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MAPPING RESEARCH OPPORTUNITIES INNOVATION CAPABILITY SMALL MEDIUM ENTERPRISES: A BIBLIOMETRIC ANALYSIS AND NETWORK VISUALIZATION

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Abstract— *Small and medium-sized business innovation research has a wide range of themes, and mapping innovation research is necessary to get an idea of the topics that are and will be developing. Bibliometric analysis of small and medium business innovation is one of the themes of trend research in the fields of business, economics, management, and computer science. Bibliometric analysis of the effects of innovation and open innovation on small and medium enterprises is one of the themes discussed, there has been no bibliometric analysis of the innovation ability of small and medium enterprises so the purpose of this study is to map research on the innovation ability of small and medium enterprises and to find opportunities for information technology innovation research themes for small and medium enterprises. The research method employed a bibliometric analysis, with data collection from the Scopus database, resulting in 542 documents. The data analysis stage, with the help of the enhancement software, is open for the main data cleansing. Vos Viewer for network visualization and overlay visualization. Tableau for data visualization and descriptive analysis. The results of the bibliometric analysis, combined with network visualization, successfully map four research clusters of innovation capabilities and provide direction to researchers to determine emerging topics and future research. The use of big data analytics to increase innovation, business, and technology can improve organizational performance is one of the research themes that has the opportunity to be studied in the future*

Keywords: *bibliometric analysis, innovation capability, network visualization, small and medium enterprises, vos viewer.*

Intisari— *Penelitian inovasi usaha kecil menengah memiliki tema yang beragam, pemetaan penelitian inovasi diperlukan untuk mendapatkan gambaran mengenai topik-topik yang sedang dan akan berkembang. Bibliometric analysis inovasi usaha kecil dan menengah menjadi salah satu trend tema penelitian di bidang bisnis, ekonomi, manajemen dan ilmu computer. Bibliometric analysis efek inovasi dan inovasi terbuka pada usaha kecil menengah merupakan salah satu tema yang dibahas, belum ditemukan bibiliometric analysis kapabilitas inovasi usaha kecil menengah sehingga tujuan penelitian ini adalah memetakan penelitian kapabilitas inovasi usaha kecil dan menengah dan mencari peluang tema penelitian inovasi teknologi informasi usaha kecil menengah. Metoda penelitian menggunakan analisis bibliometrik dengan tahap pengumpulan data dari database Scopus diperoleh 542 dokumen. Tahap analisis data dengan alat bantu*

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perangkat lunak open refine untuk pembersihan data kunci. Vos Viewer untuk visualisasi jaringan dan visualisasi overlay. Tableau untuk visualisasi data dan analisis deskriptif. Hasil penelitian analisis bibliometric dengan visualisasi jaringan berhasil memetakan empat klaster penelitian kapabilitas inovasi dan memberikan arahan kepada para peneliti untuk menentukan topik-topik yang sedang berkembang dan penelitian selanjutnya. Penggunaan analisis big data untuk meningkatkan inovasi, bisnis dan teknologi dapat meningkatkan kinerja organisasi menjadi salah satu tema penelitian yang berpeluang pada penelitian selanjutnya

***Kata Kunci**: analisis bibliometrik, kapabilitas inovasi, visualisasi jaringan, usaha kecil dan menengah, vos viewer.*

INTRODUCTION

Research on small and medium enterprises is a new phenomenon because the contribution of small and medium enterprises during the COVID-19 pandemic was able to help the economy rise from the downturn. The potential of small and medium enterprises has a very high role in the economic growth of a country because small and medium enterprises have high adaptability and flexibility compared to large companies in the face of external changes and environmental factors.

Research on small and medium enterprises is one of the interesting research objects. The research theme of innovation of small and medium-sized enterprises is one of the themes that is of great interest to researchers because strong innovation capabilities can achieve sustainable competitive advantage and drive growth.

The challenges of small and medium-sized businesses in the innovation process are considerable, especially in building knowledge, innovation opportunities, networking and collaboration, and innovation strategies. [1].

Referring to the research on Information System Strategic information technology management of an organization, specifically to consider the benefits and sustainable value in the field of information technology, in the digital era, organizations not only rely on the implementation of technology but must develop information system capabilities and enable the creation and utilization of digital innovations in a sustainable manner.

A relevant innovation strategy in the era of digitalization is digital innovation, which requires good innovation skills. Digital innovation encompasses a wide range of processes, new products, and services created due to market offerings by utilizing digital technology to improve a company's ability to face competitors.[2][3]

Bibliometric analysis research on Small and medium business innovation is one of the studies that is experiencing an increasing trend. Data from Scopus shows that the theme of the research began to be published in 2015, until 2024. Based on the Scopus database, small and medium-sized business innovation research in the field of Computer Science studies ranks second only to business, management, and accounting.

Innovation research mapping is necessary to get an idea of current and emerging topics. Previous biliometric analysis research includes the theme of the effect of innovation on small and medium enterprises, and the theme of open innovation in small and medium enterprises. [4].

