

Mapping Global Research Trends in Digital Transformation and Cyberpreneurship Through Bibliometric Analysis

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Article Info

Article history:

Submission June 19, 2026
Revised September 03, 2026
Accepted October 15, 2026
Published October 19, 2026

Keywords:

Digital Transformation
Cyberpreneurship
Bibliometric Analysis
Research Trends
Technological Innovation



ABSTRACT

Digital transformation has become a major driver of change across business sectors, including the rapid growth of cyberpreneurship in the digital economy. Technologies such as , big data, and digital platforms enable entrepreneurs to create innovation and strengthen global competitiveness. However, research on digital transformation and cyberpreneurship remains fragmented, making it difficult to identify trends, key themes, and research gaps. **This study aims** to map research trends, intellectual structures, and major themes in digital transformation and cyberpreneurship. **This study employs** a quantitative bibliometric analysis of scientific publications indexed in Scopus and Web of Science within a specified period. VOSviewer is used to identify collaboration patterns, dominant keywords, and relationships among research topics. **The findings** show a significant increase in publications, reflecting growing academic interest in this field. Major research clusters include technological innovation, digital business strategies, consumer behavior, and startup ecosystems. China and the United States emerge as leading contributors, while the research focus has shifted from technical aspects toward strategic and policy-oriented dimensions. This mapping provides a structured overview of the field and supports future research direction. **The study concludes** that digital transformation plays a crucial role in supporting cyberpreneurship growth. Nevertheless, research gaps remain, particularly in developing-country contexts and practical implementation. **Future studies** should therefore explore more contextual, inclusive, and sustainable approaches to strengthen digital entrepreneurship ecosystems.

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DOI: <https://doi.org/10.33050/sabda.v5i2.1163>

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1. INTRODUCTION

Digital transformation has become one of the most significant drivers of change in the modern business environment, influencing how organizations create value, compete, and sustain their operations in the digital economy [1]. The rapid development of technologies such as Artificial Intelligence (AI), big data analytics, cloud computing, blockchain, the Internet of Things (IoT), and digital platforms has transformed traditional business processes and enabled new forms of innovation [2]. Organizations across various industries increasingly adopt digital technologies to improve operational efficiency, enhance customer experiences, and

strengthen their competitive advantages [3]. In addition, digital transformation has encouraged businesses to develop more flexible and data-driven decision-making processes, allowing them to respond quickly to changing market demands. The integration of digital technologies has also facilitated global connectivity, enabling firms to access wider markets and establish stronger relationships with customers and stakeholders [4]. As a result, digital transformation is no longer viewed merely as a technological advancement but as a strategic necessity for business growth and sustainability [5]. The widespread adoption of digital technologies has created numerous opportunities for innovation and entrepreneurship, making digital transformation a critical factor in shaping contemporary economic development [6].

One of the most notable outcomes of digital transformation is the rapid growth of cyberpreneurship, which refers to entrepreneurial activities that utilize digital technologies and internet-based platforms to create, manage, and expand business ventures [7]. Cyberpreneurs leverage digital tools such as e-commerce platforms, social media, mobile applications, and online payment systems to reach customers more efficiently and operate beyond geographical boundaries. This form of entrepreneurship has gained considerable attention due to its ability to reduce entry barriers, lower operational costs, and provide access to global markets. Consequently, cyberpreneurship has become an important contributor to economic growth, employment generation, and technological innovation in many countries. The increasing availability of digital infrastructure and internet access has further accelerated the development of digital startups and online businesses [8]. As interest in digital transformation and cyberpreneurship continues to grow, researchers from various disciplines have conducted studies on topics such as digital innovation, entrepreneurial ecosystems, technology adoption, consumer behavior, and business performance [9]. However, despite the increasing number of publications, the literature remains fragmented, making it difficult to obtain a comprehensive understanding of the research landscape and its evolving trends.

