



## Bibliometric Analysis of Digital Entrepreneurship

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### Abstract

This research explores the dynamics of entrepreneurship in the digital era by analyzing research trends, the impact of technological innovation, and the challenges and opportunities entrepreneurs face in the face of global market changes. Using a qualitative approach with bibliometric methods, this research identifies the development of the concept of entrepreneurship from 1956 to 2025. The research expanded significantly starting in 2016, along with the increasing adoption of digital technology in various industrial sectors. Visualization of bibliometric data shows that global entrepreneurship is a significant topic in academic literature. It is interconnected with digital business, corporate entrepreneurship, and entrepreneurial process. The findings of this study show that entrepreneurship is increasingly integrated with the digital world, with social media and digital technology acting as significant factors in accelerating business growth. The results of this analysis are expected to serve as a reference for further research in the evolving field of entrepreneurship and provide insights for business practitioners and policymakers in designing innovative strategies in the digital era.

**Keywords:** Digital Entrepreneurship, Social Media, GEM, Bibliometric, Inovation.

### 1. Introduction

Entrepreneurship, or entrepreneurship, is a process that includes creating, developing, and managing business ventures, with the primary objective of making a profit while adding value to society. In a broader perspective, entrepreneurship encompasses the ability of individuals to recognize opportunities, manage risks, and bring innovations that positively impact the economy. Entrepreneurs, as we call them, serve as agents of change. They introduce new ideas to the market, create jobs, and offer innovative solutions to challenges. Entrepreneurship involves many activities, from identifying opportunities to managing resources to produce a valuable product or service. The concept is increasingly relevant, showing that entrepreneurship focuses on financial gain and creating a positive impact on society and the environment.

Entrepreneurs play an important role in creating jobs, accelerating economic growth, and driving innovation. They are individuals who brave uncertainty, turn challenges into opportunities, and develop solutions that benefit society. Known for creativity, innovation, and risk-taking traits, entrepreneurs contribute significantly to advancing the economy, creating jobs, and improving quality of life. However, the journey to becoming an entrepreneur is not easy as it is filled with challenges that demand resilience, strategic insight, and support from a conducive environment. In this modern era, the role of entrepreneurship is becoming increasingly viral. Technological changes, globalization, and market dynamics have created new opportunities for entrepreneurs to bring innovative solutions to human needs. With creativity and a strong vision, entrepreneurs can develop products or services that fulfill consumer needs and address global challenges such as environmental sustainability, social inclusion, and economic equity. Achieving success as an entrepreneur requires a clear vision, the courage to take risks, and the ability to learn and adapt continuously. Through entrepreneurship, individuals build businesses and contribute significantly to positive change for society and the world.

Today, we are in an era of digitalization where artificial intelligence can be leveraged to improve the quality of decisions we make. These technologies enrich how we perceive reality and broaden our perspectives on various aspects of life. Digitalization has brought about rapid and transformational changes, making it imperative for entrepreneurs to be aware of the outcomes and relationships and identify new opportunities in the business world. 1 The internet provides many opportunities, from connecting with people worldwide to creating,



sharing, and disseminating content. We can also quickly obtain information on various subjects and stay up-to-date with the latest developments. 2 Achintya (2003) defines entrepreneurship as a spirit that suggests that individuals can develop their views, which can be changed. Their ideas transformed into action through organized and systematic programs. 3

Entrepreneurship is closely related to the exploration and exploitation of profitable opportunities. Essential characteristics of entrepreneurial activities such as creation, innovation, and new thinking approaches are crucial in building business success in the media sector [4]. Examining how entrepreneurship affects the media industry is highly relevant and meaningful. It has been shown that entrepreneurship is a driving force for modern economies and societal development through its contribution to economic growth, job creation, and promotion of innovation [5]. Actions specifically aimed at exploring new opportunities and creating value are fundamental in creating wealth and achieving sustainable competitive advantage through entrepreneurial practices. Entrepreneurship is a key driver of innovation and job creation [6]. According to Schumpeter (2000), an entrepreneur is an innovator who seeks to develop new products, processes, and organizations or improve existing ones [7].

The ongoing advancement of digital technology has brought about major transformations in economic and social aspects. Entrepreneurs are often faced with significant challenges when starting and growing new ventures. Common obstacles they face include turning an idea into a product, validating the business model formed around that innovation, and scaling the venture. Every new venture operates in a risky environment, whether a technology-based business model offering a revolutionary approach or a franchise company implementing a proven business plan in a new location [8]. Entrepreneurs take risks to bring product innovation to small businesses, driven by their intrinsic motivation [9]. They also often play an essential role in capitalizing on opportunities in international markets. In addition, entrepreneurs continue to rely on networks for business information, advice, and solutions to problems. Technology has changed how business people and entrepreneurs interact and identify entrepreneurial opportunities [10]. Tiago and Veríssimo (2014), digital entrepreneurs utilize digital tools, data, and technology to identify market opportunities, expand customer reach, and create competitive advantage [11]. They serve as creative agents that drive economic change and advance civilization's development [12]. Their primary focus is on innovation, which has the potential to topple even the most substantial companies. Their efforts not only contribute to economic progress but also to the development of society as a whole. Made by them contribute to economic progress and the development of society as a whole.

