MAPPING THE WORLD OF DIGITAL ENTREPRENEURSHIP: A BIBLIOMETRIC ANALYSIS OF 21 YEARS (2001-2022)

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Abstract. *In digital entrepreneurship, bibliometric analysis and mapping have yet to be utilized to evaluate production and depict the industry's progress and trends. As a result, the primary objective of this research is to conduct a bibliometric analysis of digital entrepreneurship in the Scopus Collection. Between 2001 and 2022, 198 papers were published in 135 journals by 489 authors from 253 institutions and 48 nations. The publication history of the works was examined by looking at when they were published, where they were published, and what journals published them. A three-field plot analysis of authors, citations, and nationalities was also carried out, as did a thematic analysis. Eventually, suggestions for further studies are provided, with repercussions for policymakers and scholars.*

Keywords: *Biblioshiny, Digitalization, Bibliometric Review, Online ventures, Digital Entrepreneurship*

1.INTRODUCTION

Entrepreneurship research has mainly aimed to clarify the factors contributing to the inherent uncertainty of starting a business and the conditions in which entrepreneurial behaviour emerges in the face of this uncertainty (Nambisan, 2017). Indeed, uncertainty "*serves as the conceptual cornerstone for most entrepreneur theories*" (McMullen and Shepherd, 2014). The incorporation of new digital technologies, like cloud computing, mobile computing, 3D printing, data analytics, and social media into diverse aspects of business has changed the degree of unpredictability in venture creation procedures and structures, along with the methods for coping with this kind of unpredictability, in recent years. This has led to a plethora of relevant research topics at the convergence of digitalization and entrepreneurship - on digital entrepreneurship - which necessitate a detailed examination of digital technologies and their particular attributes in influencing business ventures.

The fast advancement of digital technology has contributed substantially to the global economy's structural shifts. Deconstructing conventional methods of conducting business over the previous few decades, digital technology has ushered in a new era of innovation in corporate strategies, processes, goods, and services. The widespread adoption of digital technologies has generated far-reaching implications for business owners in the modern era.

Companies based on digital technologies consequently represent the majority of today's economic value creation. Apple, Microsoft, Amazon, and Alphabet were four digital technology businesses in the top five by market cap in 2021. In essence, these businesses are built on digital platforms. Due to the widespread adoption of information technology, the business world is no longer bound by brick-and-mortar locations or regional economies, leading to the emergence of Digital Entrepreneurship. Digital entrepreneurship covers "the intersection of digital technology and entrepreneurship." Businesses whose foundation is creating value via the exchange of electronic information through mobile networks are the primary target of this strategy. (Nambisan, 2017). One definition of digital entrepreneurship is the search for business prospects via digital media.

At the same time, another describes the commercialization of products and services conducted on digital mediums, most often the Internet. Kollmann, 2006 states that "E-entrepreneurship refers to establishing a new company with an innovative business idea within the net economy, which, using an electronic platform in data networks, offers its products and services based upon a purely electronic creation of value. Essential is the fact that this value offer was only made possible through "*the development of information technology,*" while Hull et al., 2007 have defined it as "a *subcategory of entrepreneurship in which some or all of what would be physical in a traditional organization has been digitized*."

Growth in digital technology has dramatically affected the dynamics of entrepreneurship and the results it produces. This has altered how entrepreneurship is conducted in practice. Consequently, research on digitalization and digitization in entrepreneurship and management has been promoted and expanded. By reviewing the articles available on Scopus, one of the most critical worldwide databases, to comprehend this topic's nature, this field study offers a comprehensive overview of the digital entrepreneurship field. Academicians utilize different qualitative and quantitative literature review methods to comprehend and analyze prior studies. Among them, bibliometrics can offer a comprehensive,

transparent, and verifiable evaluation process using the statistical measurement of academia. Pritchard initially used the word "bibliometrics" in 1969. The statistical examination of the comparative anatomy literature from 1543 to 1860, which included grouping book and journal titles by countries of origin and periods, is an early example of bibliometric research (Tella and Aisha Olabooye, 2014). Researchers typically derive their conclusions from compiled bibliographic information from other researchers who articulate their opinions through writing, cooperation, and citation using bibliometric tools. When the information is gathered and evaluated, insights into the field's architecture, academic interests, and social networks can be gained.

