

Entrepreneurship and Digital Economy – A Bibliometric Analysis

Aparna Samudra*

Assistant Professor, Department of Economics RTM Nagpur University, Nagpur – 440012, Maharashtra, India

Abstract

The advent of the digital economy has led to the emergence of entrepreneurship which is significantly different from the existing entrepreneurial ecosystem. This study focuses on bibliometric analysis of research on the interrelationship between entrepreneurship and the digital economy. The goal is to assess the trends in global research on the relationship between entrepreneurship and the digital economy as well as the output of publication, co-authorships, co-occurrences of keywords and citations in these topics. Using the Web of Science database, a bibliometric analysis of articles under the topic “entrepreneurship” and “digital economy” has been done. A total of 293 documents were retrieved from the database and after refining them for language and type of documents, 220 documents were selected for analysis. Nodes and linkages between authors, citations, keywords and co-citations were created using VOSviewer software. The growth in literature has significantly increased since 2018, with the USA leading the research on the topic. The keyword analysis showed that the focal point of entrepreneurship research is shifting from innovation and ICT to digital entrepreneurship and new business models of sharing economy and gig economy. While providing insights into the research in the digital economy and entrepreneurship, this study also outlines the path to future research.

Keywords: Bibliometric Analysis, Digital Economy, Entrepreneurship, VOSviewer

1. Introduction

Entrepreneurship aims at creating value either by innovation or risk-bearing and the concept has evolved over the years. The rapid advancement of ICT and digital technologies has revolutionized the entrepreneurial ecosystem. The digital economy is characterized by industries and businesses which use the internet and related technologies for their business. The increased adoption of digital tools in business models is challenging the traditional forms of entrepreneurship (Autio *et al.*, 2021).

The widespread use of social media platforms, increased digital literacy and the recent COVID-19 pandemic have accelerated the use of digital technologies in business models. The digital economy has led to the evolution of new business models, hence a bibliometric analysis of the published literature on the digital economy and entrepreneurship will help understand the evolving literature around this topic.

Studies regarding the diffusion of the digital economy and entrepreneurs have captured the interest of many scholars, particularly in entrepreneurship research and it has been recognized that entrepreneurship in the digital economy will play a prominent role in economic growth (Zhao & Collier, 2016; Rybakova & Nazarov, 2020; Yuldashevich & Mukhammadeldor, 2021).

This study provides a bibliometric approach to understanding entrepreneurship in the context of the digital economy identifying the state of research in this field and more specifically, analyzing the published articles in the Web of Science database identifying publication trends and other relevant bibliometric indicators. To understand the extent of collaborations, a network of authors; journals; keywords; and countries is created using the VOSviewer software. Based on the content analysis of these publications, the identification of gaps and opportunities for entrepreneurship research in the digital economy is also done in this study.

*Email: acsamudra@gmail.com

Section 2 of this article describes the material and methods, and Section 3 explains the results by describing the publication metrics, citations, authors, leading countries and institutions engaged in this research area followed by the network of authors, references, institutions and countries. Section 4 discusses these results in detail followed by Section 5 which gives the future topics on this topic and lists the perceived limitation of the analysis.

2. Materials and Methods

Bibliometric analysis is a quantitative method for reviewing and describing published articles, which is useful for researchers to evaluate scholarly research in an area of focus (Rey-Martí *et al.*, 2016). This bibliometric analysis has been done using a two-step approach; the first being the selection of the database and the next being the search methodology. The two most prominent bibliographic databases are Scopus and Web of Science. Web of Science is the oldest of the databases founded by Eugene Garfield in 1955 and the Institute of Scientific Information (ISI) released it in 1964 as the Science Citation Index (SCI). Web of Science was launched online in 1997 and Clarivate has been managing the Web of Science database since 2016. Web of Science has more than 193 million records from over 34,000 journals (Clarivate, 2019) and provides vast options for advanced search using topics, keywords, authors and journals. It also provides an option to analyze the results and create citation reports, hence Web of Science has been chosen for this study.

The second step in this analysis is of literature search, which was done using the advanced search feature of the Web of Science with specific search strategies listed below:

Search date: 29th July 2022.

Topics: TS= (entrepreneu*) AND TS= (digital economy)

Languages = 'All languages'

Document types = 'All document types'

Timespan = 'All years (1989 - 2022)'

Databases = 'WoS Core Collection'

Results obtained: 297 documents

Refined for the type of documents to include Articles,

Early access and proceedings only: 276 documents

Exclude: Language other than English: 271 documents

Exclude: irrelevant to the current analysis

Total documents: 220

Query link: <https://www.webofscience.com/wos/woscc/summary/5858c181-d242-4d9b-b708-1b2ef00b58e4-442c4b77/relevance/1>

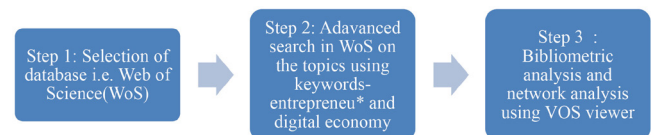
The above search criteria are summarized in Table 1.

Table 1. Summary of data source and selection

| | |
|------------------|---|
| Database | Web of Science Core collection |
| Citation Index | Web of Science Index |
| Publication Date | 1989 to 2022 |
| Searching Topics | "Entrepreneu*" and "digital economy" |
| Document Type | "Articles", "Early Access", "Proceedings" |
| Language | English |
| Sample Size | 220 |

VOSviewer (version 1.6.18) software is used to quantitatively and visually analyze the records obtained from the above-listed search strategy. This analysis includes the citation analysis, co-citation analysis and keyword co-occurrence of literature related to the topic of entrepreneurship and the digital economy, figuring together in the two hundred twenty documents retrieved from the Web of Science database.

The above research method can be understood in Flowchart 1:



Flowchart 1. Summary of research method.

3. Analysis of Results

3.1 Publication Metric Analysis

The web of Science database was scanned for a global literature search of publications on entrepreneurship and the digital economy. The first publication indexed in the database on the topics of research for purpose of this

study was in the year 1997 and the author discussed the impact of digital technologies on business processes, along with the need for collaboration between education and business to unleash the entrepreneurial and intrapreneurial skills (Cooper, 1997). According to the author, such an approach shall help to sustain the expected changes due to automation in the new economy. However, not many publications combining these two topics were published till the year 2017.

Since the year 2018, there has been growing interest in researchers on how the digital economy can be either a catalyst or a product of entrepreneurship. As per the search criteria given in Section 2 of this paper, a total of 220 publications have been published between the years 1997 to 2022. Accelerated growth of these publications is noted during the years 2018 to 2022, with 190 publications out of 220 in these five years (Figure 1). The trend in the growth of several publications can plausibly be attributed to the expansion of Industrial Revolution 4.0, the pandemic of the year 2020 and the post-pandemic times in which the digitalization of most businesses is taking place. It would not be inaccurate to expect more such state-of-the-art research in this subject area in the coming years.

