Chapter 9
Impact of Financial Inclusion on SME Growth:
A Bibliometric Analysis of OIC and Non-OIC Countries

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ABSTRACT

Financial inclusion (FI) is perceived as an imperative tool for reducing poverty and stimulating economic growth. In particular, FI provides access to capital and financial services to small and medium-sized enterprises (SMEs) and enables them to manage their finances, mitigate risks, expand operations, facilitate innovation, and drive job creation. SMEs are considered the backbone of an economy regardless of the level of development of that economy. However, their potential is not fully tapped yet and is hindered due to several constraints. Among its constraints, the unavailability of financial resources is considered a major barrier to SME growth. The International Finance Corporation (IFC) evidenced that 40% of formal SMEs in emerging economies suffer from unmet yearly financial needs of USD 5.2 trillion. Despite all the advantages of FI, it is argued that FI is contingent upon various factors such as structural and policy-related factors and cannot be achieved in isolation. The effectiveness of FI requires collective effort. On the other hand, information and communication technology (ICT) is considered a key enabler of FI. The existing literature has been debated the relationship between FI and SME growth; nonetheless, a lack of consensus exists for the role of FI in SMEs' performance and/or growth. It is also evidenced that the level of FI varies among countries as well as within a country. Therefore, this chapter reviews the academic literature on FI in SMEs by employing bibliometric analysis methods. A total of 62 publications related to FI in SMEs between 2206 and 2024 were identified from a widely recognised Scopus online database. Using VOSviewer software, the analysis established how research has evolved in this area. The authors identified main current themes, emerging trends, and gaps for future research directions.

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1. INTRODUCTION

The promotion of financial inclusion has emerged as a crucial element in the advancement of worldwide economic growth, with SMEs being the main agents of innovation, employer of choice, and major contributors to GDP. SMEs' access to financial services becomes critical as they become major forces behind economic growth. Nevertheless, small businesses face particular challenges that could impede their development and long-term sustainability. Among those challenges, access to finance is considered a major barrier to their development. However, there is a lack of consensus regarding the influence of FI on SMEs growth. Some studies advocate that FI has a positive impact on SMEs (Okello, 2017). On the contrary, another argument supports the view that FI alone cannot bring improvement in SMEs, rather it requires collective efforts (Matama, 2016; Mwangi & Cheluget, 2018). In a similar vein, it is emphasized that to leverage financial resources wisely, financial literacy is important particularly in the case of SMEs which are already resources constrained (Junoh, et al., 2019). In addition, in the era of rapid evolution of technology fintech has received attention. It is argued that Fintech can increase financial inclusion of SMEs in developing economies where SMEs suffer lack of finances and lack of financial knowledge (Nugraha et al.,2022). Despite all the factors influencing FI-SME nexus, the level of FI varies in each country. The dynamics of each country is different. For instance, Islamic countries provide Islamic finance options which can increase financial inclusion of Muslims who are interested in ethical and shariah compliant financing options.

Therefore, this book chapter intends to provide a deep insight into current trends on FI-SME nexus by considering OIC and non-OIC countries dynamics. To do this, bibliometric analysis will be employed to evaluate current trends, emerging patterns, and gaps in existing literature in Organization of Islamic Cooperation (OIC) and non-OIC nations on FI-SME literature. Given the unique economic, cultural, and legal contexts of OIC member countries—where Sharia-compliant FI concepts are common—FI in SMEs is an important component. A comparative viewpoint is also provided by non-OIC countries because of their different economic and regulatory frameworks, Islamic faith-based SMEs may have limitations in accessing interest free finance.

A systematic approach to mapping and analyzing the scholarly landscape that offers insights into the works that have shaped the discourse on the financial inclusion in SMEs is provided by bibliometric analysis, a quantitative tool. This method makes it possible to identify key publications, prominent research themes, well-known authors, and important journals surrounding the main topic of FI in SMEs. This chapter intends to undertake a thorough bibliometric analysis of the body of literature in order to identify gaps in the literature, highlight emerging patterns, and establish a foundation for future research endeavors.

Through the analysis of bibliometric methods such as co-authorship networks, co-citation patterns, and co-word clusters, the study seeks to determine the intellectual structure of the academic field. Prominent authors and highly cited papers can serve as indicators of knowledge leaders who can direct future research and policymaking endeavors. Analyzing academics' and institutions' patterns of collaboration may highlight chances to support interdisciplinary and global partnerships, boosting the field's research and policymaking. In addition, this book chapter intends to add value to the book by providing updated information on the influence of various factors that can lead to sustainability of SMEs by enabling them to access finances.