The role of entrepreneurs is to develop ideas uniquely and innovatively to create new and original concepts, products, and business processes. They are agents of change who actively seek and capitalize on opportunities, creating new and beneficial ventures [13]. The business model becomes the primary tool for entrepreneurs to face various challenges. The model links value creation and acquisition from an economic perspective and technological innovation while supporting the learning process through experimentation. Entrepreneurs design, test, and implement innovative business models in this case. They continuously create and capitalize on new opportunities arising from social, environmental, and technological changes. This digital age reduces the barriers to initiating innovative ideas and provides multiple pathways to success [14]. The advent of advanced technology and digitalization offers wider opportunities for digital start-ups. This is crucial, especially in the early stages of entrepreneurship, where information and support are indispensable for business continuity [16]. Furthermore, entrepreneurs utilize social media as a key tool to market their products and services. However, those who want to maintain business sustainability will face challenges as they must combine environmental, social, and commercial logic that often differ in values, practices, and goals [17]. The marketing tactics entrepreneurs use to follow the traditional progression include product development, pricing, promotion, and distribution, and integrating social media as an essential part of daily life that facilitates communication and information sharing [18].

**Table 1. Keywords**

Factor	Description	Resources
Social Media	Communication Channels, Interaction, Strengthening Business Relationships in the Digital Age	[1], [2], [3]
Entrepreneur	Identifying and utilizing opportunities, innovating, taking risks	[4], [5] [6]
SMEs	Taking Faster Action by Leveraging Technology, a Dominant Force in the Global Economy	[7] ,[8] [9]
Literatur Review	A systematic process for answering questions includes identifying, selecting, and assessing relevant research.	[10], [11], [12]
Integrated Framework	Value Tool Development Should Consider Complexity, as Small Changes Can Affect	[13], [14]
Entrepreneurship	Turning Ideas into Useful Actions, Highlighting New Ideas in Innovation	[15], [16], [17]
Entrepreneurial Marketing	Individual entrepreneurial marketing in pursuit of opportunities to acquire customers through innovation	[18], [19], [20]
Structured Literatur Review	Structured Review Method Based on Manual Screening	[21], [22], [23]
Digital Entrepreneurship	Opportunities Through New Technology Play a Role in Creating More Effective Business Methods	[24], [25], [26]
Digital Innovation	New Business Models Using Information Technology	[27], [28], [29]
Digital Technologies	Changing Business Models, Opening Up	[30], [31], [32]

Factor	Description	Resources
	Exciting Opportunities for Companies	
Digitalization Transformation	Processes Involving Changes in Business Models, Products Fueled by Digital Technology	[33], [34], [32]
Gender	Includes aspects of behavior, interests, and values that are feminine or masculine	[35], [36]
Woman	Individuals with unique characteristics and significant roles in human life.	[35], [24]
Business	Aktivitas Ekonomi Guna Menghasilkan Keuntungan Yang Lebih Besar, Yang Melibatkan Produksi Barang	[37], [38], [39]
Social Entrepreneurship Activity	Focusing on Innovative Solutions to Social Challenges by Emphasizing Social Value	[40], [41], [42]
Cross Country	Differences in Economic Level, Demographic, Cultural, and Institutional Characteristics	[43], [44], [45]
Social Entrepreneurship	An Innovative Approach Focusing on Social Value in Business Model Development	[46], [47], [48]
Global Entrepreneurship Monitor	Nirbala Organization Researching Entrepreneurship, Evaluating the Dynamics of the Institutional Condition of Business Actors Globally	[43], [49], [50]

## 2. Research Methods

This research adopts a qualitative method with a historical approach, aiming to understand the evolution and mapping of entrepreneurship research over time[51]-[54]. The research process was conducted in two stages. First, data collection was performed, including scientific articles published in reputable international journals and related documents[55], [56].

The next stage was to analyze the collected articles using bibliometric analysis. This method was used to identify research trends, influential authors, and dominant themes in entrepreneurship studies. This analysis provides a deeper understanding of entrepreneurship research's current development and direction. In addition, the research findings can reveal under-explored areas and potential variables for future research. The bibliographic data was analyzed through a network analysis approach, where eleven studies were reviewed. VOSviewer software was used to effectively map the relationships between topics and trends in entrepreneurship research.

### 2.1. Method of Collecting Data

Data collection was done through a review of research articles obtained from six leading publishers, namely 1) Emerald, 2) Springer, 3) Wiley Online Library, 4) Taylor and Francis, 5) Elsevier, and 6) Sage Pub Journals. These articles were retrieved from accessible databases from these publisher groups.

The article search process utilizes the Publish or Perish (PoP) software, effectively finding scientific papers relevant to the research topic. The following are the stages in data collection:

1. The search was limited to the range of 1956 to 2025.
2. The keyword used in the search was "Entrepreneurship."
3. The combination of keywords used as search criteria consisted of five combinations. The first combination [Social media, Entrepreneur; SME Literature review; Integrated framework]. The second combination [Entrepreneurship, Social media, Entrepreneurial marketing; Structured literature review]. The third combination [Digital entrepreneurship, Digital innovation, Digital technology, Digital transformation]. The fourth combination [Gender; Entrepreneurship; Women; Business; Literature review]. Fifth combination [Social entrepreneurial activity; GEM; Cross-country; Social entrepreneurship; Global entrepreneurship monitor]. 4. The data collected by the software is analyzed in journals written in English and comes from reputable article sources.
4. Searches are limited to relevant journal articles in management science, business, economics, social, information, and entrepreneurship. This study did not include conference proceedings, meeting minutes, and books.
5. The articles to be analyzed were checked to ensure the presence of essential elements such as "title," "abstract," and "keywords."
6. In the selection process of articles to be processed, some aspects that need to be considered include DOI, journal of publication, publisher, article URL, number of citations, GS Ranking, CitesPerYear, CitesPerAuthor, and AuthorCount.