Additionally, the bibliometric approach is assumed to be advantageous to more conventional methods of analysis (like thematic reviews and SLRs) for gaining essential insights into how research has evolved and progressed, as well as the significant issues that have influenced research in a particular field of study. It relies on objective methodology to derive qualitative insights (Chawla and Goyal, 2022). Rather than merely providing a static perspective, this research aims to derive observations from the year-over-year development of digital entrepreneurship-related literature. These sorts of studies are deemed most appropriate for bibliometric analysis. Therefore, the bibliometric analysis and its related tools have been used for this study to extract insights from published publications in the Digital Entrepreneurship area during the past 21 years.

2. MATERIAL AND METHODS
2.1 Data Collection
Bibliometrics operates on data derived from a couple of major literature databases, Scopus and Web of Science (Aria and Cuccurullo, 2017). We considered the online Scopus database to collect articles published on digital entrepreneurship from the year 2001 to the year 2022. The Scopus database was chosen for this investigation since it is one of the most prominent regulated article and citation collections and has significant international coverage of books, esteemed journals, and conference proceedings. (Baas *et al.*, 2020). Details of author and institution profiles and comprehensive metadata records for scientific papers are provided by Scopus. Advanced algorithms and manual curation, wherever required, assure accuracy in profiling.

The reliability attached to Scopus makes it a preferable source of data for research assessments, landscape studies, institution rankings, and evaluation of policies (Baas *et al.*, 2020). When doing the bibliometric analysis, it is essential to choose the appropriate keywords. We utilized the following query terms based on the study's objectives – Digital, Entrepreneurship, Virtual, E-commerce, Internet, and E-entrepreneurship. Therefore, we mentioned this query in the article title field for figuring out papers: TITLE [("*Digital Entrepreneurship*") OR ("*Internet Entrepreneurship*") OR ("*E-entrepreneurship*") OR ("*E-commerce entrepreneurship")* OR ("*Virtual Entrepreneurship*")]. Finally, 198 papers were received and chosen for further evaluation using the Bibliometric approach. The bibliometric analysis is conducted using the Biblioshiny application to achieve the study's objectives.

2.2 Data Analysis
The productivity of one subset of entrepreneurship, digital entrepreneurship, was examined through a quantitative and qualitative bibliometric study. Indicators such as authorship, country studies, and top journal rankings bring attention to these developing patterns in the research landscape. The connection between authors, keywords, and citations was also examined through co-occurrence analysis. After a more thorough search, the results were exported to CSV or excel file with the following fields: authors, year published, publication's name, abstracts, subject category, ISSN, keywords, and times cited. The collected information then needed to be cleaned. The Data was analyzed for possible similarities or discrepancies, and the author names were normalized. Additionally, descriptive approaches, bibliometric analysis, and bibliometric mapping were used to examine the outcomes. There were two stages to the analysis. It began by calculating the fundamental bibliometric indices (number of articles produced annually by language, country, institution, journal, and author). Then it moved on to analyzing co-keywords, co-authors, co-citations, and terms in titles and abstracts.

3. RESULTS
3.1 Basic Bibliometric Indicators
3.1.1 Primary information and Chronological evaluation of articles published-
This section analyses the research profile of Digital Entrepreneurship, encompassing published sources from 2001 to 2022. It encompasses information regarding the current level of publications, most cited articles, research trends, established contributors, nations, universities, authors' keywords, and publication sources. 2001 marked the appearance of the earliest article on Digital Entrepreneurship in the Scopus database. The information in Table 1 pertains to all papers published in Digital Entrepreneurship from 2001 to 2022 and includes average publishing years, document-wise average citations, year-wise average citations, document classifications and elements, authors' information, and collaboration work by authors.