Policymakers, scholars, and practitioners all benefit from understanding the trends and shifts in concentration across the academic community to address the difficulties SMEs have in accessing financial services and to develop targeted programs to improve SMEs' access to funding both of which contribute to promoting sustainable economic growth in both OIC and non-OIC nations. In addition, by offering insights into how Islamic finance principles affect FI, the research aims to shed light on the evolution of research on Sharia-compliant financial inclusion for SMEs in OIC member nations. It also seeks to make clear how various legal frameworks and financial systems affect SMEs' access to financial services in non-OIC nations.

This book chapter addresses the following research questions:

Q1. What are the publication trends in FI and SMEs literature?

Q2. Which are the top contributing authors, journals, and countries for financial inclusion and SMEs research area?

Q3. How do the bibliometric performances of OIC and non-OIC countries compare in the FI and SMEs nexus?

2. RELATIONSHIP BETWEEN FINANCIAL INCLUSION AND SME GROWTH

Financial inclusion (FI) has become a prominent topic in the academic literature (Nurohman et al., 2021). It is perceived as an imperative tool for reducing poverty and stimulating economic growth (Nurohman et al., 2021). Earlier studies by Beck et al. (2007) and Claessens and Perotti (2007) laid the foundation for our current knowledge of the significance of FI globally. Beck et al. (2007) noted that broader access to financial services is necessary, while Claessens and Perotti (2007) highlighted the relationship between finance and inequality. Demirguc-Kunt and Klapper (2013) analysed cross-national data on enterprises' access to finance in developing nations and found that half of adults around the world remain unbanked because of cost, distance, and documentation requirements. It is also evidenced that the level of FI varies among countries as well as within a country. Contributing to these debates methodologically, Demirguc-Kunt and Leora (2012) offered a method for gauging FI.

In particular, FI provides access to capital and financial services to Small and Medium-sized Enterprises (SMEs) and enables them to manage their finances, mitigate risks, expand operations, facilitate innovation, and drive job creation. Claessens and Perotti (2007) and Demirguc-Kunt and Klapper (2012) investigated how regulatory frameworks affect SMEs' access to financial services.

SMEs are considered the backbone of an economy regardless of the level of development of that economy. They play a crucial role in job creation and economic activity. However, their potential remains untapped due to various constraints. Access to finance is considered a major barrier to SME growth. In particular, SMEs in developing countries struggle to access finance due to the unavailability of financial resources, such as collateral options and the difficulty in recovering in case of default. 40% of formal SMEs in emerging economies suffer from unmet yearly financial needs of USD 5.2 trillion (International Finance Corporation, 2017).

Due to the critical role that SMEs play in promoting economic growth, FI in SMEs has drawn more and more scholarly attention. Examining the body of research on the subject reveals a complex environment that encompasses many aspects of FI, especially when considering both OIC and non-OIC nations. Due to different dynamics such as cultural, legal, and religious differences, the magnitude of this barrier may vary among SMEs in OIC and non-OIC countries. At the same time, despite all the advantages of FI, Naceur et al. (2015) argue that FI is contingent upon various factors such as structural and policy-related factors, and cannot be achieved in isolation (Nagpal et al., 2020). The effectiveness of FI requires collective efforts and the design of policies that support in eradicating barriers and promoting financial inclusion (Demirguc-Kunt and Klapper, 2013). For instance, evidence from an OIC country in Africa revealed that access to loan financing can positively impact permanent employment growth, especially in labour-intensive sectors such as manufacturing (Brixiova et al, 2020). Authors therefore suggest that the sectoral targeting of finance could be an effective policy tool to promote industrialization. Therefore, removing structural barriers to credit supply by establishing accurate asset valuation, strengthening property rights, and implementing partial credit guarantees are suggested. In the same vein, other evidence supports the view that access to finance is strongly linked to the performance of firms (Ayyagari, Demirguc-Kunt, and Maksimovic, 2008).

On the contrary, it is also argued that small firms are more growth-constrained than their large firms' counterparts and have more limited access to finance both in developing and advanced countries (Beck et al., 2005). Evidence from Croatia also advocates that firm size plays a crucial role in determining borrowing costs, alongside factors like collateral and internal credit rating (Kundid, A., & Ercegovac, R., 2011). Nevertheless, Ethiopian SMEs' FI is positively impacted by supply, demand, market opportunity, and collateral factors. Negative impacts come from the institutional framework and borrowing costs. Ethiopia's financial system needs strengthening to provide affordable and sustainable services to SMEs (Fekete-Farkas et al., 2021). Furthermore, bank concentration and financial inclusion both positively affect SME credit availability. In China, excessive financial inclusion reduces the beneficial effect of bank concentration, suggesting that financial inclusion substitutes for bank concentration in improving SME credit availability (Lu, Z., et al., 2020).