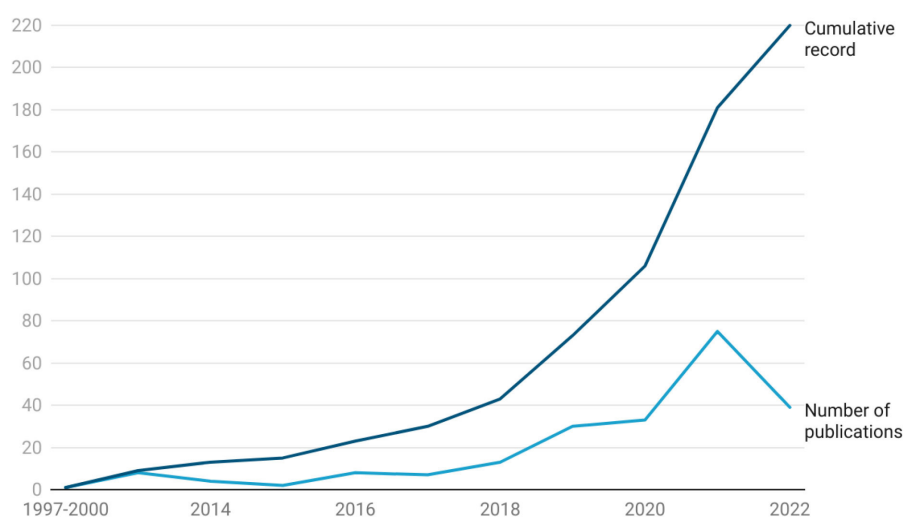
These 220 publications are classified into 55 Web of Science categories, out of which the top 10

categories are listed in Table 2. The highest number of publications falls in the Management category with 77 publications, followed by the Business category with 71 publications and Environmental Sciences with 28 publications. The publications were also categorized in Economics, Green Sustainable Science Technology and Environmental Sciences, indicating that this is a multidisciplinary topic attracting the research interest from varied subjects.

Table 2. Top 10 web of science categories for publications

| Web of Science Categories | Record Count | % of 220 |
|--------------------------------------|--------------|----------|
| Management | 77 | 35.00% |
| Business | 71 | 32.27% |
| Environmental Studies | 28 | 12.73% |
| Economics | 27 | 12.27% |
| Green Sustainable Science Technology | 24 | 10.91% |
| Environmental Sciences | 23 | 10.45% |
| Communication | 19 | 8.64% |
| Geography | 19 | 8.64% |
| Information Science Library Science | 15 | 6.82% |
| Regional Urban Planning | 15 | 6.82% |

Source: Prepared by the author based on the literature collected



Source: Prepared by the author based on the literature collected

Figure 1. Number and cumulative growth of publications since 1997.

3.2 Analysis by Publications and Citations

These 220 articles have been published in 128 journals. Out of these 128 journals, 88 journals (68.75%) have published only one article on the researched topic (Table 3). In total, 62 articles have been in the top 10 active journals accounting for 28% of the total publication on the researched topic and six journals have published more than five articles.

The top 10 journals with the highest number of papers are given in Table 4. Sustainability, which is an open-access journal published semi-monthly by MDPI, contributes 16 papers of the 220 papers. The second most published journals of these papers are Frontiers in Psychology, and the third place is taken

Table 3. Summary of productivity of journals

| Number of articles in the journal | Total Number of articles | Percentage of 128 |
|-----------------------------------|--------------------------|-------------------|
| 1. Published articles | 88 | 68.75% |
| 2. Published articles | 20 | 15.63% |
| 3. Published articles | 11 | 8.59% |
| 4. Published articles | 3 | 2.34% |
| More than 5 published article | 6 | 4.69% |
| Total | 128 | |

Source: Prepared by the author based on the literature collected

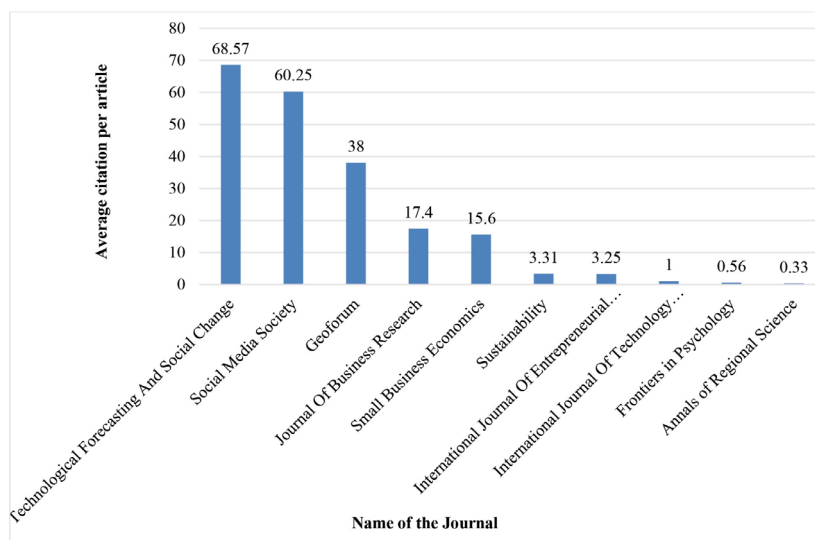
by Technological Forecasting and Social Change in publishing articles on the researched topics.

The citations received by the articles published in these journals suggest the quality of the articles being published in them. The most cited journal is Technological Forecasting and Social Change with its seven articles/documents cited 480 times with an average citation per document being 69. It can be interpreted from the above analysis that the quality of articles published by Technological Forecasting and

Table 4. Top 10 most productive journals

| Rank | Publication Titles | Record Count | % of 220 |
|------|--|--------------|----------|
| 1 | Sustainability | 16 | 7.27 |
| 2 | Frontiers in Psychology | 9 | 4.09 |
| 3 | Technological Forecasting And Social Change | 7 | 3.18 |
| 4 | Geoforum | 5 | 2.27 |
| 5 | Journal Of Business Research | 5 | 2.27 |
| 6 | Small Business Economics | 5 | 2.27 |
| 7 | International Journal Of Entrepreneurial Behavior Research | 4 | 1.81 |
| 8 | International Journal Of Technology Management | 4 | 1.81 |
| 9 | Social Media + Society | 4 | 1.81 |
| 10 | Annals of Regional Science | 3 | 1.36 |

Source: Prepared by the author based on the literature collected



Source: Prepared by the author based on the literature collected

Figure 2. Top 10 journals with high average citation per article.