In the article and discussing the ability to innovate is one of the important themes identified. The term capabilities in the theme of research in small and medium enterprises is included in the new theme that is being developed. The thematic results of this study show that the topic of innovation ability in small and medium enterprises is not only a research theme that is increasing, but is recommended to be the direction of research in the future, especially for the direction of research in the field of information technology. [4].

The research is intended to fill the research gap in research on innovation capabilities in small and medium enterprises. The purpose of this research is to map the research theme of the innovation ability of small and medium enterprises and to find opportunities for the theme of information technology research for small and medium enterprises.

The novelty of this research is the mapping of research opportunities on innovation capabilities in the field of information technology. This research is expected to contribute to research in the field of Innovation Technology management. The systematization of this paper begins with an introduction, materials and methods, results and discussions, and conclusions.

MATERIALS AND METHODS

This research was conducted using bibliometric analysis methods to explore and analyze large amounts of scientific data, which is descriptive, using trends that appear in articles and performance.

The author develops research questions to conduct a bibliometric analysis of innovation capabilities in small and medium enterprises. The research questions are arranged as follows:

1. RQ 1: What are the research trends and research journals on the innovation capabilities of small and medium enterprises?
2. RQ 2: Which countries have the most publications? And who are the authors who have published the most in the field of innovation capabilities?
3. RQ 3: What keywords appear frequently and are most often related to the publication of small and medium business innovation capabilities?
4. RQ 4: What is the direction of the research

The research stages are divided into 2 main groups: 1) Data collection, and 2) Data analysis. The researchers decided to use Scopus

database in the literature search because Scopus is the most comprehensive database and has diverse data. [5][6]

A. *Data Collection*

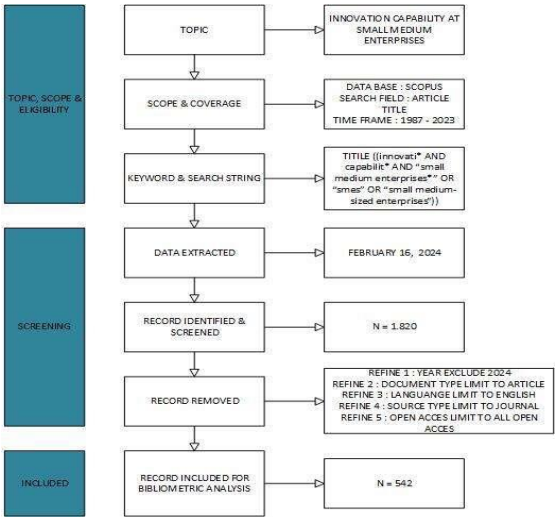
Data collection from the Scopus database is carried out through the following stages: 1) determining the Topic, Scope & Eligibility, 2) Screening data, and 3) determining Inclusion. The collected database is in the form of MS Excel files. The stages of data collection are divided into seven stages: 1) determining the topic, 2) determining scope & coverage, 3) determining keywords & search strings, 4) Date Extracted, 5) Record Identified & Screened, 6) Record Removed, 7) Record Included for Bibliometric Analysis [7].

The image of the data collection method can be seen in Figure 1 below: The topic is Innovation Capabilities at Small and Medium Enterprises. Scope & Coverage determined by the database from Scopus, with the search field

The article title, Keyword, & Search String were specified in the literature search because Scopus is the most

The research is TITTLE ((innovati* AND capabilit* AND "small medium enterprises*" OR "smes" OR "small medium-sized enterprises")). Scopus data retrieved for Data Extracts was determined on February 16, 2024, from the results of searching the Scopus database with records identified & screened from the title above, 1,820 DATA were obtained with publication time between 1987 and 2024.

The process of record removal in the Scopus databases is through 5 stages. The publication time is limited to 2023, and the results of publication in 2024 as many as 15 articles, were not included in the data collection. Documents selected in English articles with an open-access journal type to facilitate the data download process. From the data collection process, 542 data points were obtained, continued with the bibliometric analysis stage.

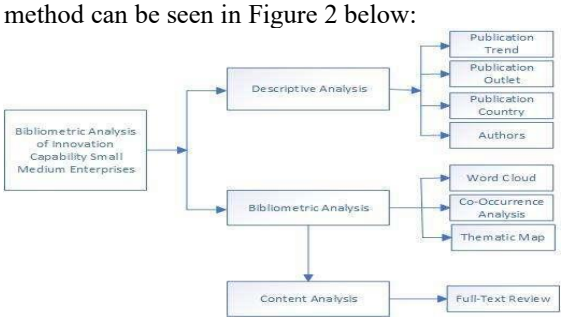


Source: ([6], [7] [8], 2021, 2022, 2023)

Figure 1: Data Search and Collection Strategy adapted from the PRISMA method [6], [7] [8]

