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A Bibliometric Study on Digital Entrepreneurship: Mapping the Evolutions and Its Impact on Startups

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ABSTRACT

This study presents a bibliometric analysis of digital entrepreneurship, mapping its evolution, key themes, and impact on startups. Utilizing data from peer-reviewed publications from 2005 to 2025, the research highlights a significant surge in scholarly interest, particularly post-2015, driven by advancements in digital technologies and their implications for entrepreneurship. The analysis identifies central themes such as "digital platforms," "innovation," and "electronic commerce," while also emphasizing the growing importance of digital skills and funding mechanisms like crowdfunding. The geographical distribution of research contributions reveals a global phenomenon, with major insights emerging from countries such as the United States, the United Kingdom, and Australia, alongside rising participation from emerging markets like Vietnam and India. The study underscores the necessity for ongoing research to address the challenges posed by rapid technological change and ethical considerations, while advocating for interdisciplinary collaboration to enrich the understanding of digital entrepreneurship. This research serves as a valuable resource for scholars, practitioners, and policymakers, providing insights into the transformative potential of digital entrepreneurship in today's economy.

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1. INTRODUCTION

Digital entrepreneurship has emerged as a transformative force in the global economic landscape, characterized by its ability to innovate, disrupt existing markets, and create new business opportunities through digital technologies. As we advance into a digital era, the nature of entrepreneurship itself has undergone significant changes, influenced heavily by the advent of the Internet, mobile technology, and social media platforms [1]. These technologies have not only changed how businesses operate but have also opened up new avenues for entrepreneurship, making it essential to understand their implications on startups.

The digital realm offers unprecedented access to vast markets and resources, reducing traditional barriers to business entry and operation. Startups today can leverage digital tools for everything from marketing and customer engagement to supply chain management and product development. This democratization of entrepreneurial opportunities has led to a surge in startup formations across diverse sectors [2]. Moreover, digital platforms have fostered a unique ecosystem where startups can thrive by utilizing platform-based business models to scale rapidly without the constraints of physical boundaries.

However, the rapid evolution of digital entrepreneurship also presents unique challenges and complexities. The fast-paced nature of digital technology can lead to quick obsolescence, requiring startups to continuously innovate and adapt to survive. The digital market environment is highly competitive, with new entrants constantly disrupting established business models. Additionally, the reliance on digital platforms raises concerns about data security, privacy, and the ethical use of consumer information [3].

Despite the growing importance of digital entrepreneurship, academic research on this topic has been fragmented. Studies have often focused on specific aspects of digital entrepreneurship, such as e-commerce or digital marketing, without a comprehensive understanding of the broader impact on startup success and sustainability. This lack of holistic insight hinders the development of strategies that could support startups navigating the digital economy.

Given the transformative potential of digital entrepreneurship and its rapid evolution, there is a critical need to systematically analyze and synthesize existing research to map the evolutions in this field and its impact on startups. Such an analysis is vital to identify trends, gaps, and future directions that can inform policymakers, practitioners, and academics. A bibliometric study, which utilizes quantitative methods to assess the breadth and depth of literature on a given topic, can provide comprehensive insights into the development trajectories of digital entrepreneurship and highlight influential works and authors in the field. In order to chart the growth of digital entrepreneurship and comprehend its effects on startup ecosystems, this study aims to perform a bibliometric analysis of the literature on the subject. By offering a methodical and impartial summary of the topic, highlighting important themes, and recommending areas for more research that could improve our comprehension and assistance of digital entrepreneurs, this study seeks to advance the academic conversation.

2. LITERATURE REVIEW

2.1 Theoretical Foundations of Digital Entrepreneurship

Digital entrepreneurship is anchored in the broader discourse of entrepreneurship theory, which has expanded to incorporate digital contexts. The shift towards digital platforms has introduced new theoretical dimensions to entrepreneurship, centering on the unique aspects of digital goods and services, including scalability, replicability, and reliance on digital platforms [4]. Moreover, the framework of digital entrepreneurship extends traditional models by emphasizing the role of digital technology not just as a tool but as a central component of the entrepreneurial process. This includes how digital platforms facilitate the creation of

new market opportunities and business models, as illustrated in the work of [5], who highlight how digital technology reshapes the entrepreneurial landscape by lowering entry barriers and enabling rapid scaling of new ventures.