Table 1. Overview of results

Particulars	Information about Particulars
Basic Information	
Time-period of Study	2001:2022
Number of Sources	135
Number of articles	198
Annual Percentage Change	19.34
Average Age of Document	3.64
Document-wise Average citations	19.67
Number of References	11056
Types of Documents included	
Papers published in conferences	50
Other Papers	148
Contents used in Documents	
Indexed Keywords	672
Keywords provided by Authors	640
Information about Authors	
Total Number of Authors	489
Number of Authors in single-authored documents	35
Collaboration by Authors	
Documents with a Single Author	37
Number of Co-Authors/ document	2.81
Percentage of International co-authorships	23.74

Source: Author's compilation

Figure 1 depicts a historical projection of digital entrepreneurship-related publications from 2001 to 2022, year by year. During 2001-2012, the notion of digital entrepreneurship was in its infancy, and research was in its infancy. This may be due to the fact that industries were adopting and establishing digital platform solutions like the Internet at this time. In addition, the company's central emphasis was on business process transformation using conventional IT approaches, although other early-mover organizations experimented with new technology. In 2012, digital entrepreneurship studies began to gain momentum. The number of papers published each year remained constant during this time. Since 2018, the number of articles has grown dramatically, maybe because firms began embracing operations facilitated by digital technology, and studies on digital entrepreneurship gained more consideration. Since then, the number of publications has increased year after year. The year 2022 saw the most extensive number of publications, and research in the digital entrepreneurship field has accelerated significantly. Since 2018, this number of articles can be linked to the increasing number of publications on digital entrepreneurship. Considering the current trend and rate of papers produced, it is reasonable to forecast that future years will produce more articles. This research field's steady expansion indicates that the phenomenon has become a prominent area of investigation across academicians.
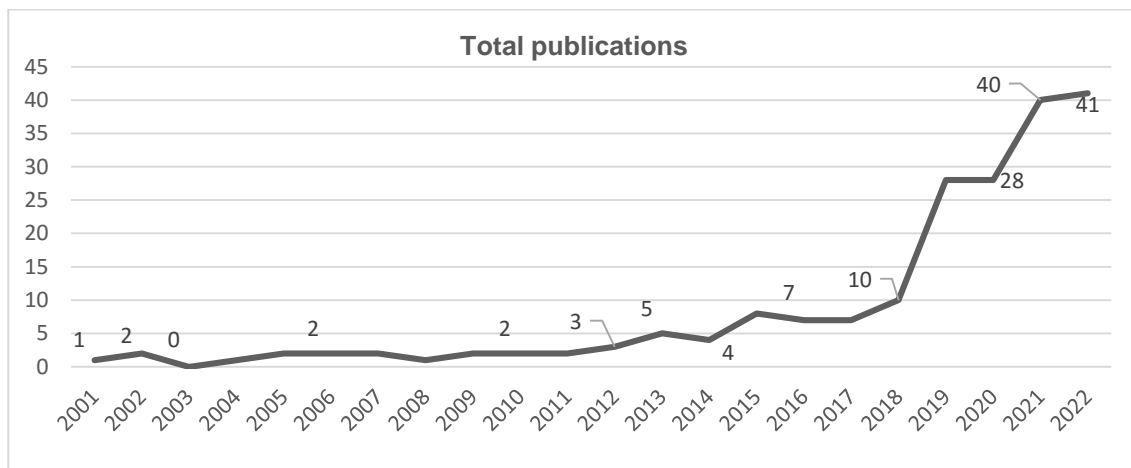

Fig. 1. Chronological evaluation of articles published

Table 2 shows the highest-ranked publications from our original sample of 198 articles, according to their Scopus database citations. However, 44 of the 198 papers have never been mentioned, whereas 94 have between one and ten citations. Table 2 contains a list of top-ten articles with the highest citations. The table enlists the articles in descending order according to the magnitude of citations. With 729 citations, "*Digital Entrepreneurship: Towards a Digital Technology Perspective on Entrepreneurship*" (Nambisan, 2017), tops the list with the highest number of references. In this paper, the writers emphasized the cause – and - effect relationship between the latest technologies in the IT space on the one hand and the inherent uncertainty in entrepreneurial outcomes as well as processes on the other hand. This work is a front-runner regarding the number of citations in the research arena on Digital entrepreneurship. The article with the second-most citations, "*Digital entrepreneurship ecosystem: How digital technologies and collective intelligence are reshaping the entrepreneurial process*" by Elia et al., 2020, describes the digital entrepreneurship ecosystem by emphasizing "*the integrated digital output and digital-environment*

perspectives." Considering the current trend and rate of papers produced, it is reasonable to forecast that future years will produce more articles. This research field's steady expansion indicates that this has emerged as a hot potato among academicians. Prior studies, such as "*Internet entrepreneurship: Social capital, human capital, and performance of Internet ventures in China*," "*Virtual Teams and the Rise of e-Entrepreneurship in Europe*," etc., focused primarily on the emergence of Digital Entrepreneurship. In post-2015 research, many study streams have emerged, such as Model innovation in digital entrepreneurship and digital entrepreneurship system. In a nutshell, we witness a shift from a more generalized and nascent stage to more specialized research streams.