To reduce the financial exclusion of SMEs, various countries are making endeavours suitable to their dynamics. For instance, SMEs in the United Kingdom (West Midlands) are struggling for credit access due to the financing gap created after the 2008 global financial crisis. Community Development Financial Institutions (CDFIs) are introduced to bridge the gap between traditional and alternative finance to address financial exclusion. However, to create a more inclusive financial landscape, a national fund could be established to increase its scale and geographical coverage. Greater cooperation between banks and CDFIs is also required to continue the positive impact (Appleyard, L., 2013). Nonetheless, SMEs in Uganda are struggling with FI issues mainly due to high costs, limited access to certain financial products and poor treatment of users. SMEs are suggested to focus on innovation to stay competitive and adopt cost-effective solutions such as digital financial services (Eton et al., 2021).

Moreover, information and communication technology (ICT) is considered a key enabler of FI (Chatterjee & Anand, 2017). More precisely, digital innovation is witnessed to outperform inclusive banking. It eases borrowing constraints and enhances productivity for SMEs, leading to better financial access across the Currency Union (Babilla, T. U. K., 2023). Moreover, evidence from China supports that digital financial services like payments, funds, credit, insurance, and investment reduce information asymmetry and facilitate SMEs' access to finance (Zhang, X. et al., 2023). Likewise, Fintech adoption in Indonesia's SMEs is driven by practicality, user-friendliness, reliability, and user-driven advancements.

Collaborative efforts between the government, financial institutions, and fintech entities are crucial for navigating regulatory obstacles and fostering trust (Nugraha, D. P. et al., 2022). Adoption of these technologies requires management support and external pressures influence firms in Canada for e-business technology acceptance (Ifinedo, P., 2011). Reforms in banks and digital financial inclusion can empower SMEs to overcome financial constraints and contribute to the economy (Lu Z. et al., 2022). It is endorsed that financial inclusion, digital financing, and the Technology Acceptance Model (TAM) positively impact SME performance in Sri Lanka. Digital finance and TAM mediate the relationship between financial inclusion and SME performance. In addition, promoting affordable and secure digital financing services and financial literacy can highly benefit SMEs (Thathsarani, U. S., & Jianguo, W., 2022).

Despite technological revolutions to promote FI and boost SME growth, these technologies such as fintech depend on some factors for their effectiveness. For instance, financial literacy is considered crucial in this regard. SMEs are advised to prioritize improving financial literacy, while governments are informed to refine regulations to support financial literacy, fintech, and financial inclusion, with emphasis on SMEs in Indonesia (Mutamimah, M., & Indriastuti, M., 2023). However, it is argued that financial inclusion is positively linked with SME performance in East Java. Whereas financial knowledge, behaviour, and digital capability are its significant drivers, however, SME performance is not influenced by them individually (Sari, Y., et al., 2023). In addition, having knowledge about insurance, managing risks effectively, and willingness to take risks can have a positive impact on economic sustainability, as revealed by (Garba et al., 2022) while examining the moderating effect of FI on the relationship between insurance literacy, risk knowledge management, risk-taking propensity and economic sustainability of Nigerian SMEs. Notwithstanding the effect of FI on SME performance and financial stability, it is argued that improving financial inclusion for SMEs can have both positive and negative impacts on financial stability. It can diversify bank assets but compromise credit standards. However, measures like credit databases and broadening collateral options can lead to favourable effects on financial stability (Morgan, P. J., & Pontines, V., 2018).

The integration of various advanced models and technologies brings opportunities and challenges as well for SMEs. To overcome these challenges, regulations and revisiting of existing policies are crucial. To help SMEs access finance, policies should focus on narrowing the financial inclusion gap, strengthening infrastructure, reducing barriers, leveraging technology, and implementing adequate regulation (Lam, W. R., & Liu, Y., 2020). In addition, technological infrastructure can help mitigate information asymmetry and transaction costs (Agyekum, F. K. et al., 2022). Despite the significant revolutionary developments in the financial technology (Fintech) industry in China, there remains a pressing need for improved coordination of regulatory policies and innovative policy tools such as Regtech and Fintech development 2.0. Achieving a balance between innovation and stability is crucial to ensure the sustainable growth of the industry (Hua, X., & Huang, Y., (2021). Moreover, regulatory sandboxes and a risk-based approach balance supporting FinTech start-ups and managing systemic risk. Light-touch regulation promotes financial stability, allowing innovative FinTech markets to develop (Tsai, C. H., & Kuan-Jung, P., 2017). However, to prevent opportunistic lenders from causing financial distress to SMEs, policymakers should reshape lender practices to ensure responsible and sustainable financing (Arvind, T. T., 2021). Moreover, the policymakers in countries (such as the EU) with high financial inclusion where SMEs are still struggling to access financial services due to unemployment and cuts in social assistance need to adopt flexible monetary policies and differential fiscal consolidation. In addition, moving towards a banking and fiscal union can help promote a more inclusive financial market in those countries (Gomez Urquijo, L., 2015).