Table 4. Top 10 authors by citations

| Rank | Author | Title of the Document | Year of Publication | Citations |
|------|---|--|---------------------|-----------|
| 1 | Rosenblat, A & Stark, L | Algorithmic Labor and Information Asymmetries: A Case Study of Uber's Drivers. | 2016 | 380 |
| 2 | Li, L | China's manufacturing locus in 2025: With a comparison of "Made-in-China 2025" and "Industry 4.0". | 2018 | 337 |
| 3 | Duffy, BE & Hund, E | "Having it All" on Social Media: Entrepreneurial Femininity and Self-Branding Among Fashion Bloggers. | 2015 | 187 |
| 4 | Duffy, BE | The romance of work: Gender and aspirational labour in the digital culture industries. | 2015 | 167 |
| 5 | Carayannis, EG & von Zedtwitz, M | Architecting gloCal (global-local), real-virtual incubator networks (G-RVNs) as catalysts and accelerators of entrepreneurship in transitioning and developing economies: lessons learned and best practices from current development and business incubation practices. | 2005 | 150 |
| 6 | Cockayne, DG | Sharing and neoliberal discourse: The economic function of sharing in the digital on-demand economy. | 2016 | 136 |
| 7 | Scuotto, V; Del Giudice, M & Carayannis, EG | The effect of social networking sites and absorptive capacity on SMES' innovation performance. | 2017 | 131 |
| 8 | Burtch, G; Carnahan, S & Greenwood, BN | Can You Gig It? An Empirical Examination of the Gig Economy and Entrepreneurial Activity. | 2018 | 126 |
| 9 | Richter, Kraus, Brem, Durst, & Giselbrecht, | Digital entrepreneurship: Innovative business models for the sharing economy. | 2017 | 108 |
| 10 | Gandini, A | Digital work: Self-branding and social capital in the freelance knowledge economy. | 2015 | 86 |

Source: Prepared by the author based on the literature collected

Social Change is much better than those published in the Sustainability journal, which is publishing the highest number of articles in the researched area but has a lower citations per document (Figure 2).

The top 10 most cited authors related to entrepreneurship and the digital economy in the Web of Science database are given in Table 4.

Table 5 gives the details of the top 10 authors by the number of articles published on the researched topic.

Sascha Kraus, Professor in Economics and Management, Free University of Bozen-Bolzano, and Italy is the most prolific author with four documents on the researched topic and with an average of 62 citations per document. The most influential author is Brooke Erin Duffy affiliated with Cornell University, having published three documents with an average of 135 citations per document.

Table 5. Top 10 published authors

| Author | Documents | Citations | Average Citation |
|----------------------|-----------|-----------|------------------|
| Kraus, Sascha | 4 | 248 | 62 |
| Duffy, Brooke Erin | 3 | 407 | 135.7 |
| Bouncken, Ricarda B. | 2 | 94 | 47 |
| Bowen, Robert | 2 | 31 | 15.5 |
| Cockayne, Daniel G. | 2 | 171 | 85.5 |
| Crowley, Caren | 2 | 49 | 24.5 |
| Harrison, Richard T. | 2 | 49 | 24.5 |
| Mcadam, Maura | 2 | 49 | 24.5 |
| Morris, Wyn | 2 | 31 | 15.5 |
| Yu, Haiqing | 2 | 24 | 12 |

Source: Prepared by the author based on the literature collected

Authors from 56 countries have published in these two hundred and twenty articles. The USA has topped the most number of documents. The top 10 countries and organizations which have published articles on

the research topics of entrepreneurship and the digital economy are given in Table 6.

3.3 Bibliometric Analysis of Co-authorship

Co-authorship analysis helps to understand the extent of collaboration between the authors as well as countries. VOSviewer is used to create a network where each node indicates the number of documents by the authors and the clusters is created by closely related nodes.

To get effective results for the network analysis of co-authorship in this study, Price Law is used for the calculation of the threshold of the number of publications. The equation of the threshold number of publications is as follows:

$$TP_n = 0.749 \sqrt{N_{max}}$$

Where TP_n is the threshold of the number of publications and N_{max} is the maximum number of publications by a single author.

The most prolific author on the researched topic is Sascha Kraus who has contributed four articles. Therefore, as per the Price Law formula, the threshold of two documents was kept and out of 607 authors, 21 authors were identified as core authors with at least one citation. The network analysis resulted in a total of 21 authors grouped under 12 clusters each cluster being represented by different colours (Figure 3). Each circle in the cluster is weighted according to the number of documents co-authored by the authors in the cluster.

Table 6. Top 10 countries and organizations of Entrepreneurship and digital economy publications

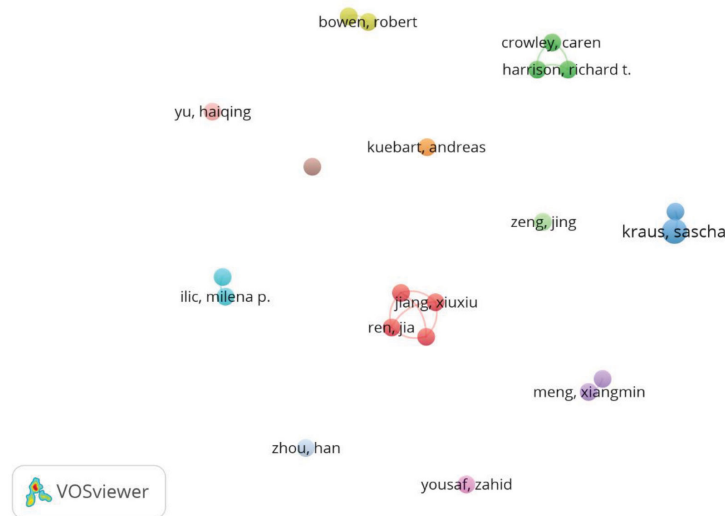
| Top 10 countries | | | | |
|----------------------|--|-----------|-----------|--------------------------------|
| Rank | Country | Documents | Citations | Average Citations Per Document |
| 1 | USA | 58 | 2263 | 39.02 |
| 2 | Peoples R China | 42 | 212 | 5.05 |
| 3 | England | 37 | 530 | 14.32 |
| 4 | Italy | 19 | 332 | 17.47 |
| 5 | Australia | 14 | 176 | 12.57 |
| 6 | Spain | 13 | 134 | 10.31 |
| 7 | France | 12 | 173 | 14.42 |
| 8 | Germany | 11 | 280 | 25.45 |
| 9 | Netherlands | 9 | 137 | 15.22 |
| 10 | Romania | 9 | 26 | 2.89 |
| Top 10 organizations | | | | |
| Rank | Organization | Documents | Citations | Average Citation Per Document |
| 1 | Durham University | 5 | 152 | 30.4 |
| 2 | University of North Carolina | 5 | 158 | 31.6 |
| 3 | L'IPAG Business School | 4 | 70 | 17.5 |
| 4 | ESIC Business & Marketing School | 3 | 79 | 26.33 |
| 5 | Jilin University | 3 | 2 | 0.67 |
| 6 | Renmin University of China | 3 | 17 | 5.67 |
| 7 | Temple University | 3 | 401 | 133.67 |
| 8 | The University of Bayreuth | 3 | 140 | 46.67 |
| 9 | The University of Birmingham | 3 | 25 | 8.33 |
| 10 | The University of California, Berkeley | 3 | 16 | 5.33 |