Therefore, this study aims to map the research trends, intellectual structures, and thematic developments related to digital transformation and cyberpreneurship through a bibliometric analysis of publications indexed in Scopus and Web of Science [10]. Previous bibliometric studies have examined digital transformation in start-ups, digital entrepreneurship, and cyberpreneurship as distinct research areas. In contrast, this study focuses specifically on the intersection of digital transformation and cyberpreneurship as an integrated research domain [11, 12]. The novelty of this study lies in examining how these two areas are interconnected within the scientific literature by combining publication trend analysis, citation analysis, co-authorship analysis, country and institutional analysis, and keyword co-occurrence analysis. This approach extends previous bibliometric research by not only identifying developments within digital entrepreneurship or digital transformation separately, but also mapping their interconnected research themes, collaboration patterns, and emerging topics within a single analytical framework. The study therefore seeks to identify dominant research clusters, emerging topics, and research gaps related to the relationship between digital transformation and cyberpreneurship. The findings are expected to contribute to the existing literature by providing a comprehensive mapping of this intersection and highlighting its evolving research landscape, while offering insights for researchers, policymakers, and practitioners interested in sustainable and inclusive digital entrepreneurship ecosystems.

Based on the background and identified research gaps, the research questions of this study are formulated as follows:

- **RQ1:** How has the research on digital transformation and cyberpreneurship developed over time in terms of publication trends and academic output?
- **RQ2:** What are the major research themes and keyword clusters that characterize the literature on digital transformation and cyberpreneurship?
- **RQ3:** Who are the most influential authors, institutions, and countries contributing to research in digital transformation and cyberpreneurship?
- **RQ4:** How are digital transformation and cyberpreneurship interconnected within the existing scientific literature?
- **RQ5:** What research gaps and emerging topics can be identified to guide future studies on digital transformation and cyberpreneurship?

Furthermore, this study contributes to the United Nations Sustainable Development Goals (SDGs), particularly SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure),

and SDG 10 (Reduced Inequalities). By mapping global research trends in digital transformation and cyberpreneurship, this study supports a better understanding of how digital technologies and entrepreneurial innovation can promote economic opportunities, strengthen innovation ecosystems, and expand access to digital business activities. The identification of emerging research themes and geographical research gaps may also help policymakers and practitioners develop more inclusive digital entrepreneurship strategies, particularly in developing countries where digital capabilities and infrastructure remain important challenges. Although this study does not directly measure SDG outcomes, its bibliometric findings provide a knowledge base for guiding future research and informing policies that align digital transformation and cyberpreneurship with sustainable, inclusive, and innovation-driven economic development.

2. LITERATURE REVIEW

The literature on digital transformation and cyberpreneurship has expanded considerably in recent years, reflecting the increasing importance of digital technologies in shaping contemporary business environments. As organizations and entrepreneurs continue to adopt emerging technologies, scholars have explored various dimensions of digital transformation, entrepreneurial innovation, and digital business development [13]. However, the growing volume of research has resulted in a fragmented body of knowledge, making it challenging to identify the conceptual relationships among these topics and understand their overall development. Therefore, this literature review examines the key concepts underlying digital transformation and cyberpreneurship, discusses their interrelationship, and highlights the role of bibliometric analysis as a systematic approach for mapping and synthesizing existing research in this domain.

2.1. Digital Transformation

Digital transformation refers to the integration of digital technologies into organizational activities to improve performance, efficiency, and value creation [14, 15]. It involves technologies such as artificial intelligence, big data analytics, cloud computing, blockchain, and the Internet of Things (IoT) to enhance business processes and strategic decision-making [16–18]. Beyond technological adoption, digital transformation encompasses changes in organizational culture, leadership, business models, and customer engagement strategies [19]. These changes help organizations adapt to market dynamics, strengthen innovation and competitiveness, and support long-term sustainability [20]. Furthermore, digital technologies enable data-driven insights into consumer preferences and market trends, supporting personalized products and services that improve customer satisfaction and loyalty, while digital platforms and cloud-based systems enhance organizational collaboration and communication [21, 22].

2.2. Cyberpreneurship

Cyberpreneurship refers to entrepreneurial activities that are conducted through digital technologies and internet-based platforms [23]. Unlike traditional entrepreneurship, cyberpreneurship relies heavily on digital infrastructure to create, market, and distribute products and services. The emergence of e-commerce, social media, mobile applications, and digital payment systems has accelerated the growth of cyberpreneurship across the globe. Entrepreneurs are increasingly utilizing digital tools to identify market opportunities, engage with customers, and develop innovative business solutions. This phenomenon has contributed to the rapid expansion of digital startups and online businesses in various industries [24].