Therefore, while the extant literature has greatly advanced our understanding of FI, most research on FI tends to ignore the difficulties that SMEs experience. Moreover, our knowledge of the various economic and regulatory contexts is limited by the paucity of studies that compare financial inclusion in SMEs across OIC and non-OIC nations. This literature review highlights the importance of FI for SMEs, identifies barriers in OIC and non-OIC nations and provides suggestions to improve the access to finance for SMEs. This analysis intends to add value to current knowledge in the area of FI in SMEs and to provide a mapping of the literature for policymakers and practitioners to found their strategies and policies on informed decisions.

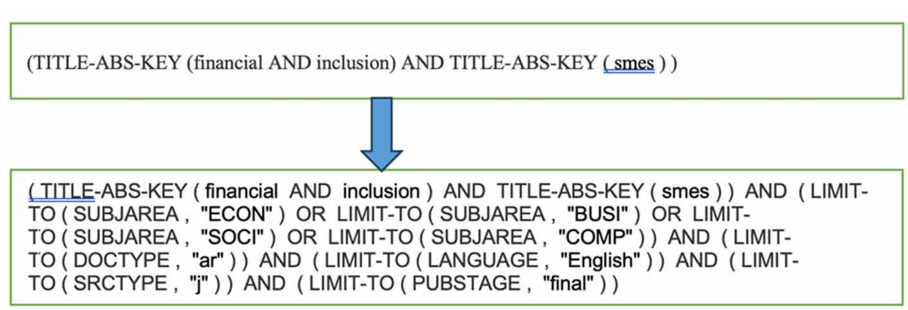
3. METHODOLOGY AND DATA

Bibliometric analysis is a scientific mapping of academic literature that analyzes and quantifies patterns of publications, citation, and scientific collobaration within a given area or topic (Zupic and Cater, 2015). In the framework of this study, bibliometric analysis was used to offer a thorough overview of the academic research regarding the FI of SMEs. This strategy enables us to identify major patterns and trends in the literature for a better understanding of the changing discourse on the subject.

To conduct a comprehensive review of knowledge base in FI of SMEs, we collected bibliometric data from Scopus, an extensive database of scholarly papers that is widely recognized and regarded as a reputable scientific database. The Scopus database was preferred because there are a greater number of articles available for review, e.g. than the Web of Science (WoS) (Paul et al., 2021). In addition, the software we chose for analysis, VOSviewer (version 1.6.20, Centre for Science and Technology Studies, Leiden University, Leiden, The Netherlands), better supports databases obtained from Scopus.

VOSviewer is a powerful tool for bibliometric analysis that enables researchers to conduct in-depth analysis, visualize and interpret scholarly literature. With features such as network visualization, citation analysis, clustering analysis, and keyword co-occurrence analysis, it helps uncover hidden patterns and trends within bibliographic datasets (van Eck and Waltman, 2010). The network visualization feature enables visual exploration of interconnections between various elements in bibliographic data such as publications, authors, references, countries and keywords. The citation analysis helps assessing citation counts, networks, and impact metrics to evaluate the influence and visibility of publications, authors, and journals. The clustering analysis in bibliographic networks allows identification of thematic clusters, research communities, and emerging trends within the literature. The keyword co-occurrence detects common themes, predominant topics, concepts and research domains through analysis of keyword patterns that frequently appear together in documents. The co-author analysis reveals collaboration networks uncovering the social ties and scientific relationships between authors and their institutions (co-affiliation), helping to gain insight into influential authors, research teams, and valuable collaborative partnerships within the scholarly community.

Figure 1. Collection of data on Scopus by applying syntax and filter



We started our search query in broader terms by using the syntaxes “Financial inclusion” AND “SMEs”, which yielded 136 documents ranging from 2006 to 2024. Then we applied several filters to refine our database (Figure 1). First, we limit the subject area to Business Management and Accounting, Economics, Econometrics and Finance, Computer Science and Social Sciences. Then we excluded any form of publication other than articles that were only published in ‘journals. We included only published articles, and not the ones ‘in press’. Any articles published in languages other than English were also eliminated. This filtering process refined the data to 85 documents. Finally, we reviewed the abstracts of each document and any article outside our scope was excluded from the list. After assembling and arranging data, 62 articles ranging from 2011 to 2023 were finalized as our sample to assess in VOS-viewer. A full list of publications used in this dataset can be found in Appendix A in full reference form with their citation count and affiliated country.