Table 2. Top ten highly cited articles on Digital Entrepreneurship

Paper	Author	Total Citations	Citations Per Year
"Digital Entrepreneurship: Toward a Digital Technology Perspective of Entrepreneurship"	Nambisan, (2017)	729	121.5
"Digital entrepreneurship ecosystem: How digital technologies and collective intelligence are reshaping the entrepreneurial process"	Elia et al., (2020)	200	66.67
"Agile Business Model Innovation in Digital Entrepreneurship: Lean Startup Approaches"	Ghezzi & Cavallo, (2020)	199	66.33
"Internet entrepreneurship: Social capital, human capital, and performance of Internet ventures in China"	Batjargal, (2007)	181	11.31
"Digital entrepreneurship: Innovative business models for the sharing economy"	Richter et al., (2017)	137	22.83
"Virtual Teams and the Rise of e-Entrepreneurship in Europe"	Matlay & Westhead, (2005)	124	6.89
"Taking advantage of digital opportunities: a typology of digital entrepreneurship"	Hull et al., (2007)	121	7.56
"Digital Entrepreneurship and Its Socio-material Enactment"	Davidson & Vaast, (2010)	118	9.38
"Digital entrepreneurship: An interdisciplinary structured literature review and research agenda"	Zaheer et al., (2019)	84	21.00
"What is e-entrepreneurship? – fundamentals of company founding in the net economy"	Kollmann, (2006)	75	4.41

Source: Author's compilation

This survey included 198 papers from 135 journals. Table 3 presents a thorough analysis of journals according to their citations. The effect of the most prolific journal is shown by the number of publications and citations of that particular journal (Dzikowski, 2018). For ease of use, the top 10 journals having at least two published papers are listed in detail. Sustainability (Switzerland) has the most publications, with a total of 11, according to data from Table 3 below. The Journals "Technological forecasting and social change" and "Frontiers in Psychology" are addressed after this. Table 3 provides a thorough overview of the journals' production over time, total number of citations, G-index, M-index, and H-index, respectively.

Table 3. Top ten journals on Digital Entrepreneurship

Journals	Total Documents	Total Citations	G-Index	M-Index	H-Index
"Sustainability" (Switzerland)	11	120	10	0.857	6
"Technological Forecasting and Social Change"	8	479	8	2	8
"Frontiers in Psychology"	6	7	2	1	2
"Procedia Computer Science"	5	41	5	0.375	3
"International Journal of E-entrepreneurship and Innovation"	4	13	3	0.750	3
"Information Systems Journal"	3	104	3	0.750	3
"International Journal of Entrepreneurial Behaviour and Research"	3	58	3	0.667	2
"International Journal of Management Education"	3	4	2	0.500	1
"Journal of Business Research"	3	290	3	0.600	3
"Journal of Small business and Enterprise Development"	3	160	3	0.158	3

Source: Author's compilation

Table 4 includes the ten most prolific writers, along with their total number of papers published, citations they received, and their h-index, m-index, and g-index. The effect of the most productive author is

determined by the number of publications and citations obtained. According to Table 4, Krauss S., Li Z., and Matley H. have produced four publications on digital entrepreneurship, making them three of the most prolific authors in the field. Following this, there are three articles each by Cavallo A, Dwivedi YK, and Ghezzi A. Cavallo A and Ghezzi A received the highest citations (294).