The growth of cyberpreneurship offers several advantages, including lower startup costs, greater market accessibility, and increased business scalability. Digital entrepreneurs can reach customers beyond geographical boundaries and operate in global markets with relatively limited physical resource [25]. Moreover, cyberpreneurship encourages innovation by enabling entrepreneurs to experiment with new business models and technological solutions [26]. Despite these benefits, cyberpreneurs also face challenges such as cybersecurity risks, intense market competition, technological disruptions, and regulatory uncertainties. Therefore, understanding the factors that influence cyberpreneurial success is essential for promoting sustainable digital entrepreneurship and supporting economic growth in the digital era [27].

2.3. The Relationship Between Digital Transformation and Cyberpreneurship

Digital transformation and cyberpreneurship are closely interconnected concepts that mutually reinforce each other. The advancement of digital technologies appears prominently as the foundation upon which

cyberpreneurial activities can emerge and grow [28]. Technologies such as cloud computing, AI, big data analytics, and digital platforms enable entrepreneurs to develop innovative products and services while reducing operational costs. As organizations continue to embrace digital transformation, new opportunities are created for entrepreneurs to identify market needs and establish digital-based business ventures [29]. Consequently, digital transformation is framed as a catalyst for the expansion of cyberpreneurship within the digital economy.

At the same time, cyberpreneurship contributes to the broader process of digital transformation by introducing innovative solutions and disruptive business models [30]. Many digital startups play a significant role in accelerating technological adoption and transforming traditional industries [31]. Through their innovative approaches, cyberpreneurs challenge conventional business practices and encourage organizations to adopt digital technologies more rapidly [32]. This reciprocal relationship is observed that digital transformation and cyberpreneurship are essential components of modern economic development [33, 34]. Understanding this relationship is therefore important for policymakers, business leaders, and researchers seeking to foster innovation and competitiveness in the digital age.

2.4. Bibliometric Analysis as a Research Mapping Tool

Bibliometric analysis is a quantitative research method used to evaluate and map scientific publications within a particular field of study [35]. This method involves the analysis of publication data, citation patterns, co-authorship networks, and keyword occurrences to identify research trends and intellectual structures [36]. Bibliometric analysis has become increasingly popular because it is associated with researchers to systematically examine large volumes of academic literature and uncover hidden relationships among research topics [37]. By analyzing bibliographic information, scholars can gain a comprehensive understanding of the development and evolution of a research field over time [38].

One of the most widely used tools in bibliometric studies is VOSviewer, which facilitates the visualization of networks among authors, institutions, countries, citations, and keywords [39, 40]. Through graphical representations, researchers can identify dominant research themes, influential contributors, and emerging areas of interest. Bibliometric analysis is particularly useful in rapidly developing fields such as digital transformation and cyberpreneurship, where the volume of publications continues to grow significantly [41]. Therefore, this method provides a valuable framework for understanding research developments, identifying knowledge gaps, and guiding future research directions. The application of bibliometric analysis in this study is expected to provide a comprehensive overview of the intellectual landscape surrounding digital transformation and cyberpreneurship [42].

3. METHOD

To achieve the research objectives and address the formulated research questions, this study adopts a systematic bibliometric approach to analyze the development of scholarly publications on digital transformation and cyberpreneurship. Bibliometric analysis is particularly suitable for examining the intellectual structure, research trends, collaboration patterns, and thematic evolution of a research field based on published scientific literature. By utilizing bibliographic data obtained from Scopus and Web of Science and applying quantitative analytical techniques, this study seeks to provide a comprehensive overview of the existing knowledge landscape, identify emerging research themes, and highlight gaps in the global literature, particularly in developing-country contexts. The methodological procedures employed in this study are described in the following subsections.

3.1. Research Design

The data used in this study were collected from two internationally recognized scientific databases, namely Scopus (Elsevier) and Web of Science Core Collection (Clarivate). The search was conducted on 27 September 2026, covering title, abstract, and keyword fields using the exact search query "Digital Transformation" AND "Cyberpreneurship". For Scopus, the search was performed across title–abstract–keyword fields, limited to publications from 2015 to 2024, English language, and document types including journal articles, conference papers, and review articles, yielding 387 initial records. For Web of Science, the same keywords were applied to the topic field, with equivalent limits on publication years 2015–2024, English language, and document types comprising articles, reviews, and conference proceedings, yielding 294 initial records.