From the search conducted using Publish or Perish between 1956 and 2025, 2,141 articles were collected. This search process utilizes a combination of titles and keywords, as seen in Table 2.

**Table 2.** Search Combination and Number of Articles Generated

Title	Keyword	Total
["Entrepreneurship"]	Social media; Entrepreneurs; SMEs Literature review; Integrated framework	315 Article

Title	Keyword	Total
["Entrepreneurship"]	Entrepreneurship; Social media; Entrepreneurial marketing; Structured literature review	590 Article
["Entrepreneurship"]	Digital entrepreneurship; Digital innovation; Digital technology; Digital transformation	312 Article
["Entrepreneurship"]	Gender; Entrepreneurship; Women; Business; Literature Review	557 Article
["Entrepreneurship"]	Social entrepreneurship activities; GEM; Cross-country; Social entrepreneurship; Global entrepreneurship monitor	371 Article

## 2.2. Data Analysis Method

This bibliometric analysis utilizes the Vosviewer application to present the results as data mapping. Using text mining capabilities, the similarity visualization in Vosviewer can identify relevant combinations of concepts or phrases in mapping and clustering approaches, thus enabling citation and data analysis to explore existing networks. This application integrates various events effectively [62].

## 3. Results and Discussion

### 3.1. Number of Years in Publication

The early 1956s witnessed a rapid growth in entrepreneurship, driven by technological advancements that favored the emergence of digital-based ventures. Entrepreneurs significantly increased as social media platforms became a potential channel for promoting their products and services. This rapid technological change drastically reshapes business management strategies and creates new opportunities in various sectors. These conditions have sparked the interest of many researchers to study entrepreneurship, either as a central theme or as a keyword in scientific publications. Based on the search, there are 2,141 articles published from 1956 to 2025, as shown in Table 3.

**Table 3.** Number of Publication Years 1956-2025

Year	Multi Years Publication	Year	Multi Years Publication
1956	1	2008	14
1987	2	2009	19
1989	1	2010	34
1991	1	2011	52
1992	3	2012	41
1993	3	2013	52
1994	1	2014	50
1995	2	2015	69
1996	1	2016	76
1997	5	2017	85
1999	4	2018	128
2000	4	2019	154
2001	7	2020	169
2002	7	2021	213
2003	10	2022	232
2004	10	2023	301
2005	17	2024	318
2006	12	2025	10
2007	33	Total	2,141

In this situation, many researchers have researched entrepreneurship as a driving factor for economic growth, both for article titles and keywords in an article. From 1956 to 2025, 2,141 articles discuss entrepreneurship.

Research from 1956 publications was limited to the discussion of entrepreneurship; from 2016 to 2025, the theme of digital entrepreneurship began to develop significantly.

The value continues to increase from year to year. However, this development does not always bring positive impacts; sometimes, it has negative consequences. Entrepreneurship offers both advantages and challenges. Given these advantages and disadvantages, researchers feel motivated to conduct further studies on entrepreneurship. The aim is to provide a better understanding and optimally manage and utilize the potential of entrepreneurship to minimize the negative impacts that may arise.

### 3.2. Author Analysis

In this analysis, the author uses the Google Scholar (GS) ranking, which has a function similar to that of the Thomson ISI Web of Knowledge, namely, calculating the Journal Impact Factor (JIF). JIF itself is used to evaluate the impact of a publication [62]. However, GS has the unique advantage of providing free article access. With this free access, researchers can refer to articles without facing financial constraints from the institutions where they work.

**Table 4.** Active Publications per Year from 1956-2025

Author Name	Title	GS Rank
AM Kaplan, M Haenlein (2010)	User World, Unite! Social Media Challenges and Opportunities	99
H Snyder (2009)	Literature Review as a Research Methodology: An Overview and Guide	709
N Donthu, S Kumar, et al. (2021)	How to Conduct a Bibliometric Analysis: Overview and Guidelines	362
C Zott, R Amit, L Massa (2011)	Business Models: Recent Developments and Future Research	508
BL Connelly, ST Certo, et al. (2011)	Signaling Theory: A Review and Assessment	922
AB Carroll, KM Shabana (2010)	The Business Case for Corporate Social Responsibility: A Review of Concepts, Research and Practice	957
RJ Brodie, LD Hollebeek, et al. (2011)	Customer Engagement: Conceptual Domains, Fundamental Propositions, and Implications for Research	461
NMP Bocken, SW Short, P Rana, S Evans (2014)	A Review of Literature and Practice to Develop a Sustainable Business Model Archetype	603
A Ardichvili, R Cardozo, S Ray (2003)	Theory of Identification and Development of Entrepreneurial Opportunities	437
PC Verhoef, T Broekhuizen, et al. (2021)	Digital Transformation: A Multidisciplinary Reflection and Research Agenda	290
DF Kuratko (2005)	The Emergence of Entrepreneurship Education: Developments, Trends, and Challenges	485
AJ Hillman, MC Withers, et al. (2009)	Resource Dependence Theory: A Review	961
LD Hollebeek, MS Glynn, et al. (2014)	Consumer Brand Engagement in Social Media: Conceptualization, Scale Development and Validation	869
TM Connolly, EA Boyle, et al. (2012)	A Systematic Literature Review of Empirical Evidence on Computer Games and Serious Games	956
IH Sarker (2021)	Machine Learning: Algorithms, Real-World Applications, and Research Directions	893

GS rankings reflect the contribution of authors in producing articles each year. Based on the available data, 346 authors are actively involved in writing. Table 5 summarizes the authors' contributing articles each year by considering the GS rank. The table shows how each author contributes to producing papers each year [63].