B. *Data Analysis*

The data analysis stage was conducted after 542 data points were obtained from Scopus, then refined using Open Refine 3.5.2 software. The bibliometric analysis used is the total publications and total citations. Mapping of knowledge by conducting citation analysis, bibliographic merging, and network analysis (clustering), and visualization with Vos Viewer and Tableau. Bibliometric analysis is divided into two groups of analysis: descriptive analysis and co-occurrence analysis. The image of the data analysis method can be seen in Figure 2 below:



Source: (Wijaya [6], 2023)

(Figure 2: Research structure modified from [6]

RESULTS AND DISCUSSION

This study presents answers to three research questions in the form of descriptive analysis and bibliometric analysis. to reveal the current state of research related to the innovation capabilities of small and medium enterprises and research opportunities in the field of digital technology. The descriptive results are used to provide a quantitative overview related to research on the innovation capabilities of small and medium enterprises. Bibliometric analysis was

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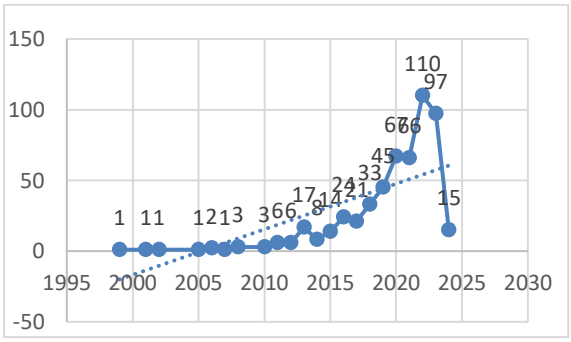
performed to map current conditions and future research [6].

Publication Trends and Research Journals on Small and Medium Business Innovation Capabilities.

The answers to the first research question related to the trend of publications and research journals are shown in Figures 3 and 4.

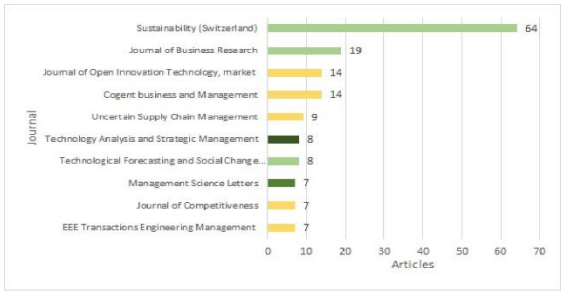
Figure 3 shows the research trends in the field of innovation capabilities by visualizing the number of publications from 2000 to 2024. This graph shows that research on innovation capabilities in MSMEs is a developing research. This study shows continuous growth and experienced a surge in 2022, with as many as



Source: (Research Results, 2025)

Figure 3: Graph of publications from the beginning of the study to the last year showing the number of documents published.

Based on the Scopus database of 542 documents analyzed, 162 researchers published articles in 152 journals in 51 countries. The information can be seen in the following Figure 4:



Source: (Research Results, 2025)

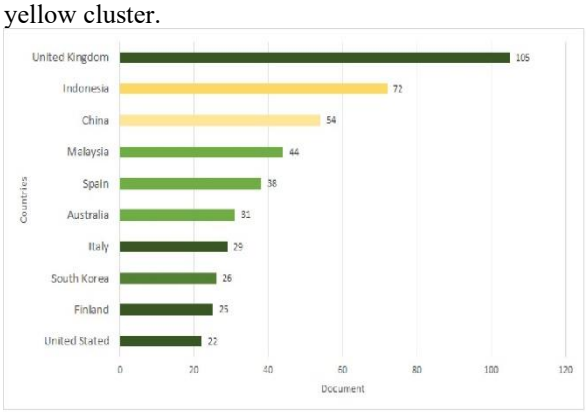
Figure 4: Top ten journals that can be used as outlets for publications in the field of innovation capability

The graph presented in Figure 4 is a representation of the top ten journals that can serve as outlets for research publications in the field of small and medium enterprise innovation capabilities. Figure 4 is intended to identify the most relevant and most influential journals so that it can provide insight for readers to make decisions to submit research articles.

Sustainability (Switzerland) is the journal with the highest number of publications, 64 articles. Journal of Business Research, 19 articles; Journal of Open Innovation Technology, market and cogent business and Management contributed 14 articles each, Uncertain Supply Chain Management, Technology Analysis and Strategic Management, Technological Forecasting and Social Change contributed 9, 8, 8 articles respectively. Management Science Letters, Journal of Competitiveness, and IEEE Transactions Engineering Management contributed 7, 6, and 6 articles, respectively.

The graph above shows 3 clusters of publication time marked with 3 different colors, 1) the dark green cluster, technology analysis and strategic management and management science letters which states the longest publication time and between the two has the most citations in the journal, technology analysis, it is possible that the journal is no longer in demand by researchers in the field of innovation capabilities as an outlet for publishing their research or is no longer indexed by Scopus, 2) the light green cluster, Sustainability (Switzerland), Journal of business research, technological forecasting and social change, indicates that the publication time of the article is newer than the dark green cluster, meaning that the journal is still in demand as an outlet innovation capability research publications.

