

## ***Mapping the Research Landscape of SME Digitalization: A Bibliometric Analysis***

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Received: 15 Maret 2025

Revised: 30 Maret 2025

Accepted: 15 April 2025

**Abstract:** *Small and Medium Enterprises (SMEs) are crucial drivers of national economies, particularly in developing countries like Indonesia. The COVID-19 pandemic significantly disrupted SME operations, yet also accelerated the adoption of digital technologies as a strategy for resilience and recovery. This study aims to map the research landscape of SME digitalization through a bibliometric analysis using data extracted from the Scopus database for the period 2020–2025. Employing a systematic literature review (SLR) and PRISMA methodology, 96 open-access articles in the field of Business, Management, and Accounting were selected and analyzed. The results reveal a sharp increase in digitalization-related research post-pandemic, with central themes including business models, sustainability, industry 4.0, and digital strategy. Network, overlay, and density visualizations generated via VOS viewer indicate that while digital transformation is a well-established topic, emerging themes such as digital maturity, governance, and internationalization present new research directions. This study contributes by offering a comprehensive overview of existing literature, highlighting conceptual linkages, and identifying future research avenues that integrate digital innovation, crisis resilience, and strategic development in SMEs.*

**Keywords:** *SME digitalization; bibliometric analysis; systematic literature review; digital transformation*

### **INTRODUCTION**

The Micro, Small, and Medium Enterprise (MSME) sector is a fundamental pillar of the national economy of Indonesia, contributing 61% to the Gross Domestic Product and absorbing more than 97% of the total workforce in 2023 (Bangun & Purnama, 2022). Despite its strategic role, the MSME sector has been one of the most severely impacted during the Covid-19 pandemic crisis, with revenue declines reaching up to 70% in some business sectors (Diah et al., 2021). In facing this situation, the government has initiated various strategic intervention programs to support the sustainability of MSMEs, with one of the primary focuses being the acceleration of digital transformation as an adaptive solution to address the economic disruptions caused by the pandemic.

The contemporary business ecosystem is now dynamically evolving with the acceleration of technological innovation, where digital solutions have been integrated into all commercial activities. Small and medium-sized enterprises are also swept up in this transformative wave, as they struggle to adapt and integrate digital tools into their businesses to maintain competitiveness. Recent research findings confirm that digital transformation is a vital catalyst for the growth and sustainability of SMEs (Islami et al., 2021; Jeza & Lekhanya, 2022; Yuen & Baskara, 2023). Significant evolution in the technological landscape has changed consumer behavior patterns, creating new expectations for responsive, personalized services available through various digital channels (Yuen & Baskara, 2023). In response to the continually transforming market demands, MSME entrepreneurs need to develop strategic approaches to modernize their value propositions, product portfolios, and service offerings through the directed and meaningful application of digital technology.

Recent research reveals that business digitization brings diverse benefits to MSMEs, not only enhancing understanding of consumer preferences and behavior but also facilitating more targeted market penetration and more efficient and economical marketing strategies (Pramesti et al., 2021). Although the pandemic has forced many MSMEs to face serious challenges such as liquidity crises and workforce reductions (Diah et al., 2021), the benefits of digitization are indeed much broader. By integrating digital information systems, MSMEs can optimize data usage to improve operational efficiency, allocate resources more strategically, and strengthen management decision-making processes.

The process of MSME digitization has proven to encounter various implementation complexities. Recent research reveals an interesting phenomenon: while many MSME actors show high enthusiasm for the revolutionary potential of digital technologies, actual implementation in the field is still far from expectations (Islami et al., 2021; Yuen & Baskara, 2023). Various classic constraints such as limited capital, minimal technological proficiency, and difficulties in managing change processes often hinder MSMEs in adopting digital solutions comprehensively (Islami et al., 2021). However, behind these challenges lies bright hope for MSME actors to survive and even thrive through the intelligent utilization of digital marketing. The key to success lies in the willingness to continually learn, understand current trends, and apply best practices in business digitization as recommended by various studies (Diah et al., 2021; Septiowati et al., 2021; Siska & Prapto, 2021).

Bibliometrics is a statistical methodology that analyzes basic document information such as authors, keywords, and references to provide insights into the development of a research topic (Nicolaisen, 2010; Raan, 2005). This methodology encompasses various techniques, and in this

study, co-occurrence analysis is applied to examine publications on MSME digitization from the Scopus database to visualize the science map and identify patterns of literature growth in this field.

With the support of the bibliometric approach, this research aims to present a comprehensive conceptual structure, identify emerging research directions, and propose current trends in MSME digitization. Specifically, this study aims to identify co-occurrence themes and visualize their networks, explore the developments in research topic trends on MSME digitization, and analyze the relationships between concepts to uncover patterns and potential research directions in the future.