### 3.3. Citation Analysis

Citation analysis shows the number of articles cited or referenced by other researchers. Entrepreneurship-related research continues to increase, especially from 1956 to 2025, as awareness of the importance of innovation in creating new business opportunities increases. Global economic trends challenge businesses to develop innovative and sustainable business strategies. Large and small-scale entrepreneurs must be highly adaptable when dealing with market dynamics. Efforts to understand and answer these challenges

encourage researchers to continue to develop relevant entrepreneurship science. The journal with the highest number of entrepreneurship publications is the Journal of Management, as shown in Table 5.

**Table 5.** Top Twenty-six Authors and Articles Cited in Entrepreneurship Publications

Author Name	Publisher	Cited Frequency
AM Kaplan, M Haenlein (2010)	Business Horizons	35724
H Snyder (2019)	Journal Of Business Research	11223
N Donthu, S Kumar, dkk. al (2021)	Journal Of Business Research	8225
C Zott, R Amit, L Massa (2011)	Journal Of Management	8167
BL Connelly, ST Certo, dkk. al (2011)	Journal Of Management	7647
AB Carroll, KM Shabana (2010)	International Journal Of Management Reviews	6921
RJ Brodie, LD Hollebeek, dkk.al (2011)	Journal Of Service Research	5743
NMP Bocken, SW Short, P Rana, S Evans (2014)	Journal Of Cleaner Production	5537
A Ardichvili, R Cardozo, S Ray (2003)	Journal Of Business Venturing	5126
PC Verhoef, T Broekhuizen, dkk.al (2021)	Journal Of Business Research	4454
DF Kuratko (2005)	Entrepreneurship Theory And Practice	4422
AJ Hillman, MC Withers, dkk. al (2009)	Journal Of Management	4349
LD Hollebeek, MS Glynn, dkk.al (2014)	Journal Of Interactive Marketing	4245
TM Connolly, EA Boyle, dkk. al (2012)	Computers & Education	4203
IH Sarker (2021)	SN Computer Science	4145
Y Xiao, M Watson (2019)	Journal Of Planning Education and Research	3921
H Hoang, B Antoncic (2003)	Journal Of Business Venturing	3814
WR Smith (1956)	Journal Of Marketing	3769
F Welter (2011)	Entrepreneurship Theory and Practice	3644
RS Burt (2017)	Social Capital	3578
AM Peredo, M McLean (2006)	Journal Of World Business	3531
JT Eckhardt, SA Shane (2003)	Journal Of Management	3440
F Boons, F Lüdeke-Freund (2013)	Journal Of Cleaner Production	3432
SM Shafer, HJ Smith, JC Linder (2005)	Business Horizons	3430
F Wilson, J Kickul, D Marlino (2007)	Entrepreneurship Theory and Practice	3374
R Hanna, A Rohm, VL Crittenden (2011)	Business Horizons	3356

### 3.4. Bibliometric Analysis

Bibliometric analysis supports researchers in mapping and evaluating the extent of research development related to entrepreneurship. As such, it can identify relevant and current themes or variables and help clarify the potential impact of the research if further development is needed.

### 3.5. Co-authorship Analysis

In the Co-authorship analysis, several authors are closely related to other authors in entrepreneurship-related research, as shown in Figure 1. Dana, LP is one of the authors with a vast network of collaborations, as seen from the strong relationships with several other authors such as Ratten, V and Kraus, S. The research conducted by Dana, LP involved various research teams, which shows that entrepreneurship research is often multidisciplinary and involves cross-institutional collaboration. In addition, Paul, J and Liñán, F also have relationships with many other authors, suggesting they are active in collaborative publications on entrepreneurship. Similarly, Urbano D also has connections with several lead authors, such as Guerrero, M and Amorós, JE, indicating cooperation in research related to entrepreneurial ecosystem development.

From this analysis, it can be concluded that academic collaboration in entrepreneurship research is quite intensive, with several key authors having extensive networks in scientific publications.