Table 4. Top ten influential authors on Digital Entrepreneurship

Authors	Total Papers	Number of Citations	H-Index	M-Index	G-Index
Kraus S	4	242	3	0.375	4
Li Z	4	56	2	0.143	2
Mataly H	4	232	4	0.211	4
Cavallo A	3	294	3	0.75	3
Dwivedi YK	3	22	2	2	3
Ghezzi A	3	294	3	0.75	3
Leong C	3	36	3	0.429	3
Tan B	3	24	2	0.286	3
Abubakre M	2	26	2	1	2
Bican PM	2	86	2	0.667	2

Source: Author's compilation

The list of nations according to the volume of published research on digital entrepreneurship is included in Table 5. The most productive and contributing nations (Table 5) in the study fields of digital entrepreneurship are determined by the magnitude of papers produced by each nation and their mean number of citations. Out of 48 nations, only 15 have published more than ten articles. The United States is shown to be the most productive and helpful nation based on the overall number of citations received. China leads all countries in productivity with 92 articles, followed by the United States and the United Kingdom. Evidently, the nations that have contributed the most to research articles on digital entrepreneurship are the United States of America, the United Kingdom, China, India, Germany, and Australia. Similarly, by Utilizing Biblioshiny, the researchers identified the most productive institution. The number of papers produced by the most prolific affiliations or institutions is depicted in Table 6. The highest ten affiliations are included in the graph for simplicity.

Table 5. Top 10 Institutions in the field of Digital Entrepreneurship

Most influential Institutions	Total Articles Published
National Changhua University of London	7
Czestochowa University of Technology	6
Graz University of Technology	6
Via Lambruschini	6
Jingdezhen Ceramic Institute	5
Universiti Teknologi MARA	5
University of Ghana Business School	5
Arab University College of Technology	4
E.Philip Saunders College of Business	4
Jilin University	4

Source: Author's compilation

Table 6 demonstrates that the National Changhua University of London is the most influential in debating and publishing topics relevant to Digital Entrepreneurship, with seven publications.

Table 6. Top 20 in Digital Entrepreneurship

Country	Documents Published	Total Citations	Average Article Citation
USA	49	1490	93.13
UK	34	371	41.22
Italy	14	296	74.00
Germany	29	257	28.56
Australia	20	144	28.80
China	92	126	5.04
France	19	62	15.50
Finland	3	54	54.00
Sweden	12	51	25.50
Netherlands	6	49	24.50
Ireland	6	42	21.00
Portugal	12	38	12.67
Poland	7	36	9.00
Saudi Arabia	9	28	4.67
India	23	15	3.75
Denmark	7	13	6.50
Qatar	4	13	13.00
Austria	9	12	6.00
Korea	1	11	11.00
Canada	9	10	10.00

Source: Author's compilation

An analysis was conducted for the most frequent words in the bibliometric study on Digital Entrepreneurship. Table 7 below displays the analysis's most frequent terms and a list of keywords. The top authors and indexed keywords that occur more than five times are displayed in the table below. Figures 2 and 3 display the word cloud based on authors' and Indexed keywords. Word cloud based on authors' keywords includes: Entrepreneurship, E-commerce,E-entrepreneurship, Digital Transformation, Digital Technology,

Digitalization, Digital Entrepreneurship, Innovation, and Education. In contrast, the word cloud of the indexed keywords for Digital entrepreneurship includes Digital Entrepreneurship, Entrepreneur, Electronic Commerce, Information Systems, Innovation, Entrepreneurship, Digital Technologies, Information Use, Students, Digitization, Internet Entrepreneurship, and Sustainability.

Source: Biblioshiny
Fig. 2. Word cloud of Indexed Keywords

Table 7. Top indexed keywords (1) and author's keywords (2) that occur five or more times

(1) Indexed Keywords	Occurrences
Digital Entrepreneurship	25
Entrepreneur	17
Electronic Commerce	16
Information Systems	14
Innovation	14
Entrepreneurship	12
Digital Technologies	11
Information Use	10
Students	10
Digitization	8
Internet Entrepreneurship	8
Sustainability	8

(1) Indexed Keywords	Occurrences
Entrepreneurship education	7
Internet	7
Commerce	6
Ecosystems	6
Information Technology	6
Social Networking online	6
Sustainable Development	6
Technological Forecasting	6
Virtual Reality	5
E-learning	5
Economic & Social Effects	5
Economics Social Media	5

(2) Author's Keywords	Occurrences
Digital Entrepreneurship	94
Entrepreneurship	31
E-commerce	15
E-entrepreneurship	14
Digital Transformation	8
China	7
Covid-19	7
Digital	7
Digital Technology	7

| (2) Author's Keywords	Occurrences
Digitalization	7
Entrepreneurship Education	7
Innovation	7
E-business	6
Social Media	6
Case Study	5
Cyber Entrepreneurship	5
Internet Entrepreneurship	5