2.2 Evolution and Impact of Digital Technologies on Startups

The rapid evolution of digital technologies has significantly impacted startups, offering both opportunities and challenges. Research has shown that technologies such as blockchain, artificial intelligence, and the Internet of Things (IoT) are redefining what is possible within entrepreneurial ventures, providing new ways to engage with customers and optimize operations [6]. These technologies enable startups to operate with greater efficiency and agility, leading to a competitive advantage in fast-moving markets. However, the literature also discusses the challenges posed by such rapid technological change, including the need for continuous learning and adaptation and the risks associated with dependency on digital platforms [7].

2.3 Role of Digital Platforms in Startup Success

Digital platforms are increasingly seen as critical enablers of new business models in the startup ecosystem. They provide essential infrastructure and services that allow startups to reach global markets with minimal capital outlay. For example, e-commerce platforms like Amazon and Alibaba redefine retail entrepreneurship by allowing small sellers to access worldwide markets, dramatically altering competitive dynamics [8]. Similarly, social media platforms like Facebook and Instagram have become integral to marketing strategies for startups, enabling them to engage directly with customers and build brand awareness at a fraction of traditional marketing costs [9].

2.4 Challenges and Risks in Digital Entrepreneurship

While the digital environment offers numerous opportunities for startups, it also introduces several risks and challenges that need careful management. The volatility of digital markets can lead to significant shifts in industry structures and competitive dynamics, requiring startups to remain flexible and responsive to maintain their competitive edge [1]. Additionally, issues related to data security and privacy are becoming increasingly critical, as startups often handle sensitive customer information. The need to navigate complex regulatory environments related to digital technology use is another significant challenge, as highlighted by [3].

2.5 Academic Perspectives on Digital Entrepreneurship

The academic investigation into digital entrepreneurship is vast, yet there are notable gaps in the literature, particularly concerning longitudinal studies that track the long-term impact of digital technologies on startup success. Most studies focus on immediate or short-term effects, with fewer insights into how digital entrepreneurship influences business sustainability over time [10]. Furthermore, there is a call for more empirical research that can test and refine theoretical models of digital entrepreneurship, especially in non-Western contexts where digital transformations may have different implications due to cultural and economic variations [4].

3. METHODS

This bibliometric study employs a systematic approach to map the scholarly landscape of digital entrepreneurship and its impact on startups. We will utilize Scopus database to compile a comprehensive dataset of peer-reviewed articles published on the topic between 2005 and 2024. The search strategy involves using keywords such as "digital entrepreneurship," "startup," and "technology innovation" in various combinations to ensure thorough coverage of the literature. The collected data will then be analyzed using VOSviewer, which facilitate the creation of co-citation and co-authorship networks, allowing us to identify key themes, trends, and influential authors in the field. Additionally, the analysis will include a temporal component to observe the evolution

of research interests and the impact of technological advancements over time.