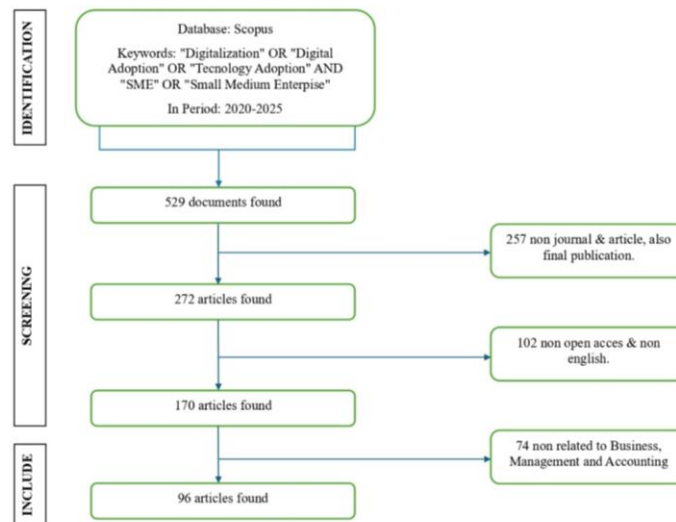
## **METHOD**

This study is a Systematic Literature Review (SLR), which is a technique for identifying, evaluating, and analyzing various relevant information in the literature to answer research questions and analyze them in depth (Snyder, 2019; Xiao & Watson, 2019). SLR "is helpful to summarize the latest knowledge on a particular topic with a systematic and transparent method of answering research questions" (Kurniati et al., 2022).

The search history in Scopus is as follows: TITLE-ABS-KEY ("Digitalization" OR "Digital Adoption" OR "Technology Adoption" AND "SME" OR "Small Medium Enterprise") AND PUBYEAR > 2019 AND PUBYEAR < 2026 AND (LIMIT-TO (SRCTYPE, "j")) AND (LIMIT-TO (OA, "all")) AND (LIMIT-TO (PUBSTAGE, "final")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (SUBJAREA, "BUSI")). With these search terms and patterns, a total of 96 articles were successfully found. Using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) model for inclusion and exclusion. This model refers to Gallagher et al (2016). Several important points below form the basis of the inclusion criteria used in this SLR, namely (1) articles published in the years 2020 to 2025; (2) only open access articles; (3) publications must be of the research/original article type; (4) the subject area of the articles is Business, Management, and Accounting; and (5) articles are published in English.

The initial search results yielded 529 documents. In the initial screening phase, 257 documents were eliminated because they were not journal articles and not final publications. Subsequently, from the 272 remaining articles, 102 were further filtered out as they were not available in open access and not written in English. After that, from the 170 remaining articles, 74 were eliminated again because they were not relevant to the fields of Business, Management, and Accounting. Finally, 96 articles met the inclusion criteria and were used in this literature study. This process demonstrates a systematic and transparent approach in selecting relevant

and quality scholarly sources.

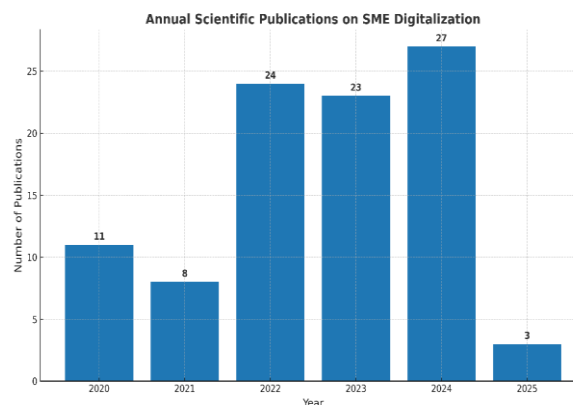


Source: processed by the researcher

**Figure 1.** PRISMA Flow Chart

## RESULT

This research examines the theme of digitalization in Micro, Small, and Medium Enterprises (MSMEs) through a bibliometric methodology using VOS viewer. The analysis is conducted to identify trends, the relationships between different types of concepts, and knowledge related to the digitalization of MSMEs. The results obtained illustrate the dynamics of the interconnections between various factors, including technology, business strategy, and innovation, that support the digital transformation of MSMEs.