4. RESULTS OF BIBLIOMETRIC ANALYSIS

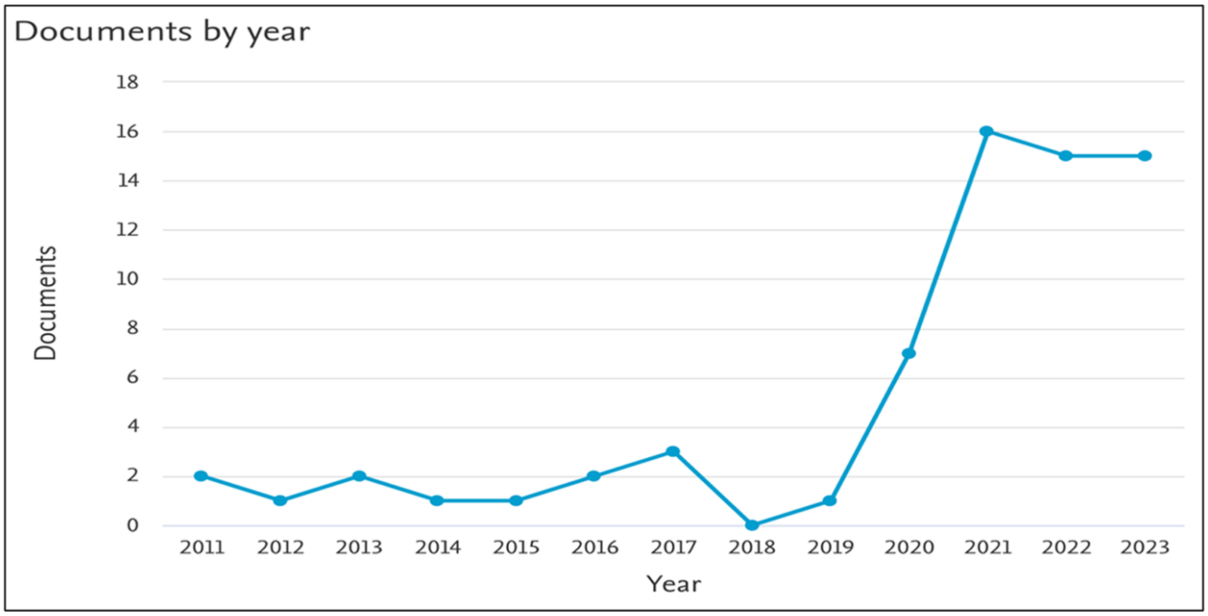
This section provides quantitative insight into FI in SMEs through identifying current research trends and contributions of authors. Table 1 below exhibits a summary of the characteristics of the publications in our dataset. Around one fifth (21%) of our dataset is comprised of publications in the context of OIC countries. Half of the publications in our dataset are on non-OIC countries. Almost one third is without a specific country context. While the international and single country collaboration are on a par (42% vs 58%), co-authorship (82%) is presented significantly more than single authorship (18%). Similarly, the number of publications with quantitative research methods (63%) are double that of with qualitative research methods (32%). Mixed research methods represent 6% of the data.

Figure 2 presents development of research on FI in SMEs from 2011 to 2023. Data collected from Scopus on FI in SMEs present a significant increase in the number of publications since 2019 in this field.

Table 1. Summary table for the characteristics of data

	Frequency	Percentage
OIC	13	21%
Non-OIC	31	50%
General context	18	29%
Study approaches		
Quantitative	39	63%
Qualitative	19	31%
Mixed methods	4	6%
Authorship		
Single authored	11	18%
Co-auothored	51	82%
Collaboration		
International collaboration	26	42%
Single country collaboration	36	58.%

Figure 2. Number of publications per year
Source: Scopus



4.1 Citation Analysis

The aim of citation analysis is to identify the most influential studies, authors and journals that contribute to the literature on FI in SMEs. This measure of influence is based on being most cited in top-N lists and reinforced by the assumption that publications that are considered to be most important are cited most. Because getting cited requires time, most cited articles tend to be older publications.

Princely Ifinedo's (2011) article receives the highest number of citations (163), making the journal his article was published, "Internet Research", one of the most influential journals in the FI in SMEs field (Tables 2 and 3). The study titled 'Internet/e-business technologies acceptance in Canada's SMEs: An exploratory investigation' examines the hindering factors of the acceptance of Canadian SMEs in adopting internet and e-business technologies in their operations and finds that, among other factors, the availability of financial support did not influence technology acceptance, in particular, such support was hard to be obtained from local financial institutions.

