

Jurnal Pendidikan Ekonomi Indonesia (JPEI)

e-ISSN 2721-1401 p-ISSN 2987-4904

Vol 8 (1) (2026) 74-86

Doi:

The Development of Product Innovation Research as a Driver of MSME Competitiveness in the Digital Economy: A Bibliometric Analysis

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ABSTRACT

This study examines the development of research on product innovation as a driver of MSME competitiveness in the digital economy through a comprehensive bibliometric analysis. Using data extracted from a curated EndNote database and processed with Bibliometrix and VOSviewer, this study analyses publication trends, keyword patterns, thematic clusters, and temporal evolution of research from 2022 to 2025. The findings reveal a significant annual increase in publications, indicating growing academic attention to digital transformation within MSMEs. Density, network, and overlay visualisations show that research themes are centred on product innovation, digital economy, e-commerce, and competitiveness, supported by emerging topics such as digital strategies, opportunities, challenges, and post-pandemic technological adaptation. Network mapping identifies five major clusters reflecting diverse research focuses, whereas temporal analysis highlights a shift from COVID-19-related discussions toward strategic innovation and market opportunities in the digital era. This study contributes to current scholarship by mapping the intellectual landscape of MSME innovation research and identifying research gaps related to advanced technologies, digital business models, and cross-institutional collaboration. These insights provide a foundation for future research and support policymakers in strengthening MSME digital innovation ecosystems.

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OPEN ACCESS

Article History:

Submitted 05 January 2026

First Revised 15 January 2026

Accepted 05 February 2026

First Available online 30 April 2026

Publication Date 28 May 2026

Keyword:

Product Innovation, Digital Economy, MSMEs, Bibliometric Analysis, Competitiveness.

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INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) play a critically important role in Indonesia’s national economic structure. According to data from the Ministry of Cooperatives and SMEs, by the end of 2024, approximately 30.18 million MSMEs were registered, contributing 61.9% to Indonesia’s Gross Domestic Product (GDP) (Kadin Indonesia, 2025). Digital transformation within the MSME sector has accelerated remarkably, with a significant surge in the adoption of digital technology across various business lines. In 2020, digitalized MSMEs numbered 11.82 million units, rising to 17.25 million in 2021, and reaching 25.45 million as of May 2024 (Link UMKM, 2025; Ministry of Cooperatives and SMEs, 2025). The government targeted 30 million MSMEs to enter the digital ecosystem by the end of 2024, in line with the national digital transformation roadmap (Link UMKM, 2025).

The acceleration of MSME digitalization has become increasingly evident since 2020. Digitalized MSMEs grew from 11.82 million in 2020 to 25.45 million as of May 2024, as shown in Table 1. The government has targeted 30 million MSMEs to enter the digital ecosystem by the end of 2024 through various programs, including the National Digital Literacy Movement and the national digital transformation roadmap (Ministry of Cooperatives and SMEs, 2025).

Table 1. Development of MSME Digitalization in Indonesia (2020–2024)

Year	Number of Digitalized MSMEs	Development Notes
2020	11.82 million	Initial acceleration of MSME digitalization after COVID-19
2021	17.25 million	Significant growth through national digital transformation programs
2022	20.24 million	Estimated continued growth
2023	23.10 million	Strengthening of the digital ecosystem
2024	25.45 million	Realized figure as of May 2024

MSME contributions to the national economy have remained stable and have continued to grow, as shown in Table 2.

Table 2. MSME Contributions to Indonesia’s GDP (2020–2024)

Year	GDP Contribution (%)	Description
2020	60,5%	MSMEs remain the backbone of the economy
2021	61,1%	Beginning of economic recovery
2022	61,4%	Increased productivity
2023	61,7%	Efficiency through digitalization
2024	61,9%	Official government data

MSME digital transformation has also been reinforced by national regulations such as the RPJMN 2020–2024 and technology-based MSME empowerment policy agendas. Nevertheless, a gap remains between policy and implementation: of the 64.2 million MSMEs in Indonesia, only 19.5% optimally utilise digital platforms (Ministry of Cooperatives and SMEs, 2025). This situation underscores the need for more targeted, evidence-based strategies.