To enhance methodological transparency and reproducibility, the publication selection process followed the PRISMA 2020 framework. In the identification stage, a total of 681 records were retrieved, com-

prising 387 from Scopus and 294 from Web of Science. After removing 169 duplicate entries, 512 unique records remained. During the screening stage, 347 records were excluded due to irrelevance or incomplete metadata, leaving 165 records assessed for eligibility. Of these, 42 were further excluded for insufficient relevance or missing information. The final dataset consisted of 123 publications included in the bibliometric analysis. All subsequent bibliometric analyses were performed using this final dataset of 123 publications. The selected publications served as the sole data source for examining publication trends, citation patterns, keyword co-occurrence, country contributions, institutional productivity, and collaboration networks. Therefore, all findings reported in this study represent the characteristics and research patterns identified from the 123 eligible publications after the PRISMA-based selection process.

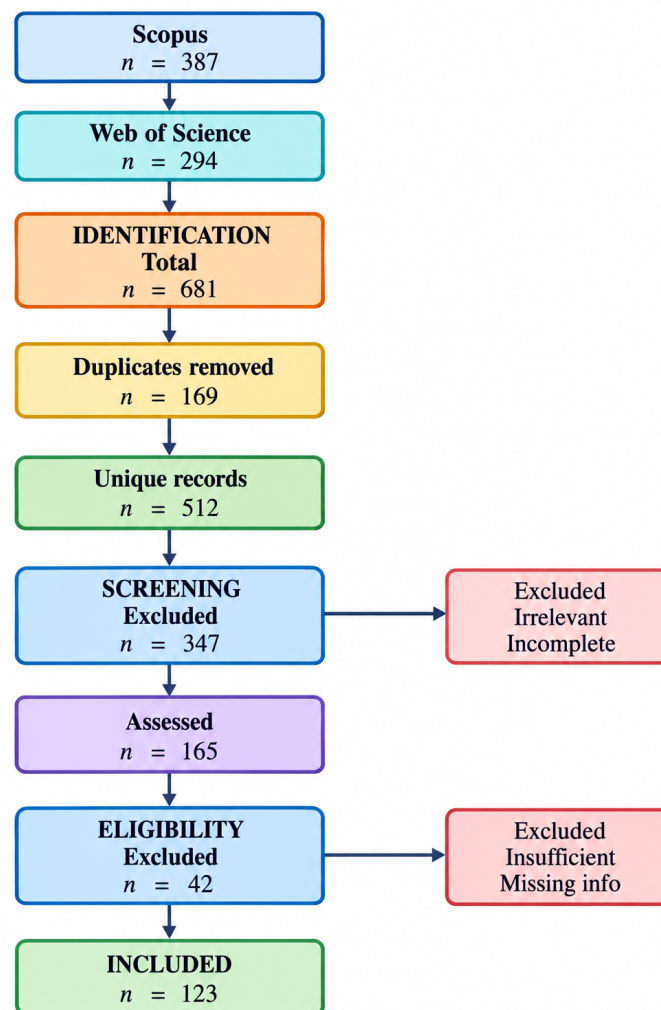


Figure 1. Research Framework

The publication selection process followed the PRISMA 2020 framework, as illustrated in Figure 1. Identification yielded 681 records, comprising 387 from Scopus and 294 from Web of Science. After removing 169 duplicate entries, 512 unique records remained for further evaluation. During screening, 347 records were excluded because they did not align with the study's core focus or lacked essential metadata. The remaining 165 records were then assessed to ensure they met all predefined inclusion criteria. At this stage, 42 records were excluded due to insufficient relevance to digital transformation and cyberpreneurship. Finally, a total of 123 publications were confirmed as eligible and included in the bibliometric analysis. Each step was carefully documented to ensure transparency and reproducibility of the findings. This process ensured reliable analysis of publication trends, collaborations, and themes in digital transformation and cyberpreneurship.

Table 1. Data Collection Criteria

Criteria	Description
Databases	Scopus and Web of Science
Keywords	“Digital Transformation” AND “Cyberpreneurship”
Document Types	Journal Articles, Conference Papers, Review Articles
Language	English
Publication Period	2015–2024
Analysis Software	VOSviewer
Analysis Type	Bibliometric Analysis

Table 1 presents the data collection criteria used in this study, including the selected databases, keywords, document types, publication period, analysis software, and bibliometric approach applied to identify and analyze relevant publications on digital transformation and cyberpreneurship.