Source: Biblioshiny

Fig. 3. Word cloud based on Authors' Keywords

3.1.2 Co-citation analysis

Research methods based on bibliometric networks such as co-citation analysis, are essential for comprehensively assessing the Digital Entrepreneurship literature and its significance in developing ideas. This analysis shows how the articles' popularity and accessibility have evolved (Zhu *et al.*, 2021). The overall number of citations indicates a document's prominence in a particular field of study, whereas citation frequency analysis focuses on how often other works have referenced a document. Contrarily, co-citation analysis reveals connections between cited and referenced works. When three different works reference the same two sources, this is called a co-citation (Aria and Cuccurullo, 2017). As noted by Measure (1973), the co-citation analysis looks at the connections

between things like authors, journals, titles, and keywords to see how closely connected things are. In Figure 4, we have a representation of the co-citation network between papers in the field of Digital Entrepreneurship. Clusters 1 and 3 contain many papers and are represented by the colours red and green, respectively. Cluster 2 is displayed in blue, whereas Cluster 4 is shown in purple. It has been observed that research communities arise when multiple writers mention the same sets of two publications. Clusters of papers with similar citation patterns often share a common theme. The figure displays the co-citation networks within the dataset, dividing them into four distinct groups. A node with a similar colour appears to share certain commonalities. This linkage diagram illustrates the organizational principles underlying the authors' citations in this study on digital entrepreneurship. The key works on this topic are shown in Table 3, forming a co-citation network.
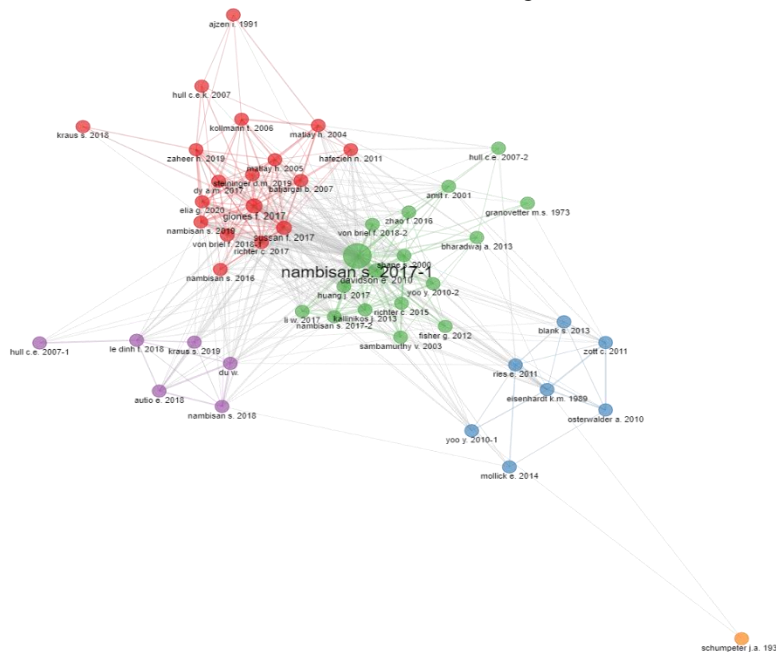
Fig. 4. Co-citation Analysis

3.1.3 Three-field plot

Figure 5 depicts the three-field layout for nations, keywords, and authors. This diagram is based on the more common Sankey designs (Riehmann, Handler

and Froehlich, 2005). According to Riehmann et al. (2005), the size of the boxes is associated with the number of occurrences. Hence it can be stated that the United States has the highest number of publications on the stated research theme, and its scholars publish more on "*digital entrepreneur-*

ship," "*e-entrepreneurship*," "*entrepreneurship*," and "*digitalization*." "*Digital entrepreneurship*" is also the primary focus of researchers in each country shown in the graph. The terms "*digital entrepreneur*