Despite being a recent publication, Junjie Wu, Zhiqiang Lu, Hongyu Li and Duc Khuong Nguyen (2022) share the second ranking in most influential authors with 70 citations on their article called 'Local Bank, Digital Financial Inclusion and SME Financing Constraints: Empirical Evidence from China'. The study covers a ten-year period between 2007 and 2017 and finds that local bank branches and digital finance technologies could alleviate SME financial constraints through enhancing digital financial inclusion and traditional SME-banking relations.

Kuan-Jung Peng and Chang-Hsien Tsai (2017) ranked third with 52 citations on their article titled "The FinTech Revolution and Financial Regulation: The Case of Online Supply-Chain Financing". The study highlights how Fintech regulations should be adaptive to promote innovation in improving digital

Table 2. Most cited authors

Author	Articles	Total Citations	Average Citations
ifinedo, princely	1	163	163
lu, zhiqiang	2	86	43
wu, junjie	2	86	43
li, hongyu	1	70	70
nguyen, duc khuong	1	70	70
peng, kuan-jung	1	52	52
tsai, chang-hsien	1	52	52
huang, yiping	2	49	24.5
hua, xiuping	1	48	48
fahma, farah	1	43	43
najib, mukhamad	1	43	43
hudaefi, fahmi ali	1	42	42
morgan, peter j.	1	38	38
pontines, victor	1	38	38
coffie, cephas paa kwasi	1	35	35
hongjiang, zhao	1	35	35
kiconco, rebecca	1	35	35
mensah, isaac adjei	1	35	35
simon, abraham emuron otim	1	35	35
fekete-farkas, maria	3	35	11
ercegovac, roberto	1	32	32
kundid, ana	1	32	32

Source: VOSviewer based on Scopus data

financial inclusion through fintech-enabled financial services such as online supply-chain financing, which is a relatively novel funding channel for small and medium-sized suppliers.

Authors with two publications in the field are abovementioned second most cited authors Junjie Wu, Zhiqiang Lu (whose second publication received 16 citations), Yiping Huang and Maria Fekete-Farkas. The first article by Huang is co-authored with Xiuping Hua, published in 2021 and received 48 citations. It touches upon the role of Chinese fintech sector in promoting financial inclusion of SMEs and low-income households through digital technology and more tolerant regulatory environment. His second article, published in 2023, received only 1 citation, probably due to being very recent.

Fekete-Farkas co-authored three recent publications, one in 2021 and two in 2022 with 14, 17 and 4 citations respectively. Two of her publications are on financial inclusion in Ethiopia; the first article focuses on the determinants of FI in SMEs while the second is about increasing women economic empowerment through FI. The third one is on Indonesian SMEs to understand what drives these SMEs for Fintech adoption to promote firm innovation.

The top cited journals directly match with the above discussion on the most cited authors. “Internet Research”, which is a relatively highly ranked 3* journal in Chartered Association of Business School

Table 3. Most cited journals

Journal Name	Total Citations	Publication Number
Internet research (CABS 3*)	163	1
Emerging markets finance and trade (CABS 2*)	70	1
Asian journal of law and society	52	1
European journal of finance (CABS 3*)	48	1
International journal on advanced science, engineering and information technology	43	1
Qualitative research in financial markets (CABS 1*)	42	1
Singapore economic review	38	1
Information technology for development (CABS 2*)	35	1
International journal of law and management	32	1
Regional studies (CABS 4*)	21	1
Structural change and economic dynamics (CABS 2*)	20	1
Journal of risk and financial management	18	2
Gender in management (CABS 1*)	17	1
Global finance journal (CABS 2*)	17	1
Journal of open innovation: technology, market, and complexity	17	1
Economic modelling (CABS 2*)	16	2
International journal of bank marketing (CABS 1*)	16	1
Journal of entrepreneurship, management and innovation	14	1
Journal of innovation and entrepreneurship	14	2
Forecasting	13	1
Journal of small business and enterprise development (CABS 2*)	13	1
International journal of business and management science	12	1
Sustainability (switzerland)	11	3
Annals of economics and finance (CABS 2*)	10	1
Economy of regions	10	1
Information (switzerland)	10	1