Source: Prepared by the author based on the literature collected

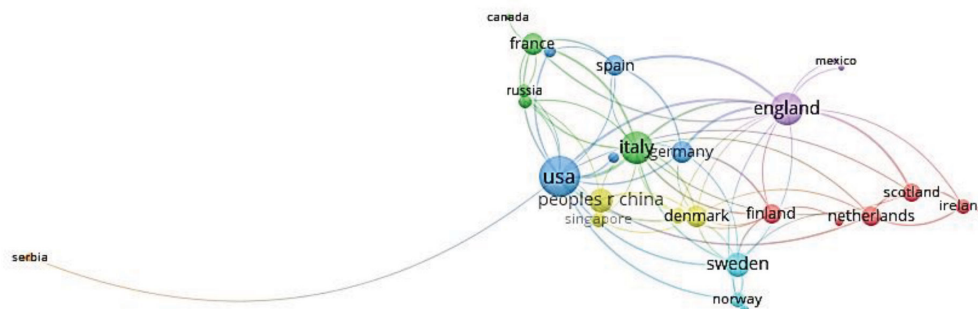
The largest connected network of co-authorship in red circles of Figure 3 is of four authors - Xiuxiu Jiang, Xia Wang, Jia Ren and Zhinmin Xie affiliated with, Tongji University, Shanghai, China who have co-authored two documents on Digital economy and entrepreneurship with special reference to China. The second cluster in green frame comprises three co-authors with two documents of Maura McAdam, Caren Crowley and Richard Harrison belonging to Dublin University, Dublin, Maastricht School of Management, Maastricht, The Netherlands and University of Edinburgh Business School, Edinburgh, UK respectively who have published articles on women digital entrepreneurship in emerging economies. The third cluster is of authors- Ricarda Bouncken of the University of Bayreuth,

Sacha Kraus of Durham University, and Norat Roig-Tierno of ESIC Business and Marketing School who have published on digital business models in sharing economy.

Analysis of collaboration of co-authorship based on countries was carried out as well. Out of 56 countries which have published work, those countries with a minimum of two documents with at least 20 citations were selected and 28 countries met the threshold. These 28 countries were divided into seven clusters (Figure 4). The largest number of documents with collaboration in authorship is from the USA and it also has the largest link strength.



Source: Prepared by the author based on the literature collected
Figure 3. Co-authorship network of authors.



Source: Prepared by the author based on the literature collected
Figure 4. Co-authorship network of countries.

3.4 Bibliometric Analysis of Keywords Co-occurrence

Keyword co-occurrence analysis is considered an effective method of grouping documents having similar research objectives. The keyword co-occurrences generated using VOS viewer suggested keywords based on their occurrence in the documents retrieved from the database and author-supplied keywords.

There are a total of 1361 keywords and a threshold of a minimum of 10 occurrences of a keyword, which led to the selection of 31 keywords. These 31 keywords were filtered to generate a network for only those keywords which are relevant for the analysis and 15 keywords were analysed for network analysis. The top five most common keywords ranked by the number of occurrences are Entrepreneurship (72 occurrences), innovation (52 occurrences), performance (27 occurrences), sharing economy (22 occurrences) and digital entrepreneurship (21 occurrences).

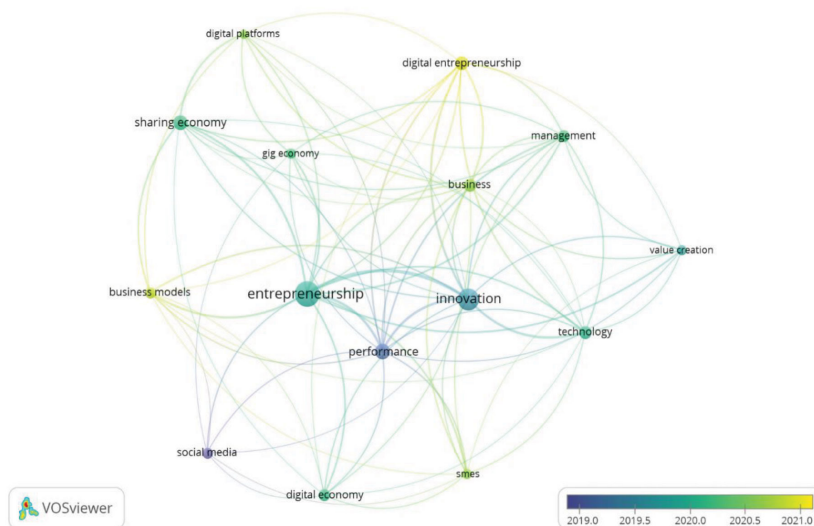
These 15 keywords can be classified into three clusters:

1. Business, digital entrepreneurship, innovation, management, technology and value creation;
2. Business models, digital economy, entrepreneurship, performance, social media and SMEs;
3. Digital platforms, the gig economy and sharing economy

(Figure 5). A look at these three clusters of keywords can help us to draw preliminary conclusions that the first cluster represents innovation and value creation, the second cluster is about entrepreneurship with new business models and the third cluster is about the sharing and gig economy.

The overlay visualisation (Figure 5) of these keywords also shows that more recent research has been focussing on digital entrepreneurship, digital platforms and business models associated with the digital economy.

Amongst these articles, there are 878 author-supplied keywords. Those author keywords which have occurred at least five times were selected translating into 22 keywords meeting this threshold limit. Out of these 22 keywords, 18 keywords were selected and the top five authors supplied which occurred a maximum number of times are: entrepreneurship (42 occurrences); digital entrepreneurship (19 occurrences); digital economy (16 occurrences); innovation (13 occurrences); sharing economy (12 occurrences). Using VOS viewer, these 18 keywords were divided into four clusters; 1. digital economy, digital entrepreneurship, digitalization, ICT, innovation, SMEs; 2. Digital platforms, digital transformation, entrepreneurship, gig economy, and social media; 3. Business model innovation, China, digital innovation, digital technology; 4. Fintech,



Source: Prepared by the author based on the literature collected

Figure 5. Keywords co-occurrences.

sharing economy and social entrepreneurship (Figure 6).

The research till 2019 was focused on innovation and ICT, evolving into the digital economy and gig economy in early 2021 and subsequently since mid-2020, the research is evolving around the keywords digital entrepreneurship, digital technology, digital transformation and digitalization (Figure 6).