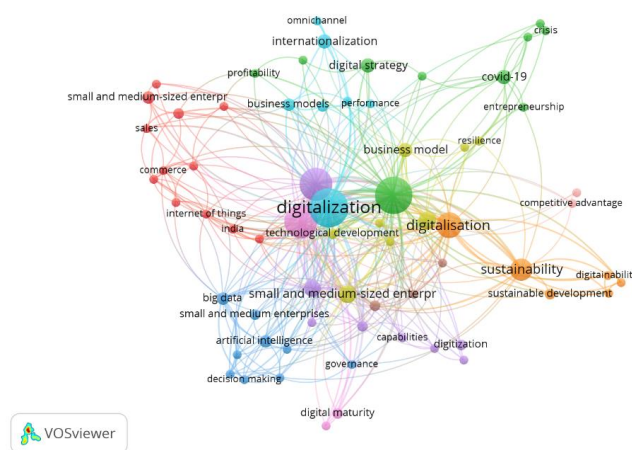


**Figure 2.** SME Digitalization Trends

The analysis of research publication trends on the digitalization of SMEs for the period 2020-2025 shows a dynamic pattern with an increasing trajectory until 2024, starting with 11

publications in 2020, declining to 8 publications in 2021, then experiencing a significant spike in 2022 with 24 publications, slightly decreasing to 23 publications in 2023, before peaking in 2024 with 27 publications. Meanwhile, the drastic decline to only 3 publications in 2025 is likely due to incomplete data since the year is still ongoing, with these fluctuations reflecting the growing academic interest in the digitalization of SMEs, particularly following the COVID-19 pandemic, which accelerated digital transformation in the small and medium-sized enterprise sector, as illustrated by the diagram depicting annual trends in scientific publications on the digitalization of SMEs that reveals a significant increase in research interest, possibly influenced by the post-pandemic technological shift.

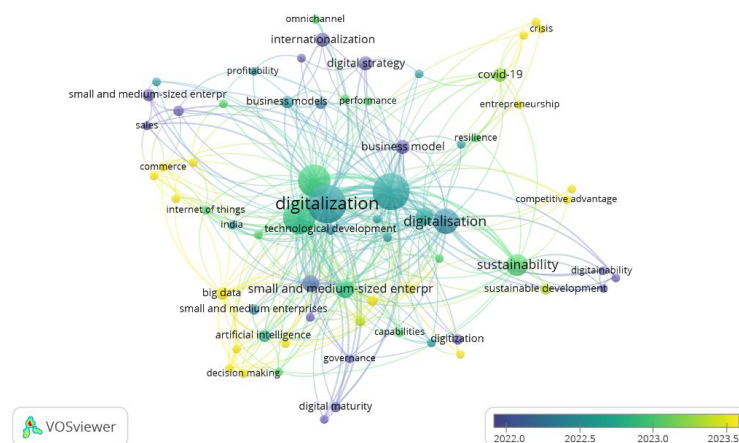
The results of Figure 3, which visualizes the research network on the digitalization of MSMEs, reveal the complexity and diversity of interrelated themes, with "SME" and "digitalization" as the main keywords at the center of connectivity. These two concepts are surrounded by various terms forming ten clusters, such as "sustainability," "business model," "industry 4.0," and "digital strategy," indicating that research on the digitalization of SMEs is not solely focused on technological aspects but also encompasses broader managerial and strategic dimensions. For instance, the red cluster contains many terms related to technology adoption and digital strategies in the face of crises, such as "COVID-19" and "resilience," while the orange and green clusters place more emphasis on sustainability and business model development. This reflects a multidisciplinary approach to understanding the digitalization of SMEs as a phenomenon that impacts various aspects of business operations.



**Figure 3.** Network Visualization

In addition, the visualization of this network shows that several key terms, such as "digital maturity," "governance," and "artificial intelligence," have cross-cluster connections, indicating

that they are interdisciplinary themes that are beginning to gain attention in the context of the digital transformation of SMEs. The relationships among these terms demonstrate a close correlation between an organization's capability to manage digital technology and its performance outcomes and long-term sustainability. In other words, the digitalization of SMEs today is no longer viewed merely as the adoption of software or digital platforms but as an integral part of business structure and strategy changes.



**Figure 4.** Overlay Visualization

The overlay visualization (Figure 4) enhances our understanding of the temporal evolution of research topics by color-coding nodes according to their publication period. The visualization reveals a chronological shift in research focus, with earlier topics (shown in red/orange) concentrated around technological fundamentals such as "internet of things," "commerce," and "sales," likely representing the foundational concepts in early SME digitalization research. More recent topics (shown in green/blue) focus on strategic and contextual aspects, including "digital strategy," "crisis," "COVID-19," and "sustainability," reflecting how research has evolved to address contemporary challenges facing SMEs. This temporal progression suggests a maturation of the research field from technology-oriented discussions toward more holistic examinations of how digitalization impacts business resilience, sustainability, and strategic positioning in a rapidly changing business environment.