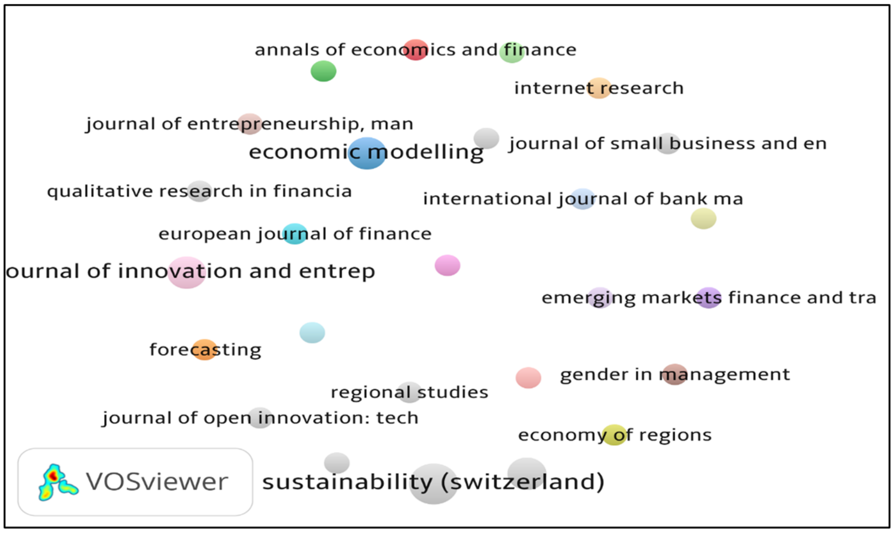
Source: VOSviewer based on Scopus data

(CABS) is the top cited journal and it is followed by other CABS 3* and 2* journals,namely "Emerging markets finance and trade", "Asian Journal of law and Society", European Journal of finance" that rank second, third and fourth with one document in each receiving number of citations 70, 52, 48 respectively.

Some journals become the most influential journals in terms of number of documents published in this field such as "Sustainability" with 3 articles, and "Journal of risk and financial management", "Journal of innovation and entrepreneurship", "Economic modelling", with 2 articles each.

Figure 3 indicates that there is no particular clustering among journals where publications FI in SMEs are focused. Authors publish whichever journal they can find as an outlet for their research.

Figure 3. Journals vs. citations
Source: VOSviewer



4.2 Co-Authorship Analysis

Co-author analysis measures the degree of scientific collaboration on publications. In other words, it produces social interactions and networks among authors based on their scientific collaborations. By analysing the patterns in co-authorship, researchers can complement their insights from citation analysis and estimate the effect of collaborations on the development of the research field (Zupic and Cater, 2015, Donthu et al. 2017).

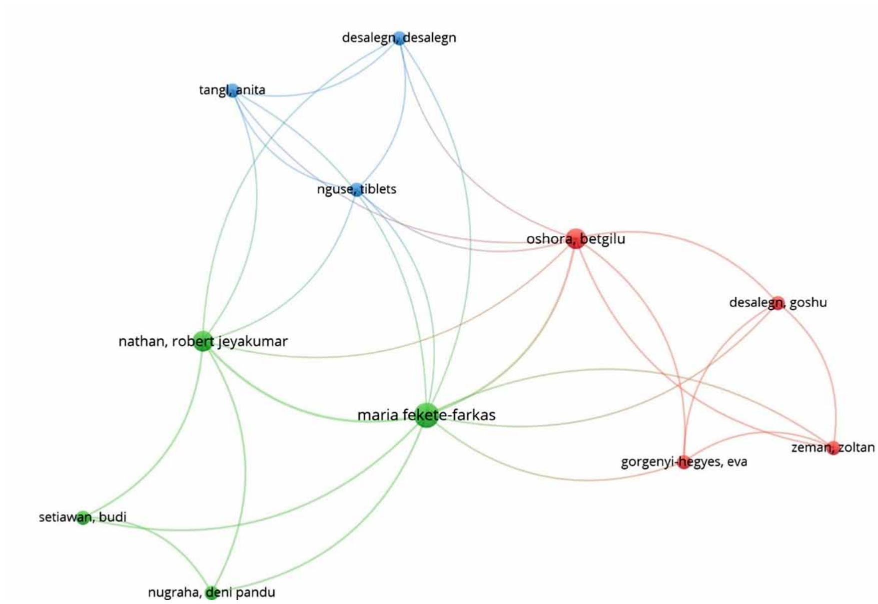
4.2.1 Collaboration Among Authors

Our co-authorship analysis identified 3 clustered research among scholars based on their collaboration in research on FI in SMEs (Figure 4). The clusters present collaboration among more than four authors and shed light on the social structure of the field. Their main characteristics can be summarized as:

(i) A high 'degree centrality' around one author, namely, Maria Fekete-Farkas, who is at the centre of three clusters in the academic community of FI in SMEs, indicating that she is a bridge between different regions in the world and different research streams (Fischbach et al., 2011). Fekete-Farkas also presents a high 'betweenness centrality' due to her distinguished capacity to connect other authors within the network compared to other authors, creating links among authors and developing social network which would have not happened if it was not for her (Acedo et al, 2006).
(ii) A geographical focus on Ethiopia (Africa) and Indonesia (an OIC country),
(iii) The fact that the collaborations are fairly recent.