3.5 Bibliometric Analysis of Co-citation Analysis

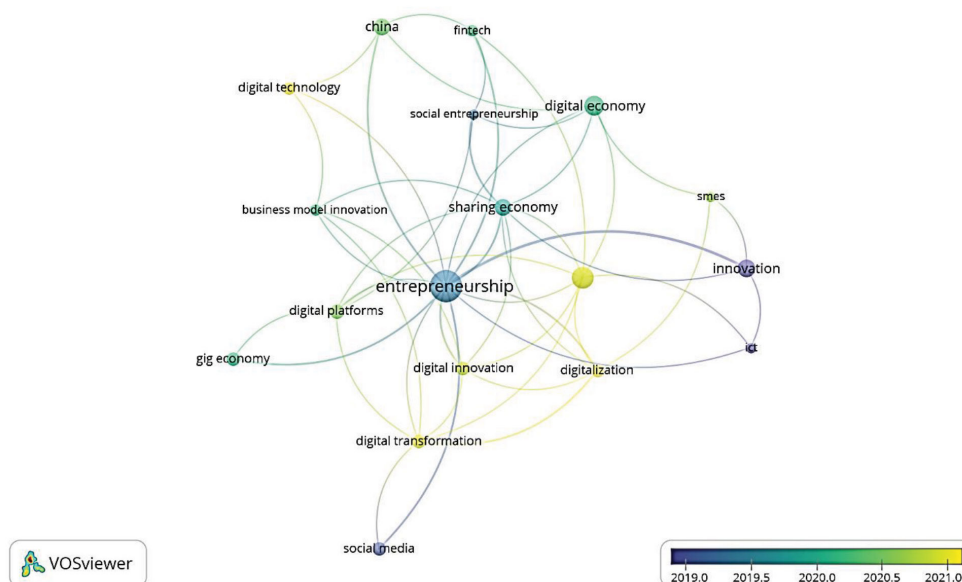
Co-citation analysis examines how closely authors, journals and articles are cited together. This type of analysis provides insight into the extent to which they have shaped and influenced academic debates about our interests. In co-citation analysis, a set of items (authors, documents, journals, etc.) is selected to represent an area of research. Co-citation analysis tracks pairs of articles that are cited together in the source article. Research clusters begin to form when the same publication pair are jointly cited by many authors. Co-cited papers within these clusters tend to share common themes.

The co-citation analysis began by looking at all the references cited together in the 220 papers in our dataset with 13955 cited references with a minimum number of citations of cited references as 10 citations and 20 references met these criteria. The top 10 most linked cited references are displayed in Table 8.

These 20 reference items were divided into two clusters as given in Figure 7, where each node in the cluster has been weighted according to the citation it received. Cluster one in red essentially published research on Strategic and long-range planning, whereas Cluster two in green published research on entrepreneurship and small business.

3.6 Co-citation and Authors

This analysis has been recognized through the relationship between authors, whose articles are cited in the same publications. The co-citation analysis began by looking at all the references cited in the 220 papers in our dataset with 10544 authors. Minimum of 20 citations of authors are considered to derive the network analysis. The sample was declined to a new sample which contains 21 authors and has 698 citations in total. 21 authors sample was drawn with the top 10 authors with the highest linkage given in Table 9. The

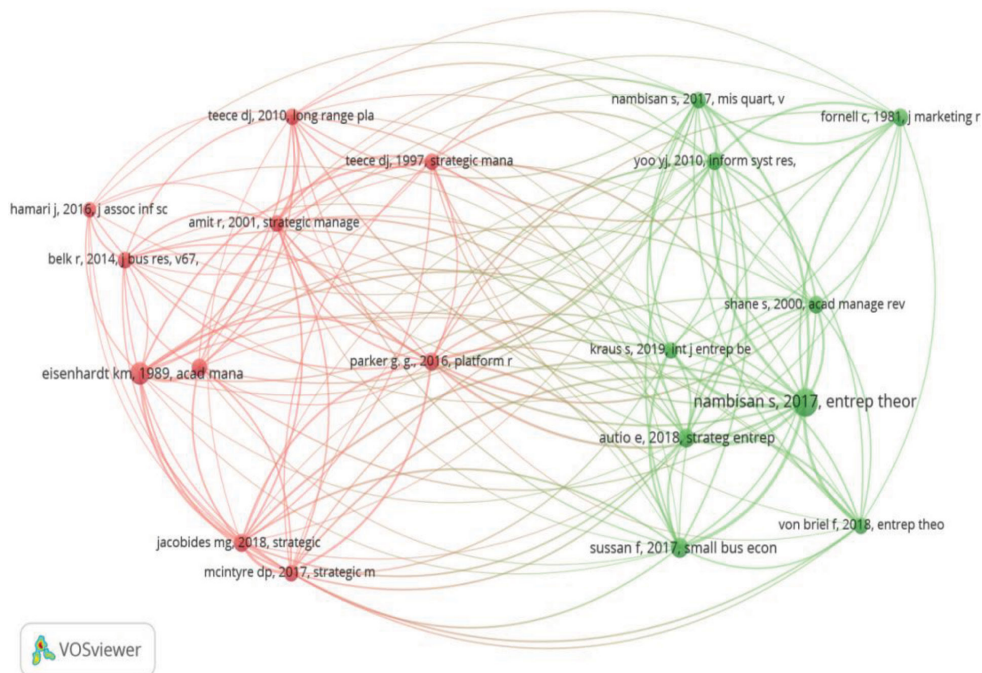


Source: Prepared by the author based on the literature collected
Figure 6. Author keywords co-occurrences.

Table 8. Top 10 most linked cited references

| Author/s | Cited Reference | Year | Journal Name | Citations | Total Link Strength |
|--|---|------|--|-----------|---------------------|
| Nambisan, S. | Digital entrepreneurship: Toward a digital technology perspective of entrepreneurship. | 2017 | Entrepreneurship theory and practice | 34 | 104 |
| Autio, E., Nambisan, S., Thomas, L. D., & Wright, M. | Digital affordances, spatial affordances, and the genesis of entrepreneurial ecosystems. | 2018 | Strategic Entrepreneurship | 15 | 58 |
| Sussan, F., & Acs, Z. J. | The digital entrepreneurial ecosystem. | 2017 | Small Business Economics | 16 | 58 |
| Yoo, Y., Henfridsson, O., & Lyytinen, K. | Research commentary—the new organizing logic of digital innovation: an agenda for information systems research. | 2010 | Information Systems Research | 14 | 58 |
| Jacobides, M. G., Cennamo, C., & Gawer, A | Towards a theory of ecosystems | 2018 | Strategic Management Journal | 14 | 53 |
| Parker, G. G., Van Alstyne, M. W., & Choudary, S. P. | Platform revolution: How networked markets are transforming the economy and how to make them work for you. | 2017 | WW Norton & Company | 13 | 52 |
| Kraus, S., Palmer, C., Kailer, N., Kallinger, F. L., & Spitzer, J. | Digital entrepreneurship: A research agenda on new business models for the twenty-first century. | 2018 | International Journal of Entrepreneurial Behaviour & Research. | 12 | 48 |
| McIntyre, D. P., & Srinivasan, A. | Networks, platforms, and strategy: Emerging views and next steps. | 2016 | Strategic Management Journal | 12 | 47 |
| Nambisan, S., Lyytinen, K., Majchrzak, A., & Song, M. | Digital Innovation Management: Reinventing innovation management research in a digital world. | 2017 | MIS Quarterly | 11 | 47 |
| Eisenhardt, K. M. | Building theories from case study research. | 1989 | Academy of management review, | 20 | 45 |

Source: Prepared by the author based on the literature collected



Source: Prepared by the author based on the literature collected

Figure 7. Network of co-citation with cited reference.

top 3 cited authors are Teece (72 citations), Nambisan (73 citations) and Acs (49 citations).