3.2. Data Analysis Procedure

Data were analyzed using VOSviewer version 1.6.20 to examine publication trends, collaboration networks, and keyword co-occurrence for digital transformation and cyberpreneurship. The analysis was conducted using bibliographic records from the 123 finalized publications after duplicate removal and eligibility screening. The dataset was exported and processed to generate bibliometric indicators, including publication output, citation impact, collaboration networks, and keyword relationships. The analysis employed keyword co-occurrence as the unit of analysis, using full counting with a minimum occurrence threshold of 5, yielding 47 keywords grouped into thematic clusters. Association strength was applied as the normalization method, and link strength measured relationship intensity among keywords. All parameters ensure methodological transparency and reproducibility.

3.3. Research Framework

The research process followed a systematic workflow consisting of data collection, screening, data cleaning, bibliometric analysis, and interpretation of results. This framework ensures that the analysis is conducted in a structured and transparent manner.

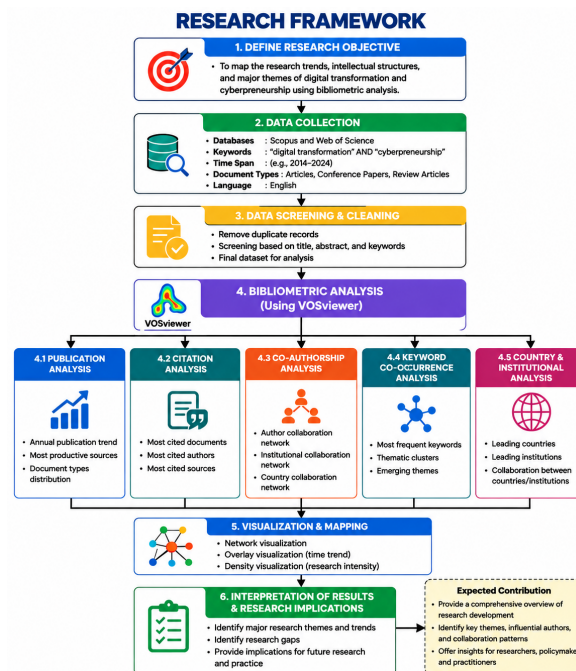


Figure 2. Research Framework

Figure 2 illustrates the research framework applied in this study, presenting the systematic workflow

for mapping research trends, intellectual structures, and thematic developments in digital transformation and cyberpreneurship. The framework begins with defining research objectives, followed by data collection from Scopus and Web of Science using relevant keywords. The collected publications are screened and cleaned to ensure dataset quality before being analyzed using VOSviewer through publication, citation, co-authorship, keyword co-occurrence, country, and institutional analyses. The resulting visualizations identify dominant themes, collaboration patterns, influential contributors, and emerging topics. Finally, the findings are interpreted to reveal research developments, knowledge gaps, and future directions within the digital transformation and cyberpreneurship domain.

3.4. Bibliometric Indicators

Several bibliometric indicators were used to analyze research development in digital transformation and cyberpreneurship, including publication, citation, co-authorship, keyword co-occurrence, country, and institutional analyses. These indicators provide insights into research productivity, impact, collaboration patterns, major themes, and the overall knowledge structure of the field. Together, they enable a comprehensive assessment of research trends and the evolving intellectual landscape of digital transformation and cyberpreneurship.

Table 2. Bibliometric Indicators Used in the Study

Indicator	Purpose
Publication Analysis	Identify annual publication growth
Citation Analysis	Determine influential articles and authors
Co-authorship Analysis	Examine research collaboration networks
Keyword Co-occurrence	Identify dominant themes and emerging topics
Country Analysis	Assess geographical distribution of publications
Institutional Analysis	Identify leading research institutions
Analysis Type	Bibliometric Analysis

Table 2 summarizes the bibliometric indicators used in this study and their respective analytical purposes. These indicators provide a structured framework for examining publication characteristics, citation impact, collaboration patterns, and thematic relationships within the literature on digital transformation and cyberpreneurship.

3.5. Reliability and Validity of the Study

To ensure the reliability and validity of the findings, data were collected from reputable databases that maintain strict indexing standards. The use of Scopus and Web of Science enhances the credibility of the dataset by ensuring that only high-quality scholarly publications are included. Additionally, standardized search strategies and inclusion criteria were applied throughout the data collection process. The use of VOSviewer further supports analytical consistency by providing reliable bibliometric visualization and network analysis techniques. By following a transparent and systematic methodology, the study aims to generate valid and reproducible findings that contribute to a deeper understanding of research trends in digital transformation and cyberpreneurship.