Within a theoretical context, product innovation is the central driver of MSME competitiveness. Schumpeterian innovation theory affirms that innovation is the engine of economic growth through value creation and product differentiation (Schumpeter, 1942). Digitalization enables MSMEs to accelerate innovation through modern product design, service modification, and real-time market analytics (Nambisan et al., 2019). Thus, technology-supported product innovation has the potential to become a key determinant of MSME competitiveness in both domestic and global markets.

A bibliometric approach is essential for mapping the development of product innovation research within the MSME digital economy ecosystem. Through this method, publication trends, author collaborations, research foci, and knowledge gaps can be identified objectively. This mapping is relevant for helping policymakers, academics, and business practitioners understand the trajectory of scholarly development and determine strategies for strengthening MSMEs (Donthu et al., 2021).

LITERATURE REVIEW

1. Product Innovation in the Perspective of Development Economics

In the development economics literature, MSMEs are regarded as the backbone of the national economic structure, particularly in developing countries,

because of their role in job creation, income distribution, and economic resilience. However, the contribution of MSMEs to long-term growth is largely determined by their innovation capacity, especially product innovation, which enables productivity gains and value addition (Audretsch et al., 2020).

Schumpeterian innovation theory positions innovation as the primary mechanism of *creative destruction* that drives economic growth through product differentiation and production efficiency (Schumpeter, 1942). In the MSME context, product innovation functions not only as a market differentiation tool but also as a means of enhancing structural competitiveness amid constraints of capital and technology. Empirical studies indicate that MSMEs capable of consistent product innovation are more likely to survive and grow than those oriented toward conventional production (OECD, 2021).

2. Digitalization and MSME Productivity

The development of the digital economy has introduced a new paradigm in the MSME innovation process. Digitalization enables MSMEs to access broader markets, reduce transaction costs, and improve coordination and distribution efficiency. From an economic perspective, digital transformation has the potential to increase the total factor productivity of MSMEs through the utilisation of information technology, e-commerce, and digital marketing systems. Recent literature affirms that digital technology adoption has a positive correlation with business performance and MSME competitiveness, demonstrating that innovation in the digital economy is the primary driver of productivity and business competitiveness (Nambisan et al., 2019).

Nevertheless, the rate of digital adoption among MSMEs in developing countries continues to face structural constraints, including limited digital literacy, technology access, and institutional capacity gaps. This situation indicates that MSME digitalization is not purely a technological issue but also a development challenge tied to the quality of human resources and public policy support (World Bank, 2022).

3. MSME Product Innovation in the Digital Economy

The digital economy reinforces the role of product innovation as the primary strategy for enhancing MSME competitiveness. Digital platforms enable data-driven innovation processes and real-time market feedback, allowing MSMEs to adapt products to consumer preferences more quickly and efficiently. In the literature, digitally-based product innovation is viewed as a form of structural adaptation by MSMEs to an increasingly competitive economic environment (Autio et al., 2018).

Several studies indicate that the integration of product innovation with e-commerce and digital marketing contributes significantly to improved market access and competitiveness (Dini & Rudra, 2021). However, most studies remain focused on micro-level analyses or sectoral case studies, and thus have not provided a

comprehensive picture of the patterns and direction of MSME product innovation research in the digital economy context at an aggregate level.

4. Bibliometric Studies in MSME and Digital Economy Research

Bibliometric approaches are increasingly employed in economics and development studies to map knowledge dynamics, identify research trends, and evaluate the intellectual structure of a field of inquiry (Donthu et al., 2021). In the context of MSMEs and the digital economy, bibliometric analysis enables identification of dominant themes, academic collaboration networks, and shifts in research focus over time.

Prior bibliometric literature indicates that digital MSME research has grown significantly in the post-COVID-19 period, with a focus on digitalization, innovation, and competitiveness (Aria & Cuccurullo, 2017). However, studies specifically mapping MSME product innovation as a driver of competitiveness in the digital economy remain relatively scarce, particularly in the context of developing countries such as Indonesia.

5. Research Gaps and Study Contribution

Based on the literature review, two main research gaps are identified. First, there is a scarcity of studies that comprehensively map the development of MSME product innovation research using a bibliometric approach. Second, the integration of a development economics perspective into MSME innovation analysis in the digital economy era remains minimal.