This study portrayed the map of the 21 authors consisting of four clusters by co-citation analysis of authors where the size of a node represents the number of citations (Figure 8).

Co-citation analysis in respect of co-cited journals was also done. Out of 6498 journals which were co-cited in

these 220 articles, those journals which had a minimum of 20 citations were selected. This gave a sample of 25 top journals which were cited together. Table 10 displays the top 10 journals which were co-cited. The top three journals are Strategic Management Journal (287 citations), Small Business Economics (206 citations) and Journal of Business Research (202 citations).

Table 9. Top 10 co-cited authors

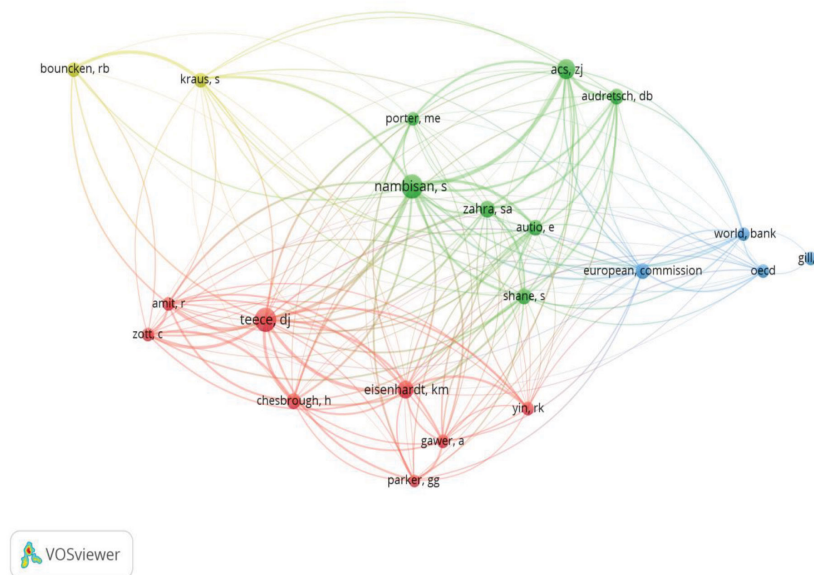
| Rank | Author | Citations | Total Link Strength |
|------|----------------|-----------|---------------------|
| 1 | Teece, DJ | 72 | 451 |
| 2 | Nambisan, S | 71 | 444 |
| 3 | Chesbrough, H | 33 | 264 |
| 4 | Acs, ZJ | 49 | 249 |
| 5 | Eisenhardt, KM | 40 | 231 |
| 6 | Amit, R | 24 | 229 |
| 7 | Shane, S | 32 | 211 |
| 8 | Autio, E | 32 | 193 |
| 9 | Gawer, A | 24 | 190 |
| 10 | Zott, C | 24 | 190 |

Source: Prepared by the author based on the literature collected

Table 10. Top 10 co-cited journals

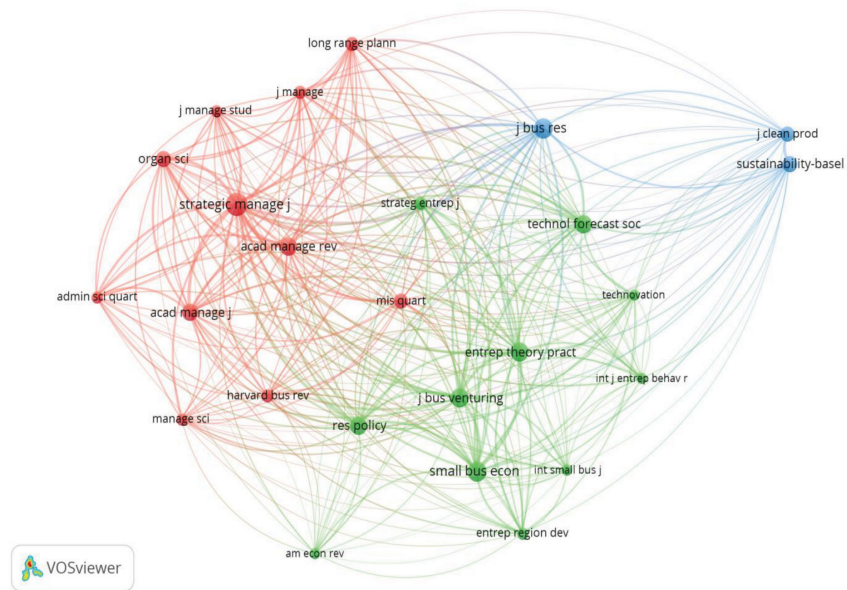
| Rank | Journal Name | Citations | Total Link Strength |
|------|---|-----------|---------------------|
| 1 | Strategic Management Journal | 287 | 9667 |
| 2 | The Journal of Business Venturing | 196 | 5940 |
| 3 | Academy of Management Review | 178 | 5873 |
| 4 | Entrepreneurship Theory and Practice | 189 | 5743 |
| 5 | Academy of Management Journal | 159 | 5480 |
| 6 | Journal of Business Research | 202 | 5318 |
| 7 | Small Business Economics | 206 | 5020 |
| 8 | Organization Science | 129 | 4530 |
| 9 | Research Policy | 174 | 4526 |
| 10 | Technological Forecasting and Social Change | 164 | 4253 |

Source: Prepared by the author based on the literature collected



Source: Prepared by the author based on the literature collected

Figure 8. Co-citation analysis of authors.



Source: Prepared by the author based on the literature collected

Figure 9. Network of co-cited journals.

The top 25 journals co-cited are classified into 3 clusters in the network, where Cluster One in red comprises those journals which focus on the area of management, Cluster Two in green are those that publish research related to entrepreneurship and Cluster Three consists of three journals which focus on the subject area of sustainability (Figure 9).

4. Discussion

The present research aims to understand the state of the research in the areas of entrepreneurship and the digital economy. The study was done to do a bibliometric analysis of research articles on entrepreneurship and the digital economy, which are published in the journals indexed in the Web of Science. The analysis has thrown light on quantitative and network analysis of these articles and identified research gaps and future research investigation areas. The study provides a bibliometric analysis of influential and prolific authors, keywords, countries, Universities and journals that have published articles on entrepreneurship and the digital economy. This study has observed that: 1. literature on entrepreneurship in the digital economy has been growing particularly since 2019; 2. The top five articles have been cited 1221 times and there are several

prolific authors in making; 3. The USA has the highest number of publications and citations, but China is fast closing this gap; 4. The keyword analysis showed that the focal point of entrepreneurship research is shifting from innovation and ICT to digital entrepreneurship and sharing as well as the gig economy.