4. RESULTS AND DISCUSSION

This section presents the results of the bibliometric analysis on digital transformation and cyberpreneurship. Using VOSviewer, the study examines publication trends, citation patterns, collaboration networks, and keyword relationships to identify major research themes, emerging topics, and future research directions based on the final dataset obtained from Scopus and Web of Science. The analyzed dataset consisted of 123 publications selected from Scopus and Web of Science after completing the PRISMA 2020 screening process. All bibliometric analyses, including publication trends, citation analysis, keyword co-occurrence, country distribution, institutional contribution, and collaboration networks, were conducted using these 123 selected publications.

4.1. Research Results

This study analyzes the development of scientific publications on digital transformation and cyberpreneurship using a bibliometric analysis method with the assistance of VOSviewer software. The research

data were obtained from the final dataset of 123 publications collected from Scopus and Web of Science covering the period from 2015 to 2024 using the keywords “Digital Transformation” and “Cyberpreneurship”.

4.2. Publication Trend Analysis

The publication trend analysis indicates growing research interest in digital transformation and cyberpreneurship from 2015 to 2024, particularly after 2020. This development reflects the increasing relevance of digital technologies, entrepreneurship, and innovation in the digital economy. Furthermore, the keyword analysis identifies 47 keywords grouped into four thematic clusters, highlighting the interconnected nature of digital transformation, e-commerce, AI, and digital business innovation.

Table 3. Annual Publication Trends Based on Final Dataset

Year	Publications
2015	2
2016	3
2017	4
2018	5
2019	7
2020	10
2021	14
2022	19
2023	26
2024	33
Total	123

Table 3 illustrates the annual publication trend from 2015 to 2024, showing an increase from 2 to 33 publications. This pattern reflects growing research interest in digital transformation and cyberpreneurship, particularly after 2020.



Figure 3. Annual Publication Trend

Figure 3 illustrates the annual publication trend generated from the final dataset of 123 publications included in this bibliometric study. The visualization presents the distribution of selected publications from 2015 to 2024 and reflects the actual research development after the PRISMA-based screening and eligibility assessment process.

4.3. Co-occurrence Keyword Analysis Using VOSviewer

A keyword co-occurrence analysis was conducted using VOSviewer with a minimum occurrence threshold of five, identifying 47 keywords grouped into four clusters. The analysis examined keyword frequency, link strength, and cluster relationships to identify dominant research themes and their interconnections. The findings highlight key themes, including digital transformation, entrepreneurship, e-commerce, AI, and big data. These clusters reflect the multidisciplinary nature of the field and reveal emerging research trends linking technological innovation, digital entrepreneurship, and business transformation.

Table 4. Cluster Keyword Research

Criteria	Color	Description
Cluster 1	Red	Digital Transformation, Innovation, Technology
Cluster 2	Green	Entrepreneurship, Startup, SMEs
Cluster 3	Blue	E-commerce, Digital Marketing, Business Model
Cluster 4	Yellow	Artificial Intelligence, Big Data, Industry 4.0

Table 4 presents four keyword clusters identified through co-occurrence analysis, highlighting digital transformation, entrepreneurship, e-commerce, and emerging technologies such as AI, Big Data, and Industry 4.0. These clusters reflect the interconnected research themes shaping digital transformation and cyberpreneurship.

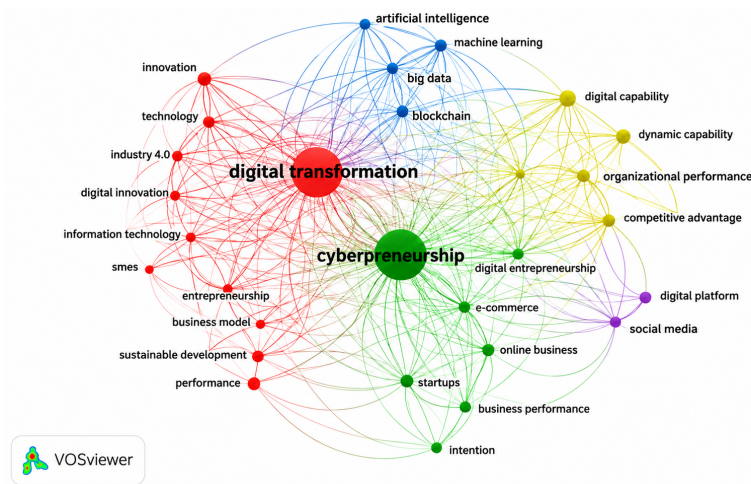


Figure 4. VOSviewer Network Visualization

Figure 4 illustrates the VOSviewer keyword network, highlighting digital transformation as a central theme interconnected with innovation, entrepreneurship, digital business, and emerging technologies in cyberpreneurship research.