This study seeks to address these gaps by conducting a bibliometric analysis of the MSME product innovation literature in the digital economy context. By mapping publication trends, thematic clusters, and temporal research dynamics, this study contributes to the enrichment of the development economics literature and provides an empirical foundation for formulating policies to strengthen digital innovation-based MSME competitiveness in Indonesia.

METHODS

This study employs a bibliometric approach to map the development of research on MSME product innovation in the digital economy context over the period 2020–2025. The bibliometric method was selected because it can systematically and measurably identify publication patterns, keyword trends, author networks, and research clusters (Aria & Cuccurullo, 2017; Donthu et al., 2021).

All bibliographic data in this study were obtained exclusively from Google Scholar, which was selected because of its broad coverage of scientific publications, encompassing national journals, conference proceedings, working papers, research reports, and academic articles.

Data collection was conducted in November 2025 using the following search keywords: MSMEs, Bibliometrics, E-commerce, Competitiveness, Digital Economy, and Innovation. The publication year range was restricted to 2020–2025 to capture the growing dynamics of the literature. A total of 80 bibliographic documents were identified in the database. Documents were included if they were published within the 2020–2025 range and examined product innovation, digital transformation, the digital economy, or MSME competitiveness. All data were analysed using VOSviewer bibliometric software (Van Eck & Waltman, 2014).

RESULT

Analysis of publication counts reveals a significant increase from 2022 to 2025. The publication peak occurred in 2025, with a total of 92 articles.

Table 3. Jumlah Publications per Year

Year	Number of publications
2022	10
2023	29
2024	48
2025	92
Total	179

Publication trends showed a significant increase. Publications grew from 10 articles in 2022 to 92 articles in 2025 (Table 3). This pattern is visualised in Figure 1, which shows a sharp upward trend since 2023.

Keyword analysis reveals the dominance of terms such as MSMEs, Product Innovation, Digital Economy, and E-commerce. These keywords reflect the primary research focus on innovation and digitalization.

Table 4. Dominant Keywords in Digital MSME Research

Kata Kunci	Frekuensi Kemunculan
UMKM	High
Innovation Produk	High
Digital Economy	High
E-commerce	High

Daya Saing	High
Digital Transformation	Medium
Digital Marketing	Medium
Technology	Medium
Digital Literacy	Medium
Model Bisnis	Low
Business Sustainability Usaha	Low
Digital Collaboration	Low

Keyword analysis indicates that research topics are most frequently associated with MSMEs, Product Innovation, Digital Economy, and E-commerce. The frequency of keyword occurrence is presented in Table 4.

Table 5. Author Most Productive

Author	Institution	Productivity
Author A	Universitas Brawijaya	>5 Publications
Author B	Universitas Indonesia	4 Publications
Author C	Universitas Negeri Malang	4 Publications
Author D	UPI	3 Publications
Author E	Universitas Airlangga	3 Publications

Table 6. Distribution of Journal Publications

Kata Kunci	Frekuensi Kemunculan
Journal Economy & Kewirausahaan	12
Journal Manajemen & Bisnis	10
Journal UMKM & Innovation	9
Journal Economy	7
Proceedings UMKM	6
Journal Sistem Informasi	5

Table 7. Ringkasan Analisis Bibliometrik

Deskripsi	Hasil
Timespan	2013–2022
Sources (Journals, Books, etc.)	123
Documents	180
Annual Growth Rate %	51,48%
Document Average Age	1,93
Average Citations per Document	7,717
References	9.127
Keywords Plus (ID)	376
Author's Keywords (DE)	760
Authors	556
Authors of Single-authored Docs	36
Single-authored Docs	36
Co-authors per Document	3,32
International Co-authorships %	29,44%
Articles	180