4. RESULTS AND DISCUSSION

4.1 Yearly Publications

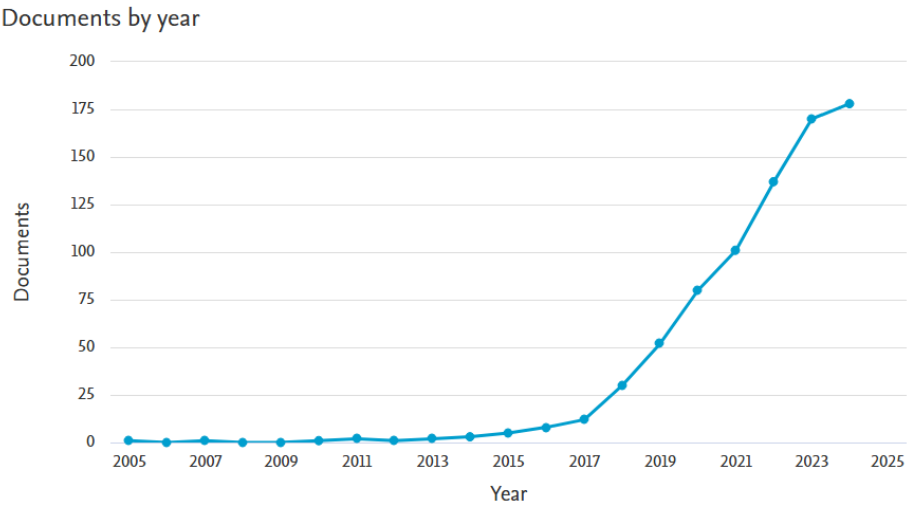

Figure 1. Yearly Publication Graph
Source: Data Analysis

The graph shows the increase in academic publications of digital entrepreneurship between the years 2005 and 2025. During the first period of years, the number of documents published per year was low and fairly stable, with a record of just a few publications from 2005 to around 2015. It means that digital entrepreneurship was not an area of major concern in research during this period. However, a sharp turn is observed after 2015, where the growth rate starts to increase exponentially, with a highly remarkable increase in documents in 2023.

Hence, according to the graph, it follows that the figure approaches almost 200 documents in the year 2023, indicating a rise in interest and research activities on digital entrepreneurship. This is an increasing trend that demonstrates how researchers increasingly recognize the importance of this field; it could be due to rapid advances in digital technologies and their impact on business models and entrepreneurship. The projection to 2025 shows that this trend will continue and can be said to stress the relevance of digital entrepreneurship in the current academic discourse and to its practice in business.

4.2 Keyword Co-Occurrence

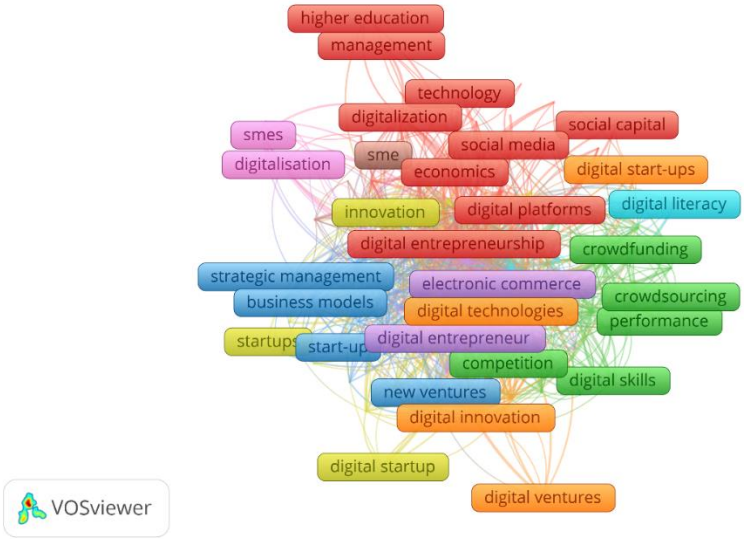

Figure 2. Network Visualization
Source: Data Analysis

This VOSviewer visualization provides a comprehensive mapping of the key concepts and themes surrounding digital entrepreneurship, showcasing the interconnectedness of various terms related to the field. The visualization employs a network layout, where nodes represent keywords and edges signify relationships based on co-occurrences in the literature. The color coding highlights clusters of related terms, indicating areas of active research and thematic focus. At the center of the visualization, the term "digital entrepreneurship" stands out as a pivotal concept, surrounded by closely related keywords such as "digital platforms," "innovation," and "digital technologies." This central positioning underscores the importance of understanding how digital tools and platforms facilitate entrepreneurial activities and the creation of new ventures. Moreover, the proximity of terms like "start-ups" and "new ventures" emphasizes the critical role that digital entrepreneurship plays in the formation and growth of innovative businesses in the digital age. Additionally, the visualization reveals the growing relevance of digital literacy and skills, as indicated by the presence of terms like "digital skills" and "digital literacy." This suggests an increasing acknowledgment in the literature of the necessity for entrepreneurs to possess not only technical know-how but also the ability to navigate digital environments effectively. The inclusion of "crowdfunding" and "crowdsourcing" further illustrates how digital entrepreneurship leverages collective intelligence and community support to drive business success. Furthermore, the presence of broader themes such as "strategic management," "business models," and "economic" suggests that digital entrepreneurship is increasingly being studied within a larger context, integrating traditional business theories with new digital realities. This multifaceted approach reflects the complexity of digital entrepreneurship as it intersects with various disciplines, including management, economics, and technology.