4.4. Overlay Visualization Analysis

The overlay visualization reveals a shift from earlier research on e-commerce and Information and Communication Technologies (ICT) toward AI, fintech, blockchain, and digital ecosystems, highlighting the growing role of advanced technologies in digital transformation and cyberpreneurship.

4.5. Citation Analysis

Citation analysis was conducted to identify influential publications in digital transformation and cyberpreneurship research. Citation frequency reflects the academic impact of these studies and highlights their contributions to technological innovation, digital entrepreneurship, and the development of this research field.

Table 5. Articles with the Highest Citations

No	Author	Year	Citation
1	[43]	2017	2,800
2	[44]	2020	650
3	[45]	2017	1,100
4	[46]	2022	350
5	[43]	2017	2,100

Based on Table 5, the article by [43] received the highest number of citations, with a total of 2,800 citations. This result indicates that the study has had a significant influence on the development of research

related to digital transformation and cyberpreneurship. The article focuses on defining digital entrepreneurship through a digital technology perspective, which closely aligns with the dominant themes identified in the bibliometric analysis, including digital transformation, innovation, digital platforms, and digital business development [47].

The high citation count suggests that the study has served as an important reference for subsequent research by providing foundational insights into how digital technologies support entrepreneurial activities and business innovation. Their influence is reflected not only in citation frequency but also in their relevance to the major research clusters identified in this study. Therefore, the citation analysis confirms that digital innovation and digital entrepreneurship frameworks remain among the central intellectual foundations shaping the evolution of cyberpreneurship research.

4.6. Discussion

The findings highlight the growing relationship between digital transformation and cyberpreneurship, with increasing research attention since 2020, accelerated by the COVID-19 pandemic. Bibliometric analysis reveals a shift from traditional e-commerce and Information and Communication Technologies (ICT) toward AI, blockchain, fintech, machine learning, and digital ecosystems, reflecting the integration of advanced technologies into entrepreneurial innovation and business models. Keyword co-occurrence analysis identifies digital transformation, entrepreneurship, innovation, AI, and e-commerce as dominant interconnected research themes. Country analysis indicates that China and the United States are leading contributors, while Indonesia shows increasing research activity in digital startups and technology-based SMEs. Overall, these findings highlight the role of digital transformation in enhancing business efficiency, innovation, and market opportunities, while providing insights into emerging research trends and future directions in cyberpreneurship.

4.7. Analysis of the Most Productive Countries

Country analysis examines the global distribution of publications on digital transformation and cyberpreneurship. The United States and China emerge as leading contributors, followed by India, the United Kingdom, and several European countries. Indonesia also demonstrates growing research activity, particularly in digital startups and technology-driven SMEs. These patterns reflect differences in research capacity, digital infrastructure, and policy support while highlighting opportunities for greater international collaboration and further research in underrepresented regions.

Table 6. Countries with the Highest Publications

Country	Number of Publications	Percentage(%)
China	412	22.8%
USA	236	13.1%
India	154	8.5%
Australia	112	6.2%
Germany	109	6.0%
United Kingdom	98	5.4%
Indonesia	87	4.8%
Brazil	45	2.5%

Table 6 presents the countries with the highest research contributions to digital transformation and cyberpreneurship. China and the United States show the highest publication productivity, followed by other countries with varying levels of research activity. The distribution indicates that research on digital transformation and cyberpreneurship has developed across different regions, reflecting growing global academic interest in the field. Indonesia also contributes to this research area, particularly in the context of digital startups and technology-based SMEs.

4.8. Conclusion of the Results

Based on the bibliometric analysis, digital transformation, cyberpreneurship, innovation, AI, and e-commerce emerge as the dominant research themes. Country analysis indicates that China and the United States have the highest publication productivity, followed by India, Australia, Germany, the United Kingdom,

Indonesia, and Brazil, reflecting broad international participation in this research area. Furthermore, visualization results highlight the strong relationship between digital transformation and modern cyberpreneurship, which continues to evolve alongside emerging technologies such as blockchain, fintech, and digital ecosystems.