SMEs in the European Union, particularly in Central and Eastern Europe, have developed digitalization driven by COVID-19. Many SMEs are reconsidering their business models and digital capabilities to adapt to the new circumstances during and after the pandemic. On the other hand, Priyono et al. (2020) states that in Indonesia, three pathways of digital transformation have emerged because SMEs had to adapt to the pandemic: first, companies already had a strong foundation to switch to digitalization; second, there was digitalization in sales, with the emergence of communication with consumers through digital channels; and third, partnering to conduct digital operation outsourcing. The existence of COVID-19 and the unexpected circumstances can bring significant impacts on SMEs, and it is inevitable that these impacts can be detrimental. Driven by a “pressured” situation, digital capabilities grew, increasing the need for SMEs to transition to digitalization during and after the pandemic (Hudayah et al., 2024). Nevertheless, Garbin Praničević et al. (2023) states that before the pandemic, some SMEs in Poland had already implemented digitalization, such as the use of IoT concepts to enhance operational efficiency, accounting software, and simple office tools, as well as social media for marketing purposes.

Moving to 2022-2023, the intensity of articles concerning SME digitalization has increased. Rajala & Hautala-Kankaanpää (2023) found that developing digitalization in SMEs is undertaken to sustain their existence amid environmental turbulence, including market turbulence and technological turbulence. This enhances managers' understanding in SMEs to adopt digital technologies and opens up new opportunities and connectivity with consumers and other companies. Moreover, digitalization also has the potential to extend the lifespan of companies and ensure their sustainability. Tick et al. (2022) even divides SMEs into two differing views on digitalization: the first group believes in the positive benefits of digitalization but is also concerned about its negative impacts, while the second group is skeptical about digitalization. Some SMEs in the Czech Republic express reluctance towards the use of digitalization because they find the process more complicated and lack external support regarding software usage and practical guidance (Straková et al., 2022).

Despite this, digitalization and technological development are unavoidable. Therefore, it has become essential for SMEs to be able to adapt. The benefits of digitalization for SMEs are also widely recognized. Prihandono et al. (2024) states that digitalization facilitates SMEs in reaching a wider consumer base, including more tech-savvy consumers, allowing product and service innovations to be directed towards digital strategies. Internally, the use of digitalization is very beneficial for developing a data-driven approach, making it easier for SMEs to design strategies and evaluate overall performance (Nagy et al., 2018). These strategies can become a strength for



SMEs in maintaining their existence and sustainability.

In 2025, articles increasingly discuss the use of digitalization for internationalization and new business strategies, as indicated by the blue cluster in Figure 3. SMEs that utilize digitalization as an innovation capability can achieve better positions in export success, although support from various parties is still needed for the internationalization of SMEs (Edeh et al., 2025). Meanwhile, (Joaquin. M et al., 2025) state that digitalization is shifting from an optional strategic choice to a necessity for business survival. Overall, this analysis shows a shift in focus from solely digital technology to integrating aspects of sustainability and resilience to crises. Future research is expected to emphasize digital strategies oriented towards resilience and innovation, where interaction between technology, business, and social elements becomes increasingly important. The results of this research not only offer new insights for researchers but also provide strategic guidance for policymakers and industry players in creating an adaptive MSME ecosystem in the continually evolving digital era.

### **CONCLUSION**

Digital transformation has become a crucial element in redefining SME business strategies within an increasingly digitized ecosystem. The adoption of digital technologies not only supports the sustainability and growth of SMEs but also responds to shifting consumer expectations, which now prioritize fast, personalized, and omnichannel services. While many SMEs have welcomed the opportunities presented by digitalization, they continue to face significant barriers such as limited resources and technological competencies. What initially emerged as a reactive strategy during the COVID-19 crisis, forcing businesses to adapt rapidly to uncertain conditions, has since evolved into a fundamental approach to enhancing resilience and competitiveness. This trend is observed not only in developing countries like Indonesia but also in Central and Eastern Europe.

Various pathways of digitalization, ranging from digital sales and online consumer communication to outsourcing digital operations through external partners, have become adaptive solutions to disruption. By 2025, the direction of digitalization will have shifted toward a stronger focus on internationalization and the development of innovation capabilities. Digitalization is no longer viewed as an optional strategy but as a fundamental necessity for business survival. This has prompted deeper integration between technology, sustainability, and crisis resilience. Future research is expected to explore digital approaches that emphasize innovation, resilience, and social connectivity in order to support the creation of an adaptive and globally competitive SME ecosystem.

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