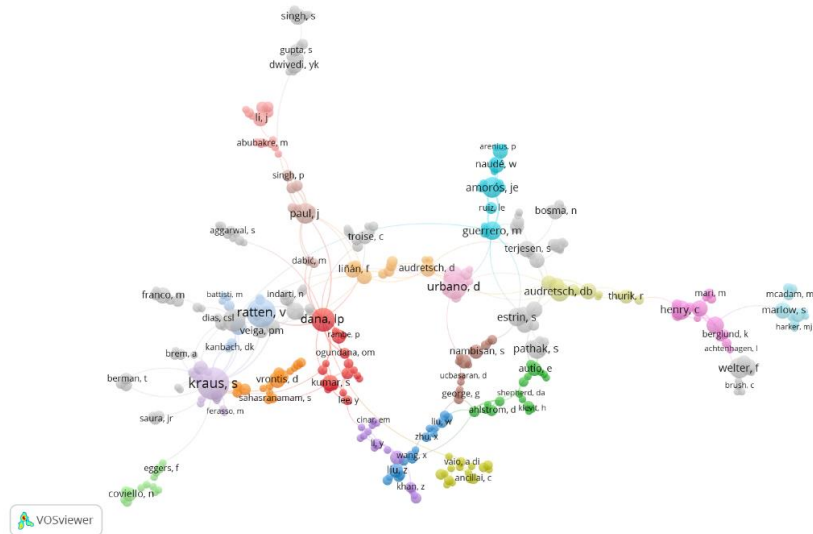


Fig 1. Author Network

The collaboration undertaken by the authors reflects a strong commitment to continue developing entrepreneurship research. Table 6 presents the research titles that they have produced in entrepreneurship-related studies.

Table 6. Author Collaboration

Author Name	Title
S Kraus, N Roig-Tierno, RB Bouncken (2019)	Innovation and digital enterprise: an introduction to the digitization of entrepreneurship
RB Bouncken, S Kraus, JF Martínez-Pérez (2020)	Institutional entrepreneurship: the emergence of co-working spaces for digital business models
K He, RB Bouncken, A Kiani, S Kraus (2024)	The role of strategic orientation for digital innovation: When entrepreneurship meets sustainability
T Berman, D Schallmo, S Kraus (2023)	Strategies for digital entrepreneurial success: the role of digital implementation and dynamic capabilities
N Sadiku-Dushi, LP Dana, V Ramadani (2019)	Entrepreneurial marketing dimensions and SME performance
Y Song, LP Dana, R Berger (2021)	Entrepreneurial processes and online social networks: forecasting survival rates
S Kumar, S Sahoo, WM Lim, LP Dana (2022)	Religion as a social shaping force in entrepreneurship and business: Insights from a technology-enabled systematic literature review
N Ojong, A Simba, LP Dana (2021)	Women's entrepreneurship in Africa: A review, trends, and future research directions
V Ramadani, A Bexheti, LP Dana, V Ratten (2019)	Informal ethnic entrepreneurship: An overview
V Ratten, LP Dana, V Ramadani (2017)	Women's entrepreneurship in family business: an overview
E Ferri, M Noguera, D Urbano (2015)	The influence of cultural factors on social entrepreneurship: The impact of the economic downturn in Spain
D Urbano, S Aparicio, D Audretsch (2019)	Twenty-five years of research on institutions, entrepreneurship, and economic growth: what have we learned?
C Felix, S Aparicio, D Urbano (2019)	Leadership as a driver of entrepreneurship: an international exploratory study
D Urbano, S Aparicio (2016)	Types of entrepreneurial capital and economic growth: International evidence

### 3.6. Bibliometric Network Visualization Analysis

The analysis using VOSviewer to test keyword co-occurrence revealed 10,210 entrepreneurship-related keywords. We limited the number of keyword occurrences to 3 to get more specific keywords from the title and abstract analysis. From this restriction, we found 246 keywords clustered in 24 clusters, as shown in Table 7.