The results obtained in this study, indicate a clear trend that the business models are changing due to the widespread adoption of ICT and the innovations brought about by Industrial Revolution 4.0. The research articles have traced the origin and growth of global digital platforms (Acs *et al.*, 2021; Sahut *et al.*, 2019) and also identified the hindrances and enablers of the entrepreneurial ecosystem in the digitalized world (Yin *et al.*, 2019; Raut *et al.*, 2021). New technologies like AI and machine learning have created boundary-less entrepreneurial opportunities in the form of the gig economy and sharing economy. The impact of these ventures on the circular economy and labour markets has attracted the attention of researchers (Cockayne, 2015; Rosenblat, 2016; Richter, 2017; Burtch, 2018).

The digital economy has also proved to be an enabler for women to create a value chain from their passionate activities in creative industries like fashion, beauty and

retail (Duffy, 2015; Duffy & Hund, 2015; Duffy & Pruchniewska, 2017; Lin & Di Kloet, 2019; O'Connell 2020). The entrepreneurial ecosystem being facilitated by the digital economy has also been seen to be an enabler in sustainable development through poverty reduction, enhanced work opportunities, and reduction in gender and income inequalities (Si *et al.*, 2019; McAdam *et al.*, 2020). The platform economy has also had an impact on business models, labour market and wages, workspaces and organization structures (Cutolo & Kenney, 2020; Huang *et al.*, 2021; Leick *et al.*, 2022; Zhang *et al.*, 2022). Social media platforms like Facebook are seen to have played a vibrant role in the development of the digital entrepreneurial ecosystem providing economic, relational and hedonic benefits, particularly to low-income digital entrepreneurs (Delacroix *et al.*, 2018).

5. Conclusion

The present study adds to the existing literature on entrepreneurship and the digital economy by providing the status, trends, gaps and research opportunities through the content analysis of recent and relevant articles on the topic. The study has contributed by identifying the growth and progress of the terms used in the research field. "Entrepreneurship", "innovation" and "performance" were the most used keywords associated with studies on entrepreneurs in the organizational context. After the strong growth of publications since 2018, new terms such as "digital economy" and its dimensions have been included.

This study also contributes by identifying the journals which publish impactful research on the selected topics. The study also focuses on the leading ten countries which contribute 67.46% of the total publications, led by the USA with 17.47% of the publications. The most prolific and influential authors in the researched area have also been identified in this study. Lastly, the study has identified the growing research scope and identified the future area of research namely sustainability through entrepreneurship in the digital economy, the impact of boundaries world on the entrepreneurship and labour markets and the effectiveness of artificial

intelligence and machine learning on the emerging business models.

The study has limited the data collection till July 2022, hence future research may be carried out to cover the whole year, which may add to the existing knowledge. This study has been done using the Web of Science as the database exclusively; studies can be conducted using multi-database sources and comparison of results obtained thereof, which may give a broad overview of the studies conducted in the researched parameters. Moreover, this study has considered only the highest quality articles, but bibliometric analysis inclusive of conference papers, book chapters, dissertations, etc., can provide valuable clues to future research trends.

6. References

- Acs, Z. J., Song, A. K., Szerb, L., Audretsch, D. B., & Komlósi, É. (2021). The evolution of the global digital platform economy: 1971-2021. *Small Business Economics*, 57(4), 1629-1659. <https://doi.org/10.1007/s11187-021-00561-x>
- Autio, E., Fu, K., Smit, W., Muftiadi, A., Chiyachantana, C., Prasarnphanich, P., Quyen, P. M., Habaradas, R., Petalcorin, C. C., Jinjark, Y., & Park, D. (2021). Adoption of digital technologies, business model innovation, and financial and sustainability performance in startup Firms. *Asian Development Bank*.
- Autio, E., Nambisan, S., Thomas, L. D. W., & Wright, M. (2018). Digital affordances, spatial affordances, and the genesis of entrepreneurial ecosystems. *Strategic Entrepreneurship Journal*, 12(1), 72-95. <https://doi.org/10.1002/sej.1266>
- Burtch, G., Carnahan, S., & Greenwood, B. N. (2018). Can you gig it? An empirical examination of the gig economy and entrepreneurial activity. *Management Science*, 64(12), 5497-5520. <https://doi.org/10.1287/mnsc.2017.2916>
- Carayannis, E. G., & von Zedtwitz, M. (2005). Architecting gloCal (global-local), real-virtual incubator networks (G-RVINS) as catalysts and accelerators of entrepreneurship in transitioning and developing economies: lessons learned and best practices from current development and business incubation practices. *Technovation*, 25(2), 95-110. [https://doi.org/10.1016/S0166-4972\(03\)00072-5](https://doi.org/10.1016/S0166-4972(03)00072-5)