The most citations are owned by Journal of business research and technological forecasting and social change, 3) yellow clusters, which are Journal of open innovation technology, market, cogent business and management, Uncertain supply chain management, Journal of competitiveness and and IEEE transaction engineering management, meaning that this journal is a journal with the most recent publication time indexed by Scopus and is most attractive to researchers to publish their articles. Journal of Open Innovation Technology is the journal with the most citations in the yellow cluster.



Source: (Research Results, 2025)

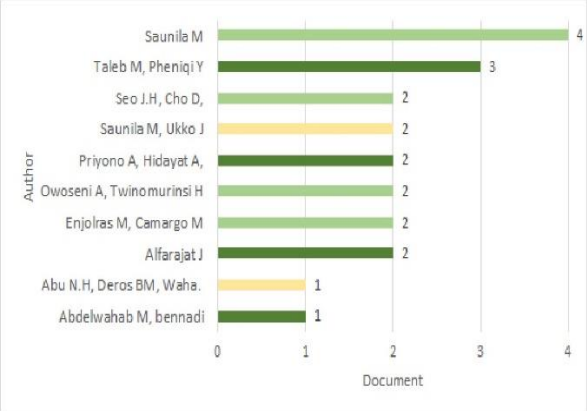
Figure 5: Top ten countries that have produced publications in the field of innovation capability

The country and the author of the most publications on the Theme of Small and Medium Enterprises Innovation Capabilities.

Based on the results of the analysis, there are fifty-one countries that contribute to research in the field of innovation capabilities. The top ten contributing countries are the United Kingdom, Indonesia, China, Malaysia, Spain, Australia, Italy, South Korea, Finland, and the United States.

Figure 5 shows the top ten countries that have produced publications and are the main research centers on the theme of innovation capabilities. These graphs can be a consideration for conducting international collaborative research and understanding the global distribution of knowledge.

Figure 5 shows three publication time clusters. namely dark green, light green, and yellow clusters, the meaning of each cluster is that dark green clusters are countries that have produced publications for a long time, including the UK, Malaysia, Italy, South Korea, Finland, and the United **States**. Finland, the United Kingdom, and the United States. The light green clusters are Spain and Australia. The yellow cluster is a country with a new publication time, Indonesia, and China



Source: (Research Results, 2025)

Figure 6: Top 10 authors who have produced publications in the field of innovation capability

Figure 6 shows authors who contributed to the research of innovation capabilities that made significant contributions in a particular field and understand academic networks and collaborations. A total of 162 authors contributed to the innovation ability research. The top 10 authors are shown in the graph in Figure 6. The three groups of publication time groups are dark green groups, namely the authors with the longest publication time, such as Taleb M, Pheniqi Y, Priyono A, Hidayat A, Alfarajat J. M; light green cluster Saunila M, Seo J.H, Cho D, Owoseni A, Twinomurinsi H, Enjolras M, Camargo M; Yellow cluster Saunila M, Ukko J, Abu N.H, Deros BM, Waha. The author with the highest citations is saunila m, ukko j means that the article written by saunila m and ukko j is the article that is most often referenced by other writers.

Keywords that appear most often and have relevance

The main themes and research topics can be mapped with Word Cloud mapping keywords with the help of R Studio software, and Network Visualization using Vos Viewer Software. In this study, the main themes and topics with important keywords appearing in the word cloud can be seen in Figure 7. Each word that appears in the word cloud shows a different size, which implies the intensity of the appearance of the keyword. The clearer the keyword has more appearances than other keywords, the smaller the keyword in the word cloud, the less the appearance of the keyword in published research. The keywords seen in the word cloud are SMEs, innovation, dynamic capability, innovation capability, firm performance, open innovation, sme performance, absorptive capacity, digital transformation, competitive advantage, knowledge management, knowledge sharing.

Source: (Research Results, 2025)

Figure 7. Word Cloud of keywords with intensity of occurrence in publications

Source: (Research Results, 2025)

Figure 8: Network visualization of Co-occurrence analysis resulting in 4 clusters

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Vos Viewer was used to obtain the main research themes and topics on the innovation capabilities of small and medium enterprises, as RQ 1 was used in this study. Visualization of co-occurrence analysis can map interrelated research topics, their popularity, and the clusters formed. Co-occurrence analysis can be used to examine the themes and main topics or important concepts from publications [9]. The results of the co-occurrence analysis conducted from the Scopus database have produced a network visualization that can be seen in Figure 8, which shows four clusters of different themes.

Co-occurrence analysis obtained 4 clusters represented by three colors: Red, Green, and Blue.

The Red Cluster consists of 31 keyword items, in the red cluster representing research on various aspects related to business context, innovation, business performance, and economic development, especially in the context of developing countries and emerging markets such as Ghana, South Africa, and Vietnam. The keywords with the highest occurrence are innovation, with an average publication time in 2018-2019, and firm performance, with an average publication time in 2021.