**Table 7.** Keyword Grouping

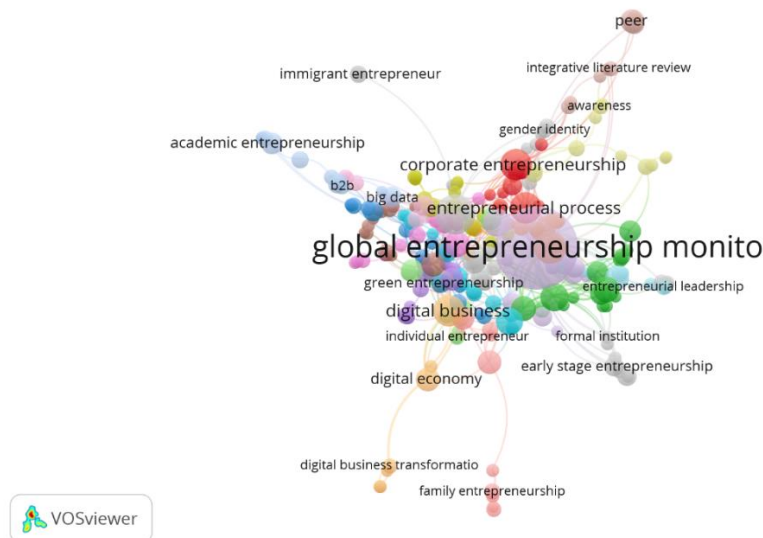
Cluster	Keyword
Cluster 1	Corporate Entrepreneurship, Digital Entrepreneurial Process, Entrepreneurial Community, Entrepreneurial Education, Entrepreneurial Mindset, Entrepreneurial Process, Internationalisation, MSMEs, Networking Capability, Organization Resilience, Refugee Entrepreneurship, Social Media Tool, Social Media Use, Success Factor
Cluster 2	Business Growth, Economic Development, Entrepreneurial environment, Entrepreneurial Performance, Entrepreneurial Strategy, Entrepreneurial Training, Entrepreneurial Monitoring, Entrepreneurial Theory, Gem Dataset, Global Entrepreneurship, Innovative Entrepreneurship, Necessity Entrepreneurship, Opportunity Entrepreneurship, Social Progress Orientation, Trait
Cluster 3	Agility, Business Research, Circular Economy, Digital Entrepreneurship Intention, Digital Revolution, Fintech, Flexibility, Future Trend, Green Entrepreneurship, New Digital Business Model, New Digital Entrepreneurship, Research Trend, Social Media Influencer, Systematic Way
Cluster 4	Creative Industry, Digital Readiness, Digital Space, Early Stage, Entrepreneurial Attitude, Entrepreneurial Experience, Environmental Factor, Improvement, International Entrepreneur, Productive Entrepreneurship, Strategy Entrepreneurship, Survival, Transnational Entrepreneurship, Unit
Cluster 5	Academic Entrepreneurship Study, Business Case, Corporate Social responsibility, Customer Engagement, Digital Business Strategy, Extant Research, Family Firm, Guideline, Innovational Management, Motivation Factor, New Business Model, Social Technology, Stakeholder
Cluster 6	Bricolage, Commercial Entrepreneurship, Cooperation, customer, Digitalization Process, Entrepreneurial Challenge, Entrepreneurial Venture, Interdisciplinary Review, Line, Selling, Social Entrepreneurial Activity, Social Entrepreneurship, Social Value
Cluster 7	Cross Country Analysis, Culture Value, Digital Entrepreneurship Education, Early Stage Entrepreneurial Activity, Economic Condition, Educator, Entrepreneurial Culture, Entrepreneurial Success, Institutional Perspective, Nascent Entrepreneurship, Premise, Student Entrepreneurship, User Entrepreneurship
Cluster 8	Allocation, Amount, Business Management, Business Ownership, Business strategy, Digital Era, Entrepreneurial Trait, Equity Crowdfunding, Small Business Economics, Smes Performance, Social Network, Strategic Orientation, Structured Interview
Cluster 9	Brand, Business Content, Customer Behavior, Digital Marketing, Entrepreneurial Marketing Education, Entrepreneurial Propensity, Marketing Strategy, Systematic Approach, Vision, Women Business Ownership, Youth
Cluster 10	Business Ecosystem, Confluence, Digital Entrepreneurial Opportunity, Digital Entrepreneurship Process, Digital Network, Family Business Research, Family Entrepreneur, Rural Women Entrepreneur, Rural Women Entrepreneurship, Technological Innovation, Technology Entrepreneurship
Cluster 11	Business Network, Digital Venture, Entrepreneurial Organization, Entrepreneurial Self Efficacy, Exploitation, government, Individual Entrepreneur, Integration, Social Media Research, Social Network Theory, Technological Transformation
Cluster 12	Academic Entrepreneurship, B2b, B2b Marketing, Big Data, Business Marketing, Digital Academic Entrepreneurship, Entrepreneurial University, Management Research, Social Media Adoption, Social Media Analytic, Trends
Cluster 13	Accelerator, Awareness, Business Model Transformation, Digital Business Model Innovation, Digital Entrepreneurship Research, Digital Star Up, Entrepreneurial Finance, Innovation Research, Qualitative Research, Social Media Channel, Systematic Literature Review Approach
Cluster 14	Business Activity, Economic Performance, Entrepreneurship Activity, Entrepreneurship Rate, Gender Factor, Global Entrepreneurship Monitor, Measuring Entrepreneurship, Policy Implication, Small Firm, Total Entrepreneurial Activity, Venture Creation
Cluster 15	Economic Freedom, Entrepreneurial Career, Entrepreneurial Intent,



	Entrepreneurial Leadership, Entrepreneurship Matter, Firm Performance, Graduate Entrepreneurship, Informal Entrepreneurship, Informal Sector, Successful Entrepreneurship
Cluster 16	Digital Business, Digital Business Transformation, Digital Economy, Digital Environment, Digital Infrastructure, Digital Transformation Era, Motivations, New Technology, Sme Entrepreneurship
Cluster 17	Cross Culture Entrepreneurship, Entrepreneurial Motivation, Entrepreneurship Article, Integrative Literature Review, Leverage, Peer, Social Entrepreneurship Research, Social Venture, Workplace
Cluster 18	Business Environment, Business Process, Collaboration, Customer Relationship Management, Entrepreneurial Research, International Marketing, Metaverse, Principle, Social Science
Cluster 19	Ambitious Entrepreneurship, Comparative international entrepreneurship, Early Stage Entrepreneurship, Entrepreneurial Behavior, Entrepreneurial Outcome, Formal Institution, Male Entrepreneur, Male Entrepreneurship
Cluster 20	Business World, Digital Entrepreneurship Success, Digitalisation, Female Refugee Entrepreneur, Immigrant Entrepreneur, Immigrant Entrepreneurship Literature, Involvement
Cluster 21	Entrepreneurial Profile, Entrepreneurship Process, Female Digital Entrepreneur, Female Digital Entrepreneurship, Gender Identity, Total Early Stage Entrepreneurship Activity,
Cluster 22	Digital Age, Digital Entrepreneurial Activity, Entrepreneurial Action, Entrepreneurial Capacity, Research Opportunity
Cluster 23	Digital Entrepreneurial Ecosystem, Ecosystem Perspective, Nation Entrepreneurship, Transformational Entrepreneurship
Cluster 24	Business Sector, Media Entrepreneurship, New Venture Creation

The network visualization analysis provides a clear picture of the many small nodes that represent the keywords from the analysis, as shown in Figure 2. This visualization indicates that there are gaps in entrepreneurship research that have not been fully explored. Further research is needed to clarify the relationship between various aspects of entrepreneurship, including “digital business,” “corporate entrepreneurship,” and “entrepreneurial process.”