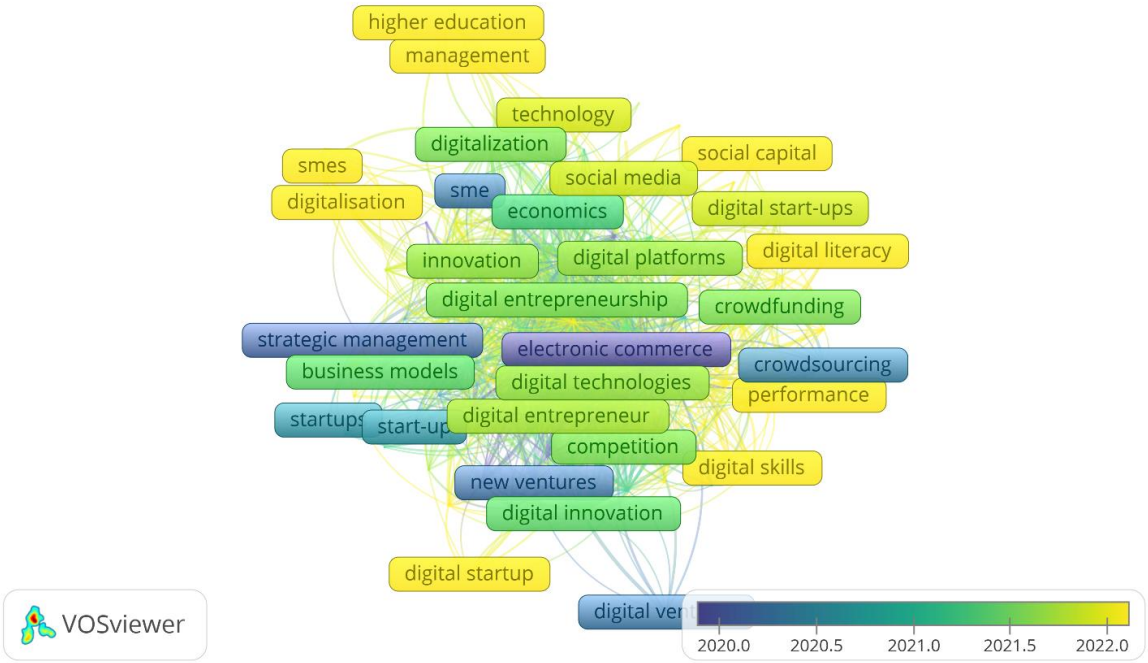

Figure 3. Overlay Visualization
Source: Data Analysis

This VOSviewer visualization illustrates the temporal development of key concepts related to digital entrepreneurship, showcasing the evolution of research themes from 2020 to 2022. The nodes in the diagram represent significant keywords, with the colors indicating the publication years, creating a visual timeline that helps identify which concepts have gained traction over time. The central theme of "digital entrepreneurship" is prominently displayed, emphasizing its growing significance in the literature and its connection to various related concepts. In this visualization, terms like "electronic commerce," "digital platforms," and "innovation" cluster closely around "digital entrepreneurship," suggesting a strong interrelation among these concepts. The blue shades associated with "electronic commerce" and "digital technologies" indicate their emergence as focal points in recent research, reflecting the increasing importance of these areas in understanding how digital environments shape entrepreneurial activities. Additionally, keywords such as "startups," "new ventures," and "business models" highlight the practical implications of digital entrepreneurship, particularly in how entrepreneurs adapt and innovate within digital ecosystems. The presence of terms like "digital skills," "social media," and "crowdfunding" illustrates the broader skill set and resources required for successful digital entrepreneurship. The visualization indicates a clear trend toward recognizing the necessity for digital literacy and skill development among entrepreneurs, alongside the technological innovations that enable new business models.