This study employs a conceptual structure based on co-occurrence relationships using keywords, titles, and abstracts, as shown in Figure 3, which displays the keyword co-occurrence network structure of research on MSME product innovation in the digital economy. Each node represents a keyword, while connecting lines indicate relationships or associations appearing across documents. The visualisation reveals the formation of several large clusters represented by different colours. The (red cluster) is the dominant cluster, focusing on keywords such as product, economy, literature review, and competitiveness, indicating that the core research discussion centres on product innovation strategies to enhance MSME economic performance. The (blue cluster) emphasises themes of opportunity, challenge, and market potential, reflecting analyses of the opportunities and challenges arising in the digital economy. The (green cluster) relates to Indonesia, digital strategies, and business models, underscoring the importance of national context and business model transformation in supporting MSME digitalization. The (yellow cluster) highlights keywords such as role, innovation, and benefit, reflecting discussions on the benefits and role of innovation for MSMEs. The (small purple cluster) groups keywords

such as covid, digital era, and ICT, reflecting the influence of the pandemic era on the acceleration of digital technology adoption. This network structure indicates that digital MSME research possesses a complex yet interconnected thematic framework, and demonstrates multidisciplinary research dynamics.

Figure 3. Network Visualization

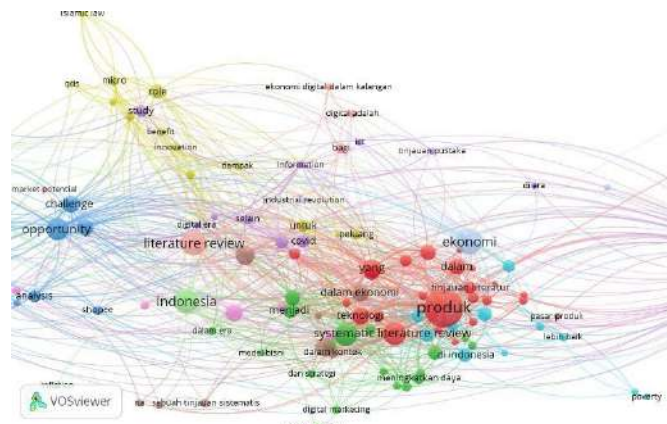


Figure 4 represents the temporal development of keywords over the analysis period. Node colours reflect the average year of keyword occurrence, where purple hues indicate older keywords (approximately 2023), while green–yellow hues indicate more recently emerging keywords (2024–2025). The visualisation shows that keywords such as covid, digital era, and ICT appeared earlier as a response to the pandemic’s impact and the acceleration of digitalization in the MSME sector. Keywords such as product, economy, literature review, and competitiveness fall within the green-coloured area, indicating consistent discussion of these topics throughout 2023–2024. Meanwhile, keywords such as opportunity, challenge, innovation, and role appear in brighter yellow hues, indicating that discussions on opportunities, challenges, and new innovations became a primary concern for researchers in 2024–2025. This pattern suggests that research focus has shifted from pandemic-related issues toward strategic issues in a more stable digital economy, such as innovation strategies, market challenges, and the strengthening of MSME competitiveness in the digital era.

Figure 4. Overlay Visualization

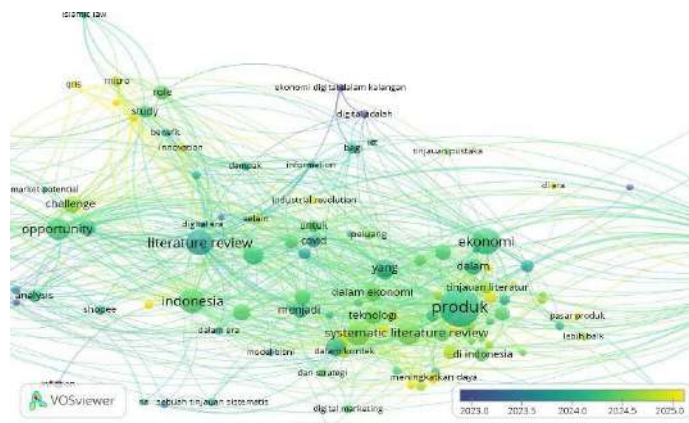
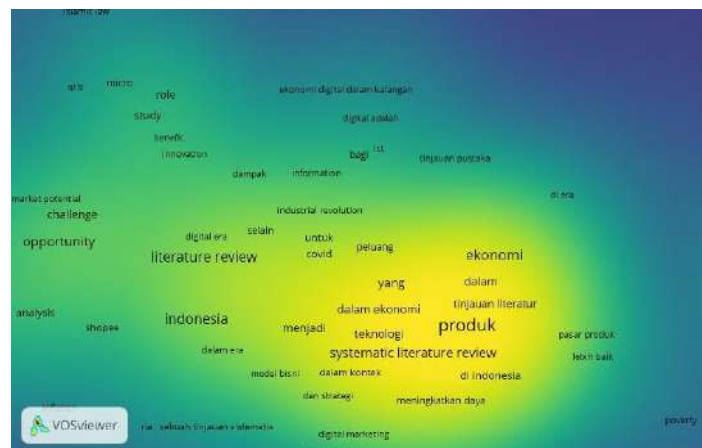