The Green Cluster consists of 29 keyword items, which represent several aspects related to business strategy, innovation, company performance, and factors that influence organizational success. These topics can be the subject of extensive research, analysis, and discussion in the context of business and management. Keywords that have the highest occurrence are small and medium enterprises with an average publication time of 2019 - 2020 and dynamic capability with a publication time between 2020 - 2021.

The Blue Cluster consists of 22 keyword items, representing research discussions on innovation, digital transformation, innovation management, and factors affecting business performance and strategy. Each of these topics is an important area in the context of modern business and management that requires an in-depth understanding and appropriate strategies to support organizational growth and success. Keywords that have the highest occurrence are open innovation, with an average publication time of 2020 - 2021, and digital transformation, with a publication time between 2021 - 2022.

The Yellow Cluster consists of 18 keyword items, representing various aspects relevant to business, innovation, technology, and organizational performance. The topic can be continued in research in the context of modern business, technology, and organizational sustainability in various sectors. Keywords that have the highest occurrence are entrepreneurship with an average publication time of 2019, capabilities with a publication time of 2018 - 2019, circular economy with a publication time of 2021, digital technology with a publication time of 2021, and organizational learning and technology capability with a publication time of 2021.

To answer RQ2 regarding topics that arise in the research on the innovation ability of small and medium enterprises in Bibliometrics. The thematic map shows four quadrants that have different meanings. The four quadrants are Motor themes, Niche themes, Emerging/declining themes, and Basic Themes in quadrants 1, 2, 3, and 4. A thematic map is a research map that shows a strategic diagram of research topics that have two parameters, centrality and density. Centrality is measured by the horizontal axis, which has an external strength between research topics and research topics in the collection of articles. The parameter is used to measure the importance of research topics in the development of a study. Density is measured by the vertical axis and is the strength of the connection between keywords in the research topic. Density is used to measure the degree of research topics.

Future Research Innovation Capability Small and Medium Enterprise

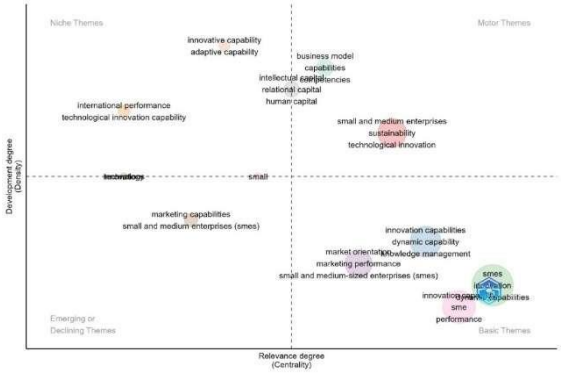
Figure 9 below presents research themes related to the innovation capabilities of small and medium-sized enterprises. Motor Themes or Quadrant 1 on the strategic diagram shows that these themes are important for research constructs in the field of innovation capabilities of small and medium enterprises.

These themes relate to small and medium enterprises, sustainability, technology innovation, business model capabilities, and business model capabilities. Basic Themes that are in quadrant 4 are research with high centrality but low density, indicating that the research is important for research development but not well developed, and is basic research. Innovation capability, dynamic capability, knowledge management, SME innovation, market orientation, and marketing performance are themes that fall into Quadrant 4. Niche Themes in quadrant 2 are research themes with high density but low centrality; these research themes are well developed, but the research impact is limited to these research areas and not to other areas. Innovation capability, adaptive capability, international performance, and technological innovation capability are included in quadrant 2.

Emerging or declining themes are themes with low density and centrality, which are less important themes in the field of research. Marketing capabilities of small and medium enterprises are found in this quadrant.

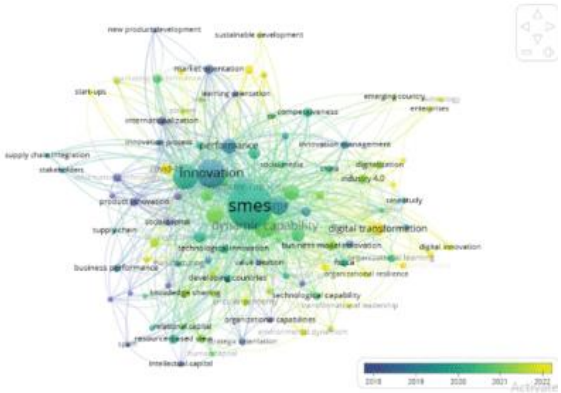
The Output of the co-occurrence analysis using Vos Viewer in the overlay visualization shown in Figure 10 can be used to display the relationship between occurrence and publication year, to determine whether a theme is a recent or old research theme. Figure 10 shows the average

publication year from 2018 to 2022; the blue to green color indicates the old publication year, while green to yellow shows the new publication year.