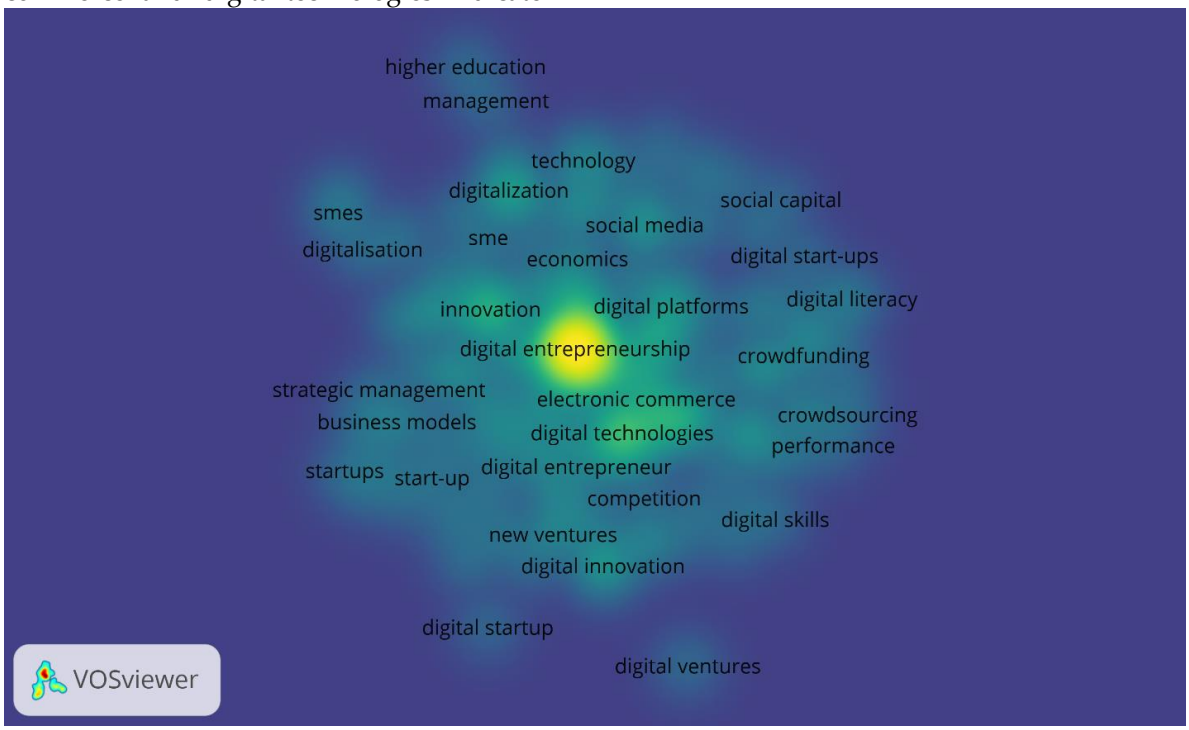

Figure 4. Network Visualization
Source: Data Analysis

This VOSviewer heatmap visualization presents a compelling overview of the key themes in digital entrepreneurship, highlighting the density of research topics and their relative prominence in the academic literature. The central node, "digital entrepreneurship," is depicted with the highest intensity, indicating its central role in ongoing research and the extensive scholarly interest it commands. Surrounding this focal point are other keywords such as "innovation," "digital platforms," and "electronic commerce," which exhibit a bright yellow hue, signaling their significance and frequent co-occurrence with the central theme. The visualization further illustrates a wide range of related concepts, including "startups," "business models," "digital

technologies," and "social media." These keywords are dispersed throughout the map but display varying levels of intensity, suggesting that while they are pertinent to the discourse on digital entrepreneurship, they may not yet have attained the same level of research focus as the core themes. The lower intensity of terms like "digital skills," "crowdsourcing," and "performance" indicates emerging areas of interest that may gain traction in future studies as the field continues to evolve.