Figure 5 shows the density level of keyword occurrence across all analysed documents. The colours in this visualisation represent the frequency of keyword use, where yellow indicates the highest density and green–blue indicates medium to low density. The visualisation reveals that the keywords (product), (economy), (systematic literature review), (literature review), and (Indonesia) are the most frequently occurring, forming bright yellow-coloured areas. The highest density of the keywords (product) and (economy) indicates that the primary research focus over the analysed period concerns product innovation and digital economic analysis in Indonesia. Meanwhile, keywords in the green or blue regions reflect supporting topics with lower discussion intensity, such as (opportunity), (challenge), and (digital era). This density pattern affirms that academic discourse in digital MSME research is more concentrated on product innovation as an adaptive strategy for navigating the dynamics of a technology-based economy.

Figure 5. Density Visualization



DISCUSSION

The bibliometric analysis reveals increasing academic attention to MSME product innovation in the digital era. The highest keyword density around the terms product and economy signals that research focuses on product innovation strategies within Indonesia's digital economy ecosystem. The keyword co-occurrence network structure in the Network Visualization identifies five main clusters. The dominance of the product innovation and digital economy clusters confirms that MSME research is aligned with the national digitalization agenda. The Overlay Visualization reveals a shift in research themes from COVID-19 impact topics toward opportunities, challenges, and innovation in the modern digital economy. This is consistent with MSME transformation toward enhanced competitiveness through technology.

Overall, these findings demonstrate that MSME product innovation research is increasingly developing toward more strategic themes such as digital market opportunities, technological innovation, and global competitiveness.

CONCLUSION

This study provides a comprehensive understanding of the development of MSME product innovation research in the digital economy context through bibliometric analysis. The findings indicate that the primary research focus is on the themes of product innovation, digital economy, and e-commerce, as mapped through keyword density, network structure, and temporal development. The year-on-year increase in publications confirms that the issue of MSME digitalization is increasingly relevant in academic inquiry, in line with national economic transformation (Hakam et al., 2023).

VOSviewer visualisations show that research has developed across several interconnected thematic clusters, including clusters on product innovation, digital strategies, opportunities and challenges of digitalization, and the pandemic's impact on the acceleration of technology adoption. Furthermore, keyword development indicates a shift in research focus from pandemic issues toward strategic issues such as opportunities, challenges, and innovation in the digital ecosystem.

Overall, this study affirms that technology-based product innovation is the primary driver of MSME competitiveness in the digital economy era. These bibliometric findings can serve as a foundation for future researchers to explore advanced themes such as the integration of advanced digital technologies (AI, IoT), digital business models, and cross-sector collaboration in supporting MSME innovation. Future research is also encouraged to utilise broader data sources to enrich the analysis of digital MSME research trends.

The findings of this study have several important implications for stakeholders. From a policy perspective, the government and MSME support institutions need to strengthen digital literacy programmes, technology access, and innovation ecosystem development to drive competitiveness based on product innovation (World Bank, 2022). For future researchers, the bibliometric results indicate research gaps in the topics of advanced technology integration, such as artificial intelligence (AI) and the Internet of Things (IoT), as well as adaptive digital business models responsive to market changes. In addition, inter-institutional research collaboration and the utilisation of broader scientific databases are strongly recommended to enrich the analysis and deepen the study of MSME innovation in the digital economy era (Donthu et al., 2021).

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