Cluster 1 is a collaboration between six authors (Nguse T, Desalegn D, Oshora B, Tangl A.; Nathan R.J.; Fekete-Farkas M) on article titled "Enhancing women economic empowerment through financial

Figure 4. Social networks of authors



inclusion: Evidence from SMEs in Ethiopia", published in Polish Journal of Management Studies. The article received only 4 citations probably because it is a new publication in 2022 that had not sufficient time to accumulate citations. Co-authors' affiliation are from Hungarian and Malaysian universities.

Cluster 2 is another prominent collaboration by five authors (Oshora B., Desalegn G., Gorgenyi-Hegyes E, Fekete-Farkas M., Zeman Z.) for the article titled "Determinants of Financial Inclusion in Small and Medium Enterprises: Evidence from Ethiopia" and published in Journal of Risk and Financial Management in 2021. The study received 14 citations. Collaborating authors are affiliated with universities in Hungary and Ethiopia.

Cluster 3 is a collaboration of four authors (Nugraha D.P.; Setiawan B.; Nathan R.J.; Fekete-Farkas M) for the article titled with title of "Fintech Adoption Drivers for Innovation for SMEs in Indonesia". Their article was published in "Journal of Open Innovation: Technology, Market, and Complexity" in 2022. The paper was cited by 17. This collaborative research by universities from Hungary, Malaysia, Indonesia, Czech Republic is a good example of international collaboration in this field.

This analysis also reveals current trends in FI in SMEs. As well as focus geographical studies on FI in SMEs, studies that integrate financial technology and women economic empowerment into FI in SMEs have been emerging.

4.2.2 Collaboration Among Countries

Figures 5, 6 and 7 explain scholarly networks at international level. VOSviewer provides visualization of collaboration among countries based on co-authorship in two main groups. Each group have a predominant country, China and Indonesia, as seen in Figure 5. The group under China's leadership for collaboration has five clusters and the group under Indonesia has three clusters, in total eight clusters (Table 4). Figures 6 and 7 are zoom-ins of the Figure 5 for better depiction of the two groups. While

Figure 5. International collaborations

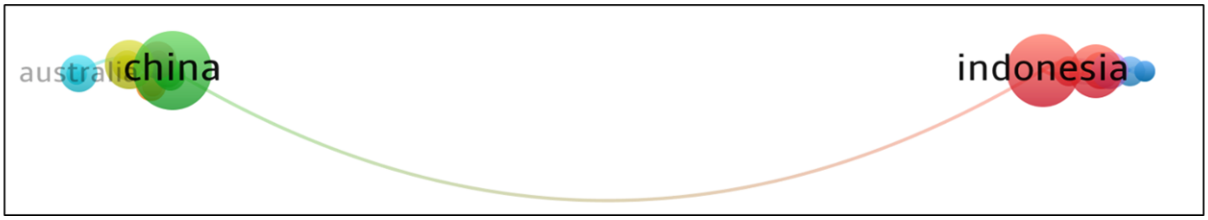
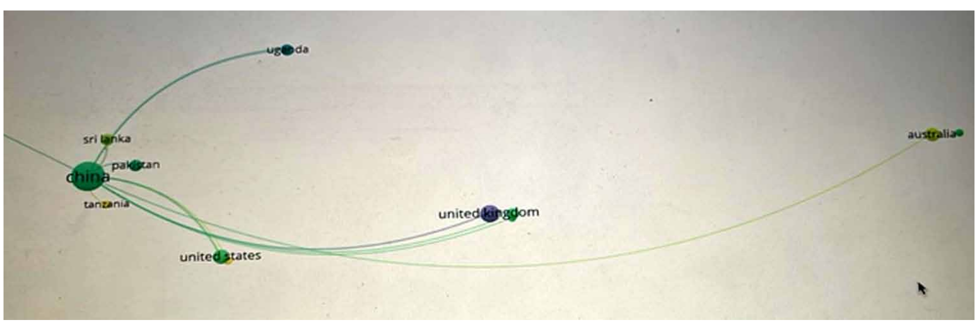


Table 4. Clusters of country collaboration analysis

Clusters under **China's** leadership for collaboration through co-authorship	1	China, Pakistan (OIC), Sri Lanka, Tanzania
	2	France, United Kingdom, Viet nam
	3	Australia, New Zealand
	4	Ghana, Uganda (OIC)
	5	Switzerland, United States
Clusters under **Indonesia's** leadership for collaboration through co-authorship	1	Indonesia (OIC), Japan, Malaysia (OIC), Nigeria (OIC), Saudi Arabia (OIC)
	2	Africa Development Bank, Czech Republic, World Bank
	3	Ethiopia, Hungary

Figure 6. International collaborations – China