- Clarivate. (2019). Web of Science - Web of Science Group. Web of Science Group. Available from: <https://clarivate.com/webofsciencegroup/solutions/web-of-science/>
- Cockayne, D. G. (2015). Entrepreneurial affect: Attachment to work practice in San Francisco's digital media sector. *Environment and Planning D: Society and Space*, 34(3), 456-473. <https://doi.org/10.1177/0263775815618399>
- Cockayne, D. G. (2016). Sharing and neoliberal discourse: The economic function of sharing in the digital on-demand economy. *Geoforum*, 77, 73-82. <https://doi.org/10.1016/j.geoforum.2016.10.005>
- Cooper, D. N. (1997). The future of work in the digital diaspora: Economic restructuring and education. *Journal of Organizational Change Management*, 10(2), 139-155. <https://doi.org/10.1108/09534819710160808>
- Cutolo, D., & Kenney, M. (2020). Platform-Dependent Entrepreneurs: Power Asymmetries, Risks, and Strategies in the Platform Economy. *Academy of Management Perspectives*, 35(4). <https://doi.org/10.5465/amp.2019.0103>
- Delacroix, E., Parguel, B., & Benoit-Moreau, F. (2018). Digital subsistence entrepreneurs on Facebook. *Technological Forecasting and Social Change*, 146, 887-899. <https://doi.org/10.1016/j.techfore.2018.06.018>
- Duffy, B. E. (2015). The romance of work: Gender and aspirational labour in the digital culture industries. *International Journal of Cultural Studies*, 19(4), 441-457. <https://doi.org/10.1177/1367877915572186>
- Duffy, B. E., & Hund, E. (2015). "Having it All" on social media: Entrepreneurial femininity and self-branding among fashion bloggers. *Social Media + Society*, 1(2), 205630511560433. <https://doi.org/10.1177/2056305115604337>
- Duffy, B. E., & Pruchniewska, U. (2017). Gender and self-enterprise in the social media age: a digital double bind. *Information, Communication and Society*, 20(6), 843-859. <https://doi.org/10.1080/1369118X.2017.1291703>
- Eisenhardt, K. M. (1989). Building theories from case study research. *The Academy of Management Review*, 14(4), 532-550. <https://doi.org/10.2307/258557>
- Gandini, A. (2015). Digital work: Self-branding and social capital in the freelance knowledge economy. *Marketing Theory*, 16(1), 123-141. <https://doi.org/10.1177/1470593115607942>
- Huang, Y., Chen, Y., & Tan, C. H. (2021). Regulating new digital market and its effects on the incumbent market: Investigation of online peer-to-peer short-term rental. *Information and Management*, 58(8), 103544. <https://doi.org/10.1016/j.im.2021.103544>
- Jacobides, M. G., Cennamo, C., & Gawer, A. (2018). Towards a theory of ecosystems. *Strategic Management Journal*, 39(8), 2255-2276. <https://doi.org/10.1002/smj.2904>
- Kraus, S., Palmer, C., Kailer, N., Kallinger, F. L., & Spitzer, J. (2018). Digital entrepreneurship. *International Journal of Entrepreneurial Behavior and Research*, ahead-of-print(ahead-of-print). <https://doi.org/10.1108/IJEER-06-2018-0425>
- Leick, B., Falk, M. T., Eklund, M. A., & Vinogradov, E. (2022). Individual-contextual determinants of entrepreneurial service provision in the platform-based collaborative economy. *International Journal of Entrepreneurial Behavior and Research*, 28(4). <https://doi.org/10.1108/IJEER-09-2020-0585>
- Li, L. (2018). China's manufacturing locus in 2025: With a comparison of "Made-in-China 2025" and "Industry 4.0." *Technological Forecasting and Social Change*, 135, 66-74. <https://doi.org/10.1016/j.techfore.2017.05.028>
- Lin, J., & de Kloet, J. (2019). Platformization of the unlikely creative class: Kuaishou and Chinese digital cultural production. *Social Media + Society*, 5(4), 205630511988343. <https://doi.org/10.1177/2056305119883430>
- McAdam, M., Crowley, C., & Harrison, R. T. (2020). Digital girl: Cyberfeminism and the emancipatory potential of digital entrepreneurship in emerging economies. *Small Business Economics*, 55(4), 1179-1179. <https://doi.org/10.1007/s11187-020-00321-3>
- McIntyre, D. P., & Srinivasan, A. (2016). Networks, platforms, and strategy: Emerging views and next steps. *Strategic Management Journal*, 38(1), 141-160. <https://doi.org/10.1002/smj.2596>
- Nambisan, S. (2017). Digital entrepreneurship: Toward a digital technology perspective of entrepreneurship. *Entrepreneurship Theory and Practice*, 41(6), 1029-1055. <https://doi.org/10.1111/etap.12254>
- Nambisan, S., Lyytinen, K., Majchrzak, A., & Song, M. (2017). Digital innovation management: Reinventing innovation management research in a digital world. *MIS Quarterly*, 41(1), 223-238. <https://doi.org/10.25300/MISQ/2017/41:1.03>
- O'Connell, R. (2020). Labouring in the image: Celebrity, femininity, and the fully commodified self in the drag of Willam Belli. *Celebrity Studies*, 1-17. <https://doi.org/10.1080/19392397.2020.1765085>
- Parker, G. G., Alstyne, M. W. V., & Choudary, S. P. (2017). Platform revolution: How networked markets are transforming the economy and how to make them work for you. W.W.Norton & Company, Inc.

- Raut, J., Čelić, Đ., Dudić, B., Čulibrk, J., & Stefanović, D. (2021). Instruments and methods for identifying indicators of a digital entrepreneurial system. *Mathematics*, 9(17), 2151. <https://doi.org/10.3390/math9172151>
- Rey-Martí, A., Ribeiro-Soriano, D., & Palacios-Marqués, D. (2016). A bibliometric analysis of social entrepreneurship. *Journal of Business Research*, 69(5), 1651-1655. <https://doi.org/10.1016/j.jbusres.2015.10.033>
- Richter, C., Kraus, S., Brem, A., Durst, S., & Giselsbrecht, C. (2017). Digital entrepreneurship: Innovative business models for the sharing economy. *Creativity and Innovation Management*, 26(3), 300-310. <https://doi.org/10.1111/caim.12227>
- Rosenblat, A., & Stark, L. (2016). Algorithmic labor and information asymmetries: A case study of uber's drivers. *International Journal of Communication*, 10, 3758-3784.
- Rybakova, E. V., & Nazarov, M. A. (2020). Entrepreneurship in digital era: prospects and features of development. In *Current Achievements, Challenges and Digital Chances of Knowledge Based Economy* (pp. 105-112). https://doi.org/10.1007/978-3-030-47458-4_13
- Sahut, J.-M., Iandoli, L., & Teulon, F. (2019). The age of digital entrepreneurship. *Small Business Economics*, 56(3), 1159-1169. <https://doi.org/10.1007/s11187-019-00260-8>
- Scuotto, V., Del Giudice, M., & Carayannis, E. G. (2016). The effect of social networking sites and absorptive capacity on SMES' innovation performance. *The Journal of Technology Transfer*, 42(2), 409-424. <https://doi.org/10.1007/s10961-016-9517-0>
- Si, S., Ahlstrom, D., Wei, J., & Cullen, J. (2019). Business, entrepreneurship and innovation toward poverty reduction. *Entrepreneurship and Regional Development*, 32(1-2), 1-20. <https://doi.org/10.1080/08985626.2019.1640485>
- Sussan, F., & Acs, Z. J. (2017). The digital entrepreneurial ecosystem. *Small Business Economics*, 49(1), 55-73. <https://doi.org/10.1007/s11187-017-9867-5>
- Yin, Z., Gong, X., Guo, P., & Wu, T. (2019). What drives entrepreneurship in digital economy? Evidence from China. *Economic Modelling*, 82, 66-73. <https://doi.org/10.1016/j.econmod.2019.09.026>
- Yoo, Y., Henfridsson, O., & Lyytinen, K. (2010). Research commentary- The new organizing logic of digital innovation: An agenda for information systems research. *Information Systems Research*, 21(4), 724-735. <https://doi.org/10.1287/isre.1100.0322>
- Yuldashevich, U. I., & Mukhammadeldor, R. (2021). The impact of digital economy on the development of small business and private entrepreneurship. *East European Scientific Journal*, 66(2), 4-7.
- Zhang, K., Feng, L., Wang, J., Qin, G., & Li, H. (2022). Start-Up's road to disruptive innovation in the digital era: The interplay between dynamic capabilities and business model innovation. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.925277> PMID:35800925 PMCid:PMC9255633
- Zhao, F., & Collier, A. (2016). Digital Entrepreneurship: Research and Practice. 9th Annual Conference of the EuroMed Academy of Business, 2173-2182.

Copyright of SDMIMD Journal of Management is the property of Shri Dharmasthala Manjunatheshwara Institute for Management Development (SDMIMD) and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.