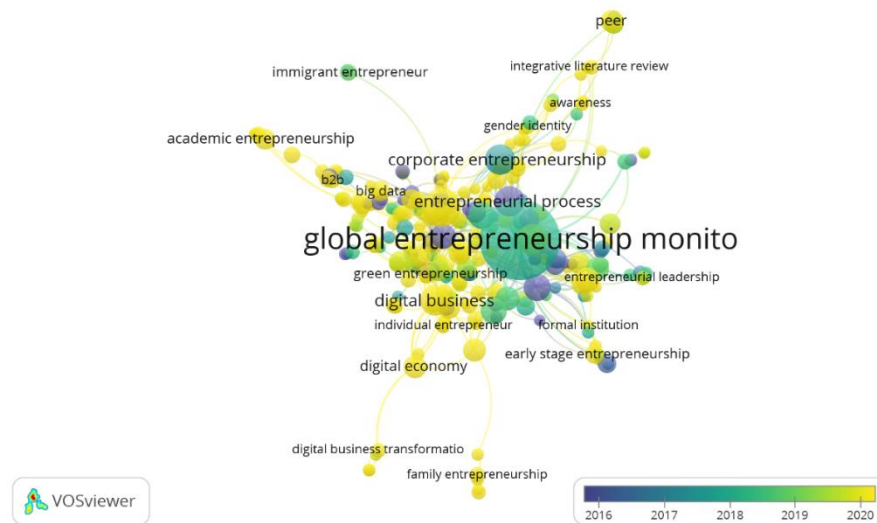
For example, the node “immigrant entrepreneur” shows weak linkages with key nodes such as “global entrepreneurship,” suggesting the need for a deeper study of the impact of immigrant entrepreneurship on the global economy. In addition, understanding the relationship between “digital economy” and “entrepreneurial leadership” is incomplete, so additional research is needed to uncover the mechanisms underlying the relationship.



**Fig 2.** Publication of Network Visualization in Entrepreneurship

Elucidating the causal relationships between the nodes in this network will contribute significantly to developing more profound scientific knowledge about entrepreneurship. By understanding these relationships, both academics and practitioners can design more effective policies and strategies to promote entrepreneurial growth at the global level.

### 3.7. Overlay Visualization Analysis



**Fig 3.** Visualization of Overlay in Entrepreneurship Publication

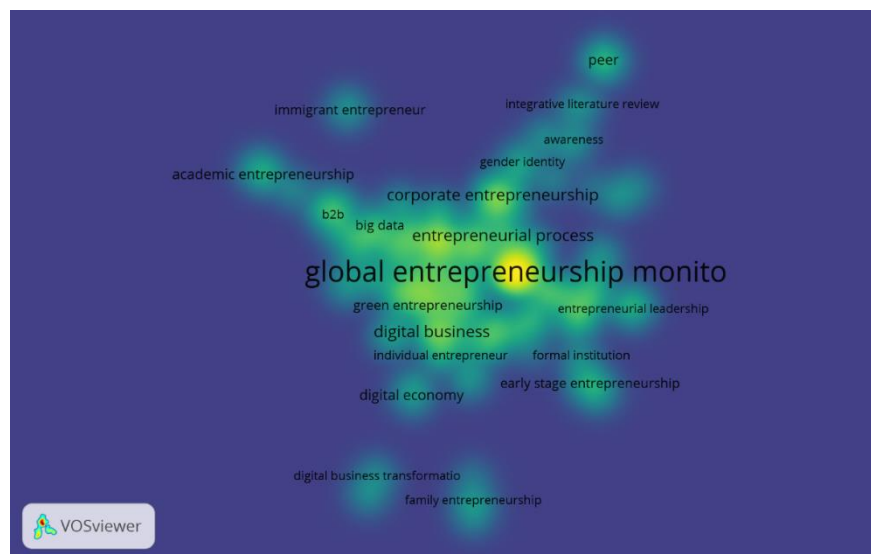
Figure 3 Network visualization analysis provides a clear picture of the number of small nodes representing keywords from the analysis, as shown in the figure. Based on a bibliometric analysis of entrepreneurship research trends from 2016 to 2020. Each node in this network represents a keyword that appears frequently in the academic literature, while the node's size indicates its occurrence frequency. The colors of the nodes reflect the temporal progression, where blue indicates earlier topics, while yellow indicates newer and emerging issues.

This visualization reveals that *global entrepreneurship* is a significant topic closely related to other aspects of entrepreneurship, such as *digital business*, *corporate entrepreneurship*, and *the entrepreneurial process*. The presence of green entrepreneurship and digital economy concepts shows that entrepreneurship research increasingly focuses on sustainability and digital transformation.

However, this analysis also indicates research gaps that can be further explored. For example, the *immigrant entrepreneur* node appears to have a weak relationship with key nodes such as *global entrepreneurship*, indicating the need for further research into the impact of immigrant entrepreneurship on the worldwide economy. In addition, the relationship between the *digital economy* and *entrepreneurial leadership* remains unclear, signaling the need for further studies to understand how entrepreneurial leadership develops in the digital economy ecosystem.