5. MANAGERIAL IMPLICATIONS

The findings provide several managerial implications for entrepreneurs, startups, and SMEs operating in the digital economy. Managers should prioritize digital transformation by adopting technologies such as AI, big data, digital platforms, and e-commerce to improve business efficiency, support innovation, and expand market opportunities. The identified keyword clusters indicate the importance of developing technology-driven business models and strengthening digital capabilities as part of cyberpreneurship development. In addition, the growing connection between digital transformation, entrepreneurship, innovation, and emerging technologies highlights the need for continuous innovation and the integration of digital ecosystems into business strategies. Organizations can leverage digital marketing, e-commerce, and big data to enhance products and services, respond to changing market conditions, and strengthen their competitiveness in the digital economy.

For startups and SMEs, particularly in developing economies such as Indonesia, strengthening digital capabilities and increasing participation in digital ecosystems can support sustainable entrepreneurial growth. Managers should focus on improving technological skills, adopting flexible digital business models, and fostering collaboration with ecosystem stakeholders to enhance innovation and market access. These managerial initiatives align with the study's findings that digital transformation contributes to greater business efficiency, innovation, market expansion, and the development of technology-based entrepreneurial activities.

Furthermore, the identified research trends provide strategic insights for managers and policymakers in strengthening digital entrepreneurship ecosystems. The growing emphasis on AI, blockchain, fintech, and digital platforms highlights the importance of adopting emerging technologies based on business needs and innovation priorities. Managers should establish strategic partnerships with technology providers, academic institutions, and government agencies to enhance digital readiness and access to technological resources. For startups and SMEs, particularly in developing countries, these initiatives can help overcome technological barriers, improve operational adaptability, and strengthen long-term competitiveness. A continuous evaluation of digital strategies is also essential to ensure that technology adoption contributes to sustainable business growth and entrepreneurial innovation.

6. CONCLUSION

This study demonstrates that digital transformation is strongly associated with the growth and development of cyberpreneurship within the digital economy. Based on the bibliometric analysis of publications from 2015–2024, research interest in digital transformation and cyberpreneurship has increased significantly, particularly after 2020. The growing number of publications indicates the rising academic and practical importance of digital technologies in shaping entrepreneurial activities, business innovation, and digital ecosystem development. The analysis also reveals the expanding intellectual landscape of the field, characterized by increasing scholarly attention to the integration of technology and entrepreneurship.

The findings identify several dominant research themes, including digital transformation, innovation, entrepreneurship, e-commerce, AI, big data, and startup ecosystems. Keyword co-occurrence and network visualization analyses reveal strong relationships among these concepts, highlighting the central role of digital transformation in supporting cyberpreneurial activities. Furthermore, the results indicate a shift in research focus from traditional digital business and e-commerce topics toward advanced technologies such as AI, blockchain, fintech, machine learning, and digital ecosystems. The study also shows that China and the United States have the highest publication productivity in the literature, followed by India, Australia, Germany, the United Kingdom, Indonesia, and Brazil. These findings indicate that research on digital transformation and cyberpreneurship has developed across different regions and continues to attract growing global academic interest.

Overall, this study provides a comprehensive bibliometric mapping of research on digital transformation and cyberpreneurship between 2015 and 2024. The findings reveal the evolution of research themes from digital business and e-commerce toward emerging topics such as AI, blockchain, fintech, machine learning, and digital ecosystems. The study contributes to the literature by identifying major thematic clusters, publication

trends, and global research contributions, while highlighting the growing scholarly interest in the intersection between digital transformation and cyberpreneurship. Despite these contributions, the study is limited to publications indexed in Scopus and Web of Science and relies on bibliometric indicators and keyword-based analysis. Future research may expand the data sources, conduct comparative analyses across regions, and explore emerging themes and practical implementation contexts to further develop understanding of digital transformation and cyberpreneurship.

7. DECLARATIONS

7.1. About Authors

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7.2. Author Contributions

Conceptualization: SS; Methodology: LS; Software: AZ.; Validation: SS and LS; Formal Analysis: AZ and LS; Investigation: SS; Resources: LS; Data Curation: LS; Writing Original Draft Preparation: AZ and SS; Writing Review and Editing: LS and AZ; Visualization: LS; All authors, SS, LS, and AZ, have read and agreed to the published version of the manuscript.

7.3. Data Availability Statement

The data presented in this study are available on request from the corresponding author

7.4. Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

7.5. Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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