4.3 Top Cited Literature

Table 1. Top Cited Literature in Scopus

CItations	Author's	Title
1.478	[1]	Digital Entrepreneurship: Toward a Digital Technology Perspective of Entrepreneurship
742	[11]	Digital transformation by SME entrepreneurs: A capability perspective
515	[4]	The digital entrepreneurial ecosystem
512	[12]	Digital entrepreneurship ecosystem: How digital technologies and collective intelligence are reshaping the entrepreneurial process
466	[6]	Digital entrepreneurship: A research agenda on new business models for the twenty-first century
381	[13]	Agile Business Model Innovation in Digital Entrepreneurship: Lean Startup Approaches
264	[14]	Exploring the impact of digital transformation on technology entrepreneurship and technological market expansion: The role of technology readiness, exploration and exploitation
255	[15]	A Web of opportunity or the same old story? Women digital entrepreneurs and intersectionality theory
242	[16]	Digital entrepreneurship: Innovative business models for the sharing economy
224	[17]	The age of digital entrepreneurship

Source: Scopus Database, 2024

4.4 Author Collaboration

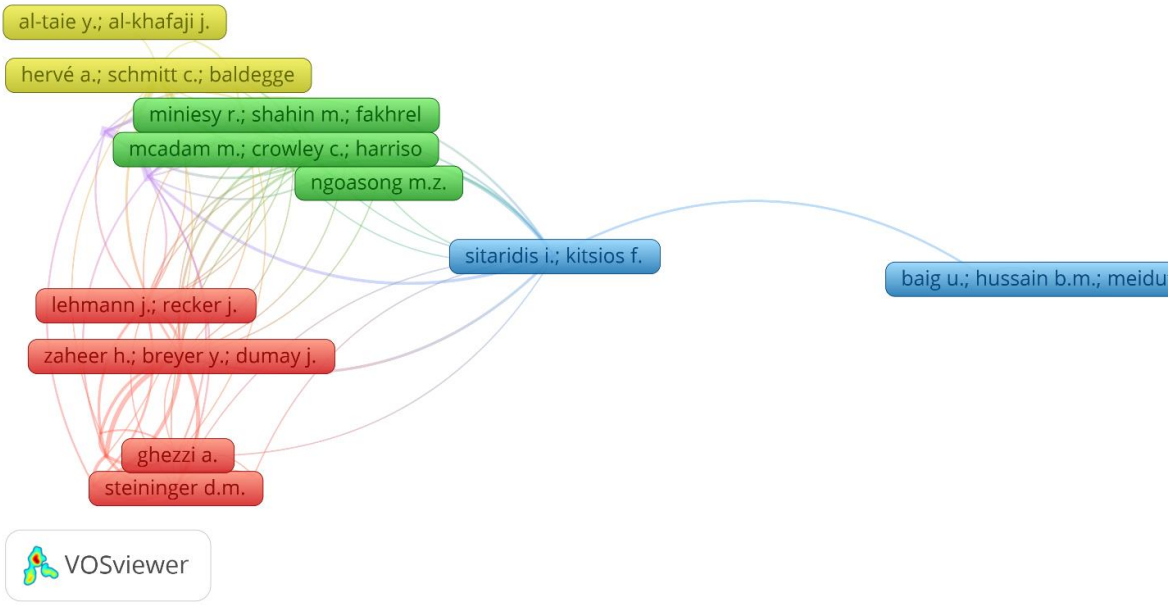

Figure 5. Author Visualization

Source: Data Analysis

The visualization highlights central figures such as Sitaridis and Kitsios, who are connected to multiple authors like miniesy r, shahin m, fakhrel, mcadam m, crowley c,

harriso, ngoasong, m.z in green cluster, lehmann j, recker j, zaheer h, breyer y, dumay j, ghezzi a, and steininger d.m in red cluster, suggesting they play a pivotal role in the academic discourse on digital entrepreneurship. The presence of authors like Baig et al. on the periphery also indicates their involvement in relevant research, albeit with potentially fewer collaborations compared to more central authors.