By understanding the causal relationships between concepts in this network, academics and practitioners can design more effective strategies and policies to promote global entrepreneurial growth. Further research will enrich the academic literature and provide practical insights for developing entrepreneurial ecosystems in the digital age.

### 3.8. Density Visualization Analysis



**Fig 4.** Visualization of Density in Entrepreneurship Publications

Figure 4 shows a study focusing on entrepreneurship, particularly on Global Entrepreneurship. This can be seen from the yellow area in the density visualization, which indicates that this topic has a higher frequency of publication than other topics. On the other hand, subthemes such as Corporate Entrepreneurship, Digital Business, and Entrepreneurial Process also attract attention, although they are characterized by darker colors. This suggests that there are still opportunities for further research in these areas.

These findings align with the Network Visualization and Overlay Visualization analysis, which shows that entrepreneurship research continues to grow. However, some subthemes have not been fully explored. The visualizations underline the importance of continued research in entrepreneurship, especially in the context of the Digital Economy, Green Entrepreneurship, and Family Entrepreneurship. Research in this area is expected to contribute to the development of scientific literature and provide valuable insights for academics and practitioners in understanding future entrepreneurship trends and challenges.

#### 4. Conclusion

Entrepreneurship continues to evolve along with advances in digital technology, which creates new opportunities for entrepreneurs in various sectors. Digitalization enables business model innovation, improves efficiency, and expands market access. However, challenges such as adaptation to technological change and global competition remain factors to overcome. This research highlights the need for adaptive strategies and cross-sector collaboration to support sustainable entrepreneurial growth.

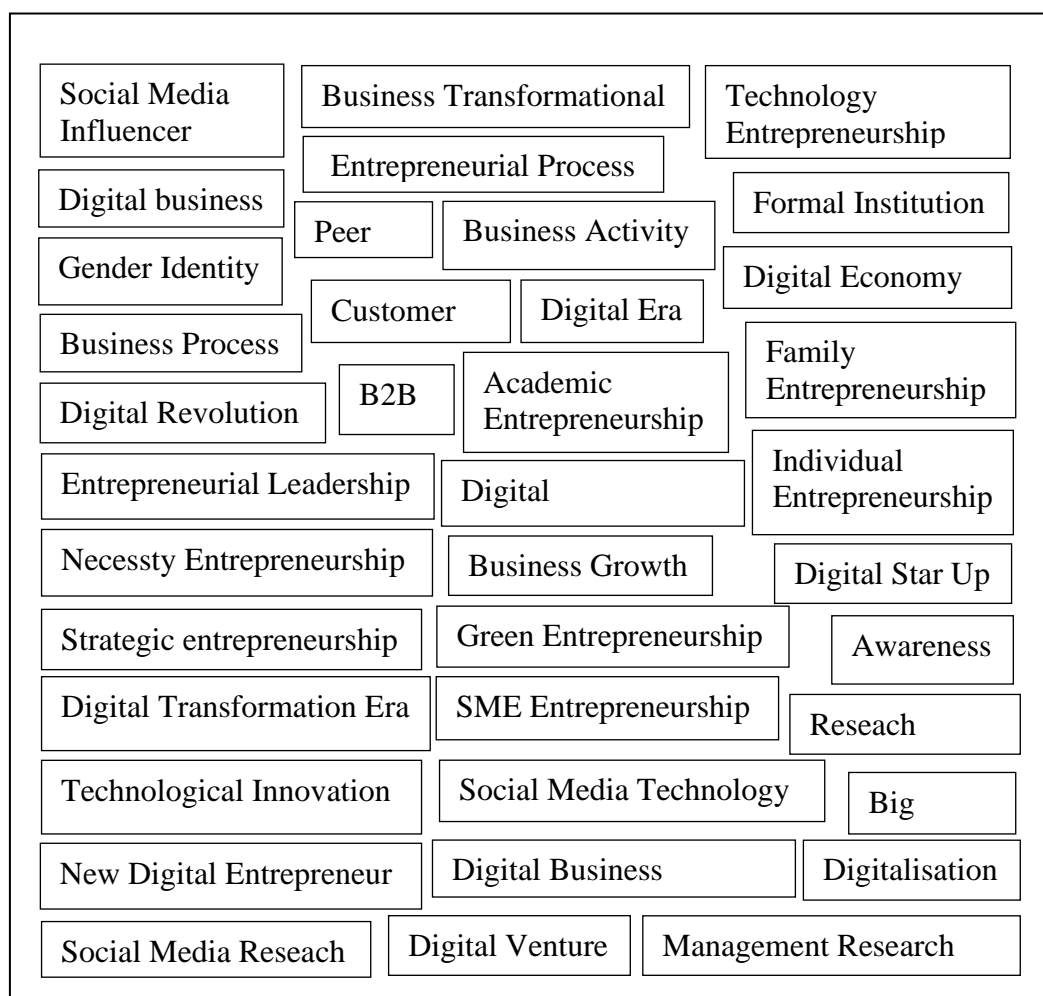


Fig 5. Recommended Themes

The variables or topics covered in this paper are derived from a selected set of articles published between 1956 and 2025. Bibliometric analysis reveals that many aspects of entrepreneurship still have not been researched in various business and economic contexts, as mentioned in Figure 5. This research gap is a signal for future researchers to explore entrepreneurship further. Some themes are also proposed to investigate entrepreneurship from the viewpoint of innovation, strategy, and business development.

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