rship," and "*e-commerce*" are popular among Indians and the top ten authors listed in the graph. Most of the authors' work centres on "*digital entrepreneurship*," while other plot-related keywords receive less attention.
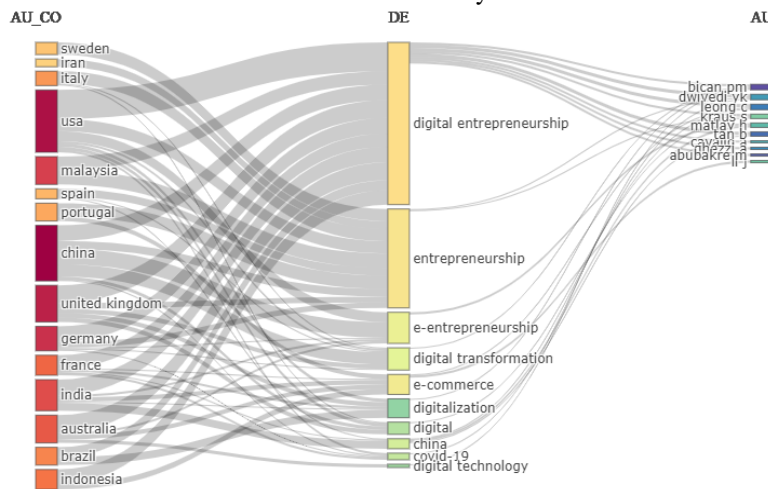
Fig. 5. Three-Field Plot

Figure 6 depicts the thematic progression of Digital Entrepreneurship based on the authors' keywords. This analysis, in particular, enables the reader to transmit knowledge on a specific issue, in this instance, Digital Entrepreneurship. Figure 6 depicts the motor themes in the upper-right quadrant. They are distinguished by their high density and centrality, regarded as the most evolved issue in the literature and the primary research subject in digital entrepreneurship study. Digital Entrepreneurship, Artificial Intelligence, E-learning, innovation, competition, students, and entrepreneurship education are the driving themes in this quadrant. The upper-left quadrant has high-

density topics but minor external linkages, making it of little importance in the field (low centrality). This quadrant's topics include online communities, investment, computer networks, conceptual frameworks, and female entrepreneurs. The developing or fading themes are located in the lower-left quadrant. This area includes marketing, computers, China, Guangdong, and industrial economics in digital entrepreneurship research. Finally, the primary and transversal themes are shown in the lower-right quadrant. This quadrant contains electronic commerce, information systems, digital technology, and social media. These themes address broad issues across the field's many study areas**.**
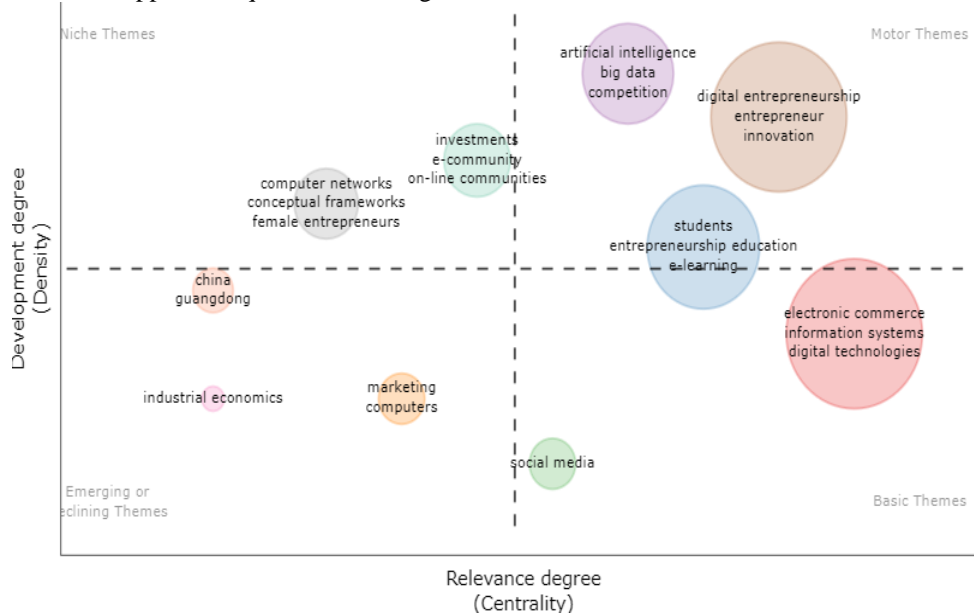
Fig. 6. Thematic Evolution

4. DISCUSSIONS AND IMPLICATIONS

This research paper conducted a detailed assessment of the literature on Digital entrepreneurship for over 21 years to reflect the current research situation. Using bibliometric analytic approaches, we assessed the effectiveness of authors, published journals, affiliated universities, and nations. To understand the broader domain of digital entrepreneurship, we conducted citation, keyword analysis, and co-citation.