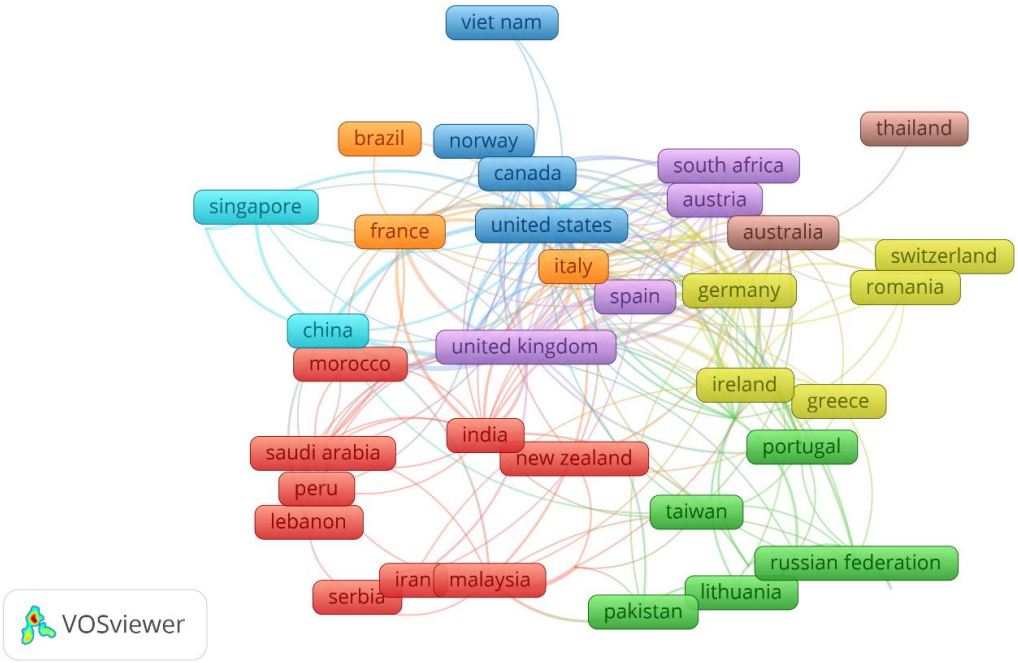

Figure 6. Country Visualization
Source: Data Analysis

This VOSviewer visualization illustrates the geographical distribution of research collaborations in the field of digital entrepreneurship, with countries represented as nodes connected by lines that signify co-authored publications. The visualization highlights key countries involved in this research area, such as the United States, the United Kingdom, and Australia, which are centrally located and demonstrate a significant number of connections to other nations. This centrality indicates that these countries are not only major contributors to the field but also act as hubs for international collaboration. The clustering of countries suggests regional patterns of research activity, with nations like Germany, France, and Spain closely linked, indicating a strong collaborative network within Europe. Additionally, emerging countries such as Vietnam and India show connections with other nations, hinting at their growing role in the digital entrepreneurship discourse. The diversity in the representation of countries, including those from Asia, Europe, and the Americas, emphasizes the global nature of research in digital entrepreneurship, showcasing how ideas and innovations are shared across borders.

DISCUSSION

Growth and Evolution of Digital Entrepreneurship Research

The sharp increase in the number of publications on digital entrepreneurship since 2015 indicates a growing recognition of the field's importance. This surge can be attributed to several factors, including the rise of digital technologies, the increasing reliance on e-commerce, and the proliferation of social media platforms that facilitate entrepreneurship. As highlighted in the yearly publication graph, prior to 2015, scholarly work in this area was limited, but as digital tools became more integral to business operations, researchers began to explore their implications on entrepreneurship. This aligns

with [1] assertion that digital technologies not only transform existing businesses but also create entirely new entrepreneurial opportunities. The accelerating pace of digital innovation necessitates ongoing research to understand its impacts on startups and established businesses alike. As indicated by the rapid increase in documents published, researchers are now more focused on examining the intersection of digital technologies and entrepreneurship, highlighting how these innovations can drive economic growth, enhance competitive advantage, and foster innovation. This trend emphasizes the need for continuous research to keep pace with technological advancements and their implications for the entrepreneurial ecosystem.