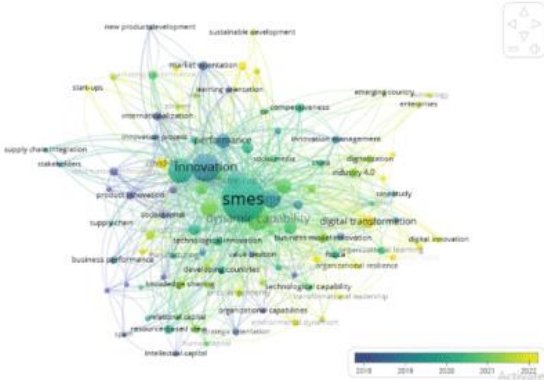


Source: (Research Results, 2025)
Figure 9: Strategic diagram featuring 4 quadrants

The research topic shows different colors; the green-yellow conclusion states that the research topic is developing. The blue to green color shows a declining topic. Emerging topics can be seen in Figure 10, overlay visualization with green to yellow inference for each cluster.

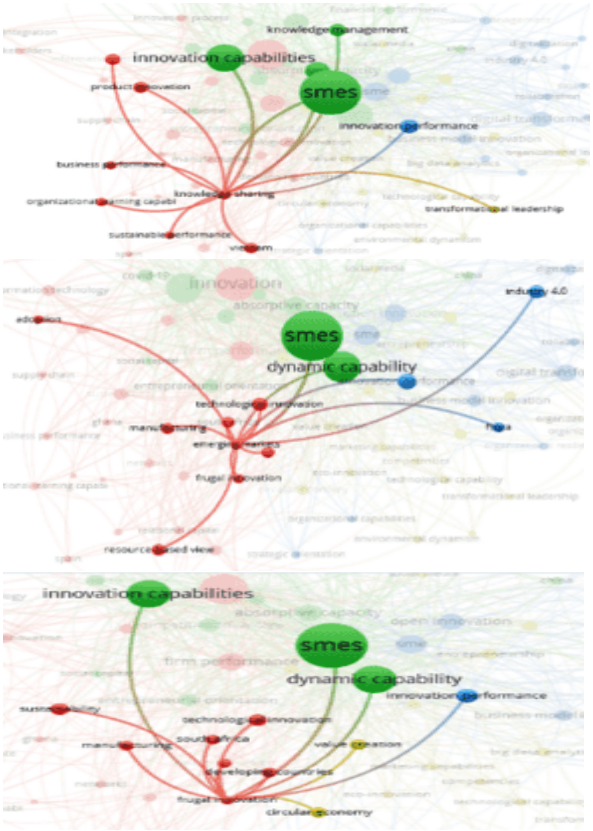


Source: (Research Results, 2025)
Figure 10: Overlay visualization showing the average year of publication gives an overview of emerging topics



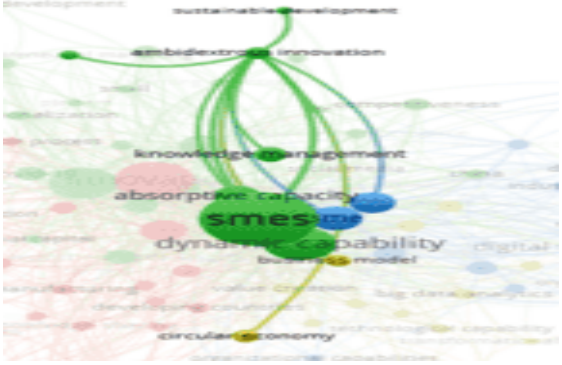
Source: (Research Results, 2025)
Figure 11: Overlay visualization showing the average year of the publication provides an overview of future research directions

The following is Future works and direction seen from the results of co-occurrence analysis overlay visualization with the most recent average year visible yellow nodes. The result of the co-occurrence network visualization analysis of them can be seen in the following figure 12:



Source: (Research Results, 2025)
Figure 12: Network visualization showing the connection of future research direction themes with other themes contained in the red cluster

The themes in the green clusters are start-ups, entrepreneurial marketing, and ambidextrous innovation. The results of the co-occurrence network visualization analysis of these themes can be seen in the following Figure 13:



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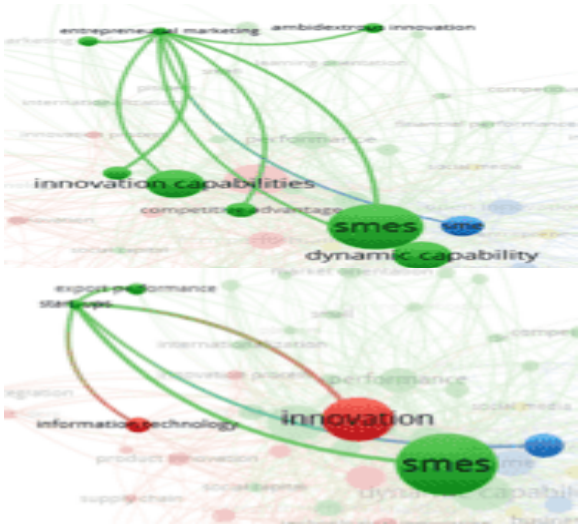
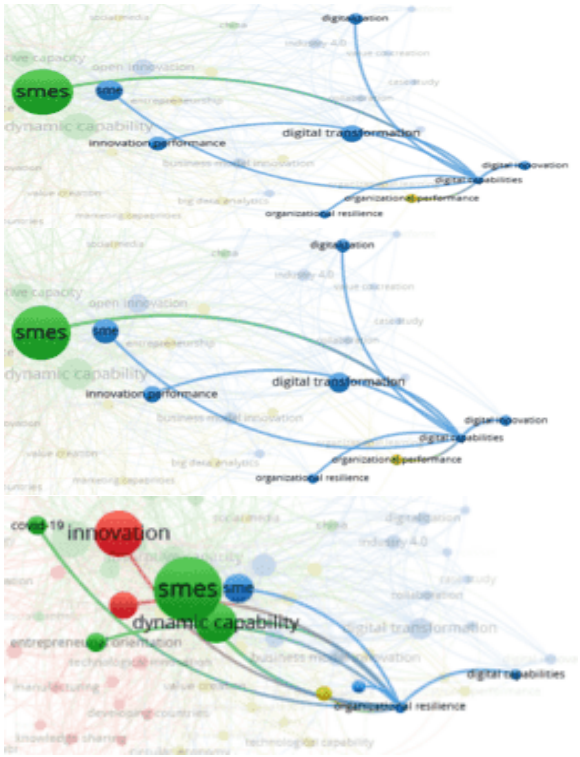


Source: (Research Results, 2025)

Figure 13: Network visualization showing the connection of future research direction themes with other themes contained in the green cluster.

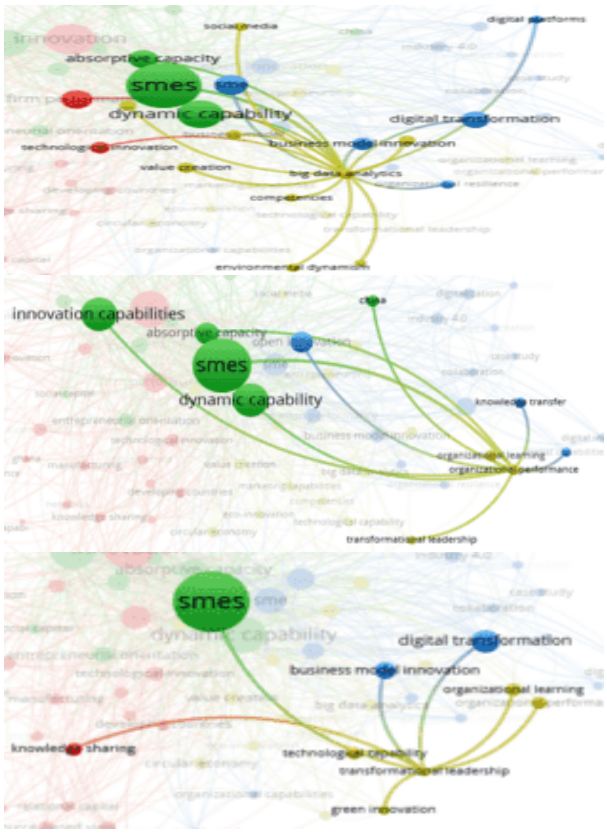
The themes in the Blue Cluster are organizational resilience, digital innovation, and digital capability. The results of the co-occurrence network visualization analysis of these themes can be seen in the following figure 14



Source: (Research Results, 2025)

Figure 14: Network visualization showing the interrelationship of future research direction themes with other themes contained in the blue cluster.

The themes in the yellow cluster are big data analytics, organizational performance, and transformational leadership. The results of the co-occurrence network visualization analysis of these themes can be seen in the following Figure 15 :



Source: (Research Results, 2025)

Figure 15: Network visualization showing the interrelationship of future research direction themes with other themes contained in the yellow cluster.

Discussion

Innovation capability refers to increasing the organization's ability to implement new ideas and programs so that the organization can achieve a sustainable competitive advantage [10], Small and medium enterprises as one of the drivers of the economy have the opportunity to achieve competitive advantage by improving innovation capabilities. This research was conducted to find out the map of developing research and future research related to the theme of innovation capabilities of small and medium enterprises. This research uses the Scopus database as a data source because Scopus is a database that has the capacity for a large number of publications and many citations [6], In order to provide enough data for this research map, the Scopus data obtained were 542 documents which were limited to the scope of English articles, Journals, and Open Access from 1999 to 2023.

The structure of this study is divided into two main parts: descriptive analysis and bibliometric analysis. Descriptive analysis is organized into an explanation of publication trends, publication outlets, countries of publication, and authors of small and medium enterprise innovation capabilities. Publication trends of small and medium enterprise innovation capabilities are the theme of technological innovation due to the COVID-19 pandemic, among these studies [11].