The year-by-year historical examination of articles identifies two stages, the first until 2012 as its infancy, and the second, after 2018 onwards, with an international expansion. The analysis determined the most influential and contributing writers by analyzing the volume of papers published and the total citations obtained by each author.

The most cited article is "Digital Entrepreneurship: Toward a Digital Technology Perspective of Entrepreneurship" by Satish Nambisan, followed by "Digital entrepreneurship ecosystem: How digital technologies and collective intelligence are reshaping the entrepreneurial process" by Elia. Parida, Krauss S., Li Z., and Matley H. have the most publications, each with four. Cavallo A and Ghezzi A have the most citations, with a total citation document score of 294 each. The evaluation of citations reveals a strong correlation between the highest cited publications and the most prominent authors. "Technological Forecasting and Social Change" is the most-referenced journal.

The National Changhua University of London, Czestochowa University of Technology, and the Graz University of Technology are the institutions that have contributed the most. The research also looked at the countries that contributed the most in terms of papers produced and total citations. China has the most published articles, followed by the United States of America and Germany. Co-citation analysis shows that the work of Nambisan, Sussan, and Giones is the most referenced; these writers serve as the foundation for future study. According to co-word analysis, the most general keywords in the literature on Digital entrepreneurship are Digital entrepreneurship, Entrepreneurship, E-commerce, and E-entrepreneurship. This research study aimed to organize and rationalize the published flow of digital entrepreneurship-related knowledge. We have assessed and analyzed the underlying framework of the digital entrepreneurship literature to guarantee that the objectives of this research study have been met.

We shall now go over the study's repercussions. The findings have significant educational and administrative repercussions. In terms of conceptual contributions, the research adds to the current information base by analyzing the advancement of research in digital entrepreneurship. It develops and summarizes information on notable writers, associated organizations, locational matrices of the writers, contributing journals, and important keywords that have substantially shaped the study of Digital entrepreneurship through citation and co-citation analysis. In addition, the findings extensively identify the research clusters and developing research streams that, when other digital technologies and their applications emerge, the research studies may be expanded to enhance the Digital entrepreneurship literature. Another contribution of this study is bibliometric and network analysis concepts, which academicians can use to acquire information on critical topics and develop research trends in other sectors of significance. For the professional world, our study gives pertinent information into the present state of research, future central projections, and various schools of thought, allowing them to outline key emphasis areas and highlight key concentration areas for a smooth transition to a technology-driven business. In a nutshell, this study will serve as a quick reference guide for professionals, providing them with accurate data and actionable advice to maximize the rewards of their digital entrepreneurial activities.

5. CONSTRICTIONS & FUTURE OUTLOOK FOR RESEARCH

The research study is restricted to a single source (Scopus) for information retrieval, and the conclusions are derived from these publications. Despite being the most comprehensive source, it only reflects a portion of the total articles. Similarly, we retrieved articles based on specified keywords. Different results may be obtained by modifying the search indexes, databases, keywords, or disciplines. There is a lot of diversity in the domain of digital entrepreneurship; thus, there might be a lot of differences in the keywords. Therefore, findings should be generalized consciously. Furthermore, the citation analysis is centred on quantity rather than quality. Overall, we see a rise in digital entrepreneurship initiatives in reality, and we recommend additional research to provide case-based practical insights for digital entrepreneurship clients and implementation partners. As a result, we advise that future research include comprehensive perspectives rather than limiting them to single areas. We also propose developing a generally recognized quantitative metric to evaluate the impact of digitalization in the commercial sector, which has yet to be addressed in the literature on digital entrepreneurship. Finally, we propose expanding this study by undertaking quantitative studies to provide more statistically quantifiable findings, utilizing this or other indexes such as Google Scholar or Web of Science Collection.

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