Key Themes and Concepts

The VOSviewer visualizations provide a nuanced understanding of the key themes and concepts associated with digital entrepreneurship. The centrality of "digital entrepreneurship" in the network indicates that it serves as a core theme around which various subtopics revolve. Related concepts such as "digital platforms," "innovation," and "electronic commerce" highlight the multifaceted nature of digital entrepreneurship, which encompasses a range of activities from utilizing digital technologies for business operations to exploring new market opportunities. The emphasis on "digital skills" and "digital literacy" underscores the increasing recognition that entrepreneurs must possess the necessary competencies to navigate the digital landscape effectively. As startups rely heavily on technology for marketing, sales, and operations, the demand for digital skills among entrepreneurs has become paramount. This aligns with [3], who emphasize that the ability to leverage digital tools effectively can determine the success or failure of a startup in the competitive digital marketplace. Furthermore, the visualization also points to emerging themes such as "crowdfunding" and "crowdsourcing," which reflect innovative funding and collaboration models that digital platforms facilitate. These concepts are particularly relevant in the context of startups, where traditional financing avenues may not be readily available. Crowdfunding, for example, allows entrepreneurs to access capital directly from consumers, reducing dependency on conventional financial institutions and enabling a more inclusive approach to funding.

Geographical Distribution of Research

The geographical visualization reveals the global nature of research in digital entrepreneurship, with significant contributions from countries such as the United States, the United Kingdom, and Australia. The interconnectedness of various countries in the research landscape suggests that digital entrepreneurship is not confined to specific regions but is a global phenomenon. This international collaboration is crucial for fostering a diverse exchange of ideas and best practices, which can enhance the overall understanding of digital entrepreneurship. Moreover, the presence of emerging markets, such as Vietnam and India, in the network indicates that digital entrepreneurship is gaining traction in these regions as well. This is significant because it highlights the potential for innovation and economic growth in developing countries, where digital tools can bridge gaps in traditional business models and create new opportunities for entrepreneurs. The implications for policy and practice are substantial; as more countries engage in digital entrepreneurship, there is a pressing need for supportive frameworks that can foster innovation, enhance digital skills, and facilitate access to technology and funding.

Challenges and Future Directions

While the analysis highlights the significant advancements in digital entrepreneurship research, it also points to several challenges that require attention. One key issue is the rapidly changing nature of digital technologies, which can lead to the quick obsolescence of existing knowledge and practices. As noted by [10], the fast-paced evolution of digital tools necessitates continuous learning and adaptation among entrepreneurs. Future research should focus on longitudinal studies that track the long-term effects of digital technologies on

entrepreneurial success, ensuring that insights remain relevant in a continually evolving landscape. Additionally, the ethical implications of digital entrepreneurship warrant further exploration. As businesses increasingly rely on data-driven strategies, issues related to data privacy, security, and ethical use of consumer information become paramount. Researchers should investigate how startups can balance innovation with ethical considerations, ensuring that they build trust with consumers while leveraging data effectively. Lastly, there is a need for more interdisciplinary research that integrates insights from fields such as economics, management, and technology studies. This holistic approach can provide a more comprehensive understanding of digital entrepreneurship and its broader economic and social impacts. Collaborative efforts among scholars from different disciplines will enhance the richness of the research and inform more effective policies and practices that support digital entrepreneurs.

5. CONCLUSION

the bibliometric analysis of digital entrepreneurship reveals a rapidly evolving field characterized by a significant increase in scholarly interest and a rich tapestry of interconnected themes. The findings underscore the importance of digital technologies in shaping entrepreneurial practices and highlight the need for ongoing research to address emerging challenges and opportunities. As digital entrepreneurship continues to grow globally, it is essential for researchers, practitioners, and policymakers to work together to foster an environment that nurtures innovation, supports skill development, and addresses ethical concerns. By doing so, the field can continue to thrive, contributing to economic growth and societal advancement in the digital age.

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