A publication outlet is a journal where researchers publish the highest number of papers. In this study, it was found that the largest publication outlet was Sustainability (Switzerland), while if you look at the publication outlet with the latest publication year, it is the Journal of Open Innovation Technology, Market, and Complexity. The country with the highest number of publications is the United Kingdom. The country with the most and latest publications is Indonesia. This can be interpreted as the United Kingdom being a predecessor country that conducts research in the field of innovation, and Indonesia is a country that is experiencing rapid research development with innovation themes, publishing from 2018 to 2022. A total of 162 authors have contributed to the 542 documents analyzed in the field of innovation capability, with the most research being conducted by Saunila, with the highest citation of the author's work

The main research themes and topics mapped using word clouds are derived from the Scopus database, with the dominating keyword being "small and medium enterprises." Innovation in Small and medium enterprises is an interesting theme for research topics because small and medium enterprises are organizations that can drive the economy of a country [12]

Dynamic capability in small and medium enterprises is the theme that most often appears in research topics on innovation capability [13], [14], [15] with this data, the researchers obtained direction that the research topic of innovation capability is based on the concept of dynamic capability.

Co-occurrence analysis used to answer RQ1 obtained 4 clusters that provide direction for themes and topics of research on the innovation capabilities of small and medium enterprises, the red cluster shows the themes and topics of the longest research with an average publication time of 2018-2019 has the theme of innovation, business, business performance and economic development of a country, one of which is Vietnam. [16], [17][18].

The green cluster, being the second cluster with an average publication time between 2020-2021, has research topics related to business, innovation, company performance, and factors that affect organizational success. [19], [20], [12]

Blue clusters are new research topics that have an average publication time between 2021-2022, with research topics on innovation, business, digital transformation, innovation management, and factors affecting business performance and strategy [21] , [22] . Research topics in the blue cluster can be used as future research directions.

The yellow cluster is research that has an average publication of 2018 - 2019 with themes related to business, innovation, technology, and organizational performance.[23], [24], [25].

Emerging Topic is the answer to RQ2 to find out the latest topics that emerge and the current state of innovation capabilities of small and medium enterprises. Thematic map with Enhanced Strategic Diagrams (ESDs) produces recommendations for themes that can be developed in research on the innovation capabilities of small and medium enterprises, such as Small and Medium Enterprises, Sustainability [26], technology innovation [23], [27] , business model capabilities and competencies [28]

Future Works and Direction to answer RQ3 using Overlay Visualization, explaining the latest topics in research by showing yellow nodes. The results of the analysis of overlay visualization and co-occurrences analysis are the most relevant to answer RQ3 in each cluster: the red cluster, emerging markets, frugal innovation, knowledge sharing, and sustainability. Green cluster start-ups, entrepreneurial marketing, and ambidextrous innovation. Blue cluster organization resilience, digital innovation, and digital capabilities. Yellow cluster: big data analytics, organizational performance, transformational leadership. The conclusion from the analysis of Network Visualization, Overlay Visualization, and Enhanced Strategic Diagram is that Future Works Research is a research theme in the field of technological innovation, including digital innovation.[23], [27], digital capabilities, start-ups [29], digital transformation [21], [30] , digitalization [31], and big data analysis [32].

CONCLUSION

This research uses bibliometric analysis with network visualization to map the research opportunities of innovation capabilities of small and medium enterprises. Descriptive analysis and future research directions were carried out to map the research. Co-occurrence analysis and thematic maps managed to determine several research topics that are currently being developed in the field of innovation capabilities.

The co-occurrence analysis shows clusters of innovation capability research that can be a direction for researchers, with themes divided into four clusters: the red cluster represents research in the context of business, innovation, business performance, and its development in several developing countries. The green cluster provides research directions related to

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business strategy, innovation, company performance, and factors that affect organizational success. The blue cluster represents research directions in innovation, digital transformation, innovation management, and factors affecting business strategy. The yellow cluster represents research in business, innovation, technology, and organizational performance.

Emerging topics are mapped on a strategic diagram using R Studio to produce four quadrants and overlay a visualization of the results of co-occurrence analysis with Vos Viewer.

Future research directions among the four clusters are most recent in the average publication year of 2022, which is related to innovation, technology, digital transformation, innovation management, business strategy, and organizational performance. Research on small and medium enterprises, sustainability, technology innovation, business models, digital innovation, digital transformation, digital capabilities, and capabilities competencies is research that can be conducted for the research theme of innovation capabilities. The use of big data analysis to improve innovation, business, and technology to improve organizational performance is one of the research themes that has the opportunity to be carried out in future research.

Based on the explanation above, it can be concluded that this research can explain the mapping of research in the field of innovation capabilities of small and medium enterprises and provide insights for research that is potentially conducted in the future.

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