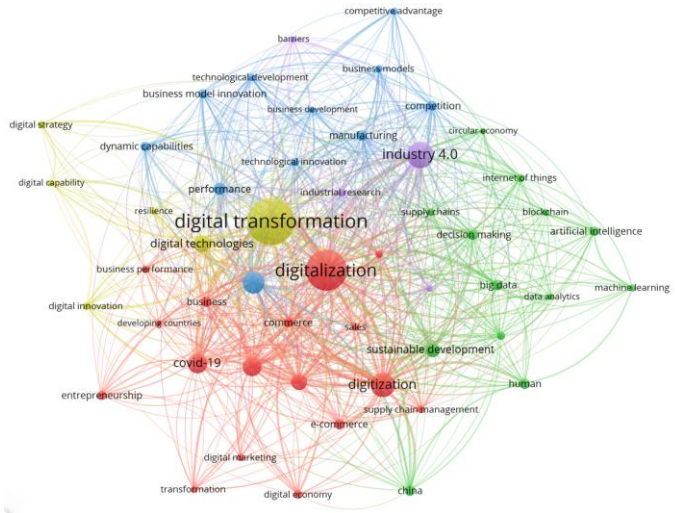

Fig. 7. Co-occurence keywords network

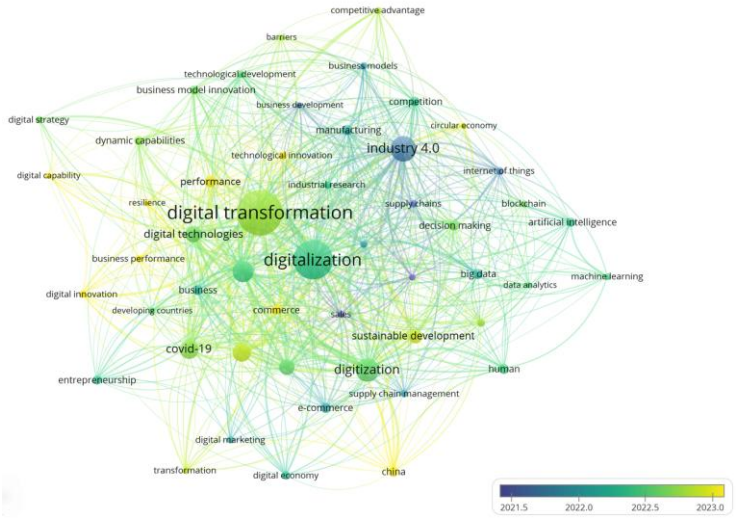

Fig. 8. Co-occurence keywords overlay visualization

DISCUSSION

The results indicate that the study of SMEs' digital transformation has gained significant prominence. Academics across diverse disciplines have examined its antecedents and impacts from distinct viewpoints related to their own fields of study and expertise. Consequently, numerous research papers on the digital transformation of SMEs have been published, with the annual document count steadily increasing throughout the past decade (2014-2024).

The publication distributions depict multiple dimensions, encompassing country, institution, and discipline. The publications are predominantly concentrated in a few leading countries. China leads the count with 149 documents, followed by Italy (120) and Indonesia (100). Other significant contributors include the United Kingdom, Germany, and Spain, indicating an active global research presence with notable clusters in Asia and Europe. The affiliation distribution underscores the dominance of European and Asian institutions in the research on SMEs' digital transformation, with Università degli Studi di Torino at the forefront (17 documents) and significant contributions

from Malaysian universities, Universiti Sains Malaysia (13) and Universiti Putra Malaysia (11). The subject distribution highlights the multidisciplinary nature of this topic, with Business, Management, and Accounting leading (26.4%), followed by Social Sciences (13.6%), Computer Science (12.7%), and contributions from engineering, decision sciences, economics, and finance.

The clusters in figure 6 illustrate the interconnection and cooperative endeavors of scholars of diverse nations, underlining the necessity of international collaboration in improving the study of digital transformation in SMEs. The geographical evolution of research engagement in this field demonstrates a complex pattern of scientific knowledge dissemination, beginning with pioneering studies by researchers in Western and Central European countries such as Morocco, Kazakhstan, and the Czech Republic. This is succeeded by significant contributions from established European research institutions, ultimately leading to the increasing involvement of researchers from developing economies like China, Brazil, and Vietnam. This evolution depicts a dynamic global information ecosystem that increasingly democratizes scientific research and technological discovery across various geopolitical contexts. Nonetheless, the findings from the co-authorship study indicate that collaboration within researchers is inadequate, which reflects the fragmented nature of research in this field, thus, additional advancement is necessary.

The results of document citations indicates that Müller, Matarazzo, Coreynen, Cenamor, Eller, Priyono, Bouwman Myovella, Nasiri, Sommer are the top 10 most influential scholars in digital transformation of SMEs. The high citations of these authors indicate their substantial impact in this field. Their articles published in esteemed academic journals, including Technological Forecasting and Social Change, Journal of Business Research, and Industrial Marketing Management, signify the quality and importance of the research included throughout.

The results of keyword co-occurrence network indicates that five main themes jointly offer a thorough overview of the principal areas of emphasis in SMEs' digital transformation research, illustrating the complex structure of the discipline and the varied subjects being investigated by academics. Digital technologies theme, emerging technologies (AI, IOT, big data, block chain, data analytics, machine learning) in SMEs' DT are characterized by the first cluster. Sebastian et al. (2017) propose that social media, mobile technologies, data analytics, cloud computing, and the Internet of Things (IoT) be classified as new digital technologies. Digital transformation (DT) is closely associated with digital technologies, suggesting that technology serves as both a primary catalyst and a tool for attaining a competitive advantage through DT.

Digital capabilities theme, such as digital capabilities, digital strategy, digital innovation, and resilience make up the second cluster of keywords. Authors in [41] assert, "Strategy, not technology, drives digital transformation." This signifies that companies must cultivate abilities for utilizing digital technologies for business goals [6, 42]. Moreover, Digital transformation frequently resembles a mosaic of ambitious yet unconnected activities. Companies require a digital strategy and agenda to define parameters that prevent them from becoming disoriented in the range of options [43].

Business economic-related theme, business models, innovation, competitive advantages, and performance makes up of the fourth cluster of, which shows the impacts of DT on business ecosystem. Digital transformation is requiring companies to rethink and innovate their business models (BMs). Innovation thrives with digital technologies by breaking free from architectural constraints through loose couplings and enabling rapid diversification of digital products, while low entry barriers empower small entrepreneurs to transform ideas into market offerings [42]. Basing on an empirical study of 321 European SMEs, authors in [37] found that digital transformation performance significantly improves when small and medium enterprises allocate more resources to business model experimentation and actively engage in strategy implementation. Digital transformation enhances ESG performance, with this relationship being largely mediated by innovation and servitization [44]. Furthermore, digitalization, significantly enhance the competitive advantage of SMEs by enabling the effective adoption and integration of digital technologies.

Socioeconomic development-related theme, e-commerce, digital marketing, Covid-19, digital economy, supply chain management and sustainability make up the third cluster. The COVID-19 pandemic expedited the transition to online sales for small and medium firms (SMEs), resulting in an abrupt movement from conventional physical markets to e-commerce [45]. Digital transformation promotes sustainability by allowing SMEs to implement eco-friendly practices while maintaining profitability, so fostering sustainable growth through enhanced efficiency, cost reductions, product quality, and reputation [46] [47].

Industry research theme, industry 4.0, which includes issues like industrial management and industrial revolutions, makes up the last cluster. Industry 4.0 plays an essential role to digital transformation, facilitating firms in attaining unparalleled advantages such as enhanced production, efficiency, and system adaptability [48]. As the driving force behind digital transformation, Industry 4.0 emphasizes the integration of advanced technologies into business processes, though its implementation presents challenges.

This overlay visualization mapping depicts the evolving research landscape in the field of digital transformation and its related concepts. Most recently, wider societal and environmental impact of these digital transformations in SMEs, such as sustainability, attracts the interest of academic [13, 46, 47, 49, 50]. Integrating sustainable into DT process enhances a company's brand and attracts customers and investors that emphasize responsibility for the environment. This progression from a technology business-centric view to a more holistic, capability-driven, and socially responsible approach reflects the maturing of the research field

CONCLUSION

Despite digital transformation being an established field with much systematic research, there is a scarcity of thorough studies on digital transformation (DT) in SMEs [18]. Based on the analysis of 1204 studies, this paper presents a thematic map that delineates the primary antecedents and effects of digital transformation in small and medium-sized enterprises. The findings of this study indicate the key themes, as well as highlighting the studies that ought to be the focus of future investigations.

A. Implications

This article contributes to current discussion through unifying, mapping, and analyzing existing research on digital transformation in SMEs, presenting significant macro- and micro-level insights from the literature, and recommending relevant future research areas. From a macro-level perspective, the existing body of literature on digital transformation in SMEs is very extensive, illustrating the multidisciplinary essence of the issue, since publications encompass several clusters and concepts. Additionally, these findings furnish policymakers and managers with essential insights into the inherent connections among innovation, digital transformation, and sustainability, hence providing more focused and anticipatory strategic direction for the long-term advancement of SMEs.

B. Future research recommendation

Firstly, the incorporation of these three concepts (digitization, digitalization, digital transformation) in the mapping highlights that digital transformation is a complex and multi-faceted process, merging the technology elements of digitization with the organizational changes of digitalization. The distinctions between these phrases are frequently ambiguous, featuring overlapping interpretations and practical uses [42, 51]. This underscores the necessity of creating a more cohesive and uniform comprehension of the digital transformation process, its multiple facets, and their interrelations.

Secondly, current academic discussions highlight the necessity of embracing a more comprehensive view of digital transformation. Future research must beyond conventional technology limits and explore the significant socio-cultural and economic ramifications of digital transformation. By realizing the beneficial correlation among digital transformation, performance, and sustainability, SMEs may leverage these elements to propel their success [47]. Furthermore, through examining basic paradigm shifts and their broader societal implications, scholars can create more complete theoretical frameworks that encapsulate the intricate, multidisciplinary essence of digital organizational change in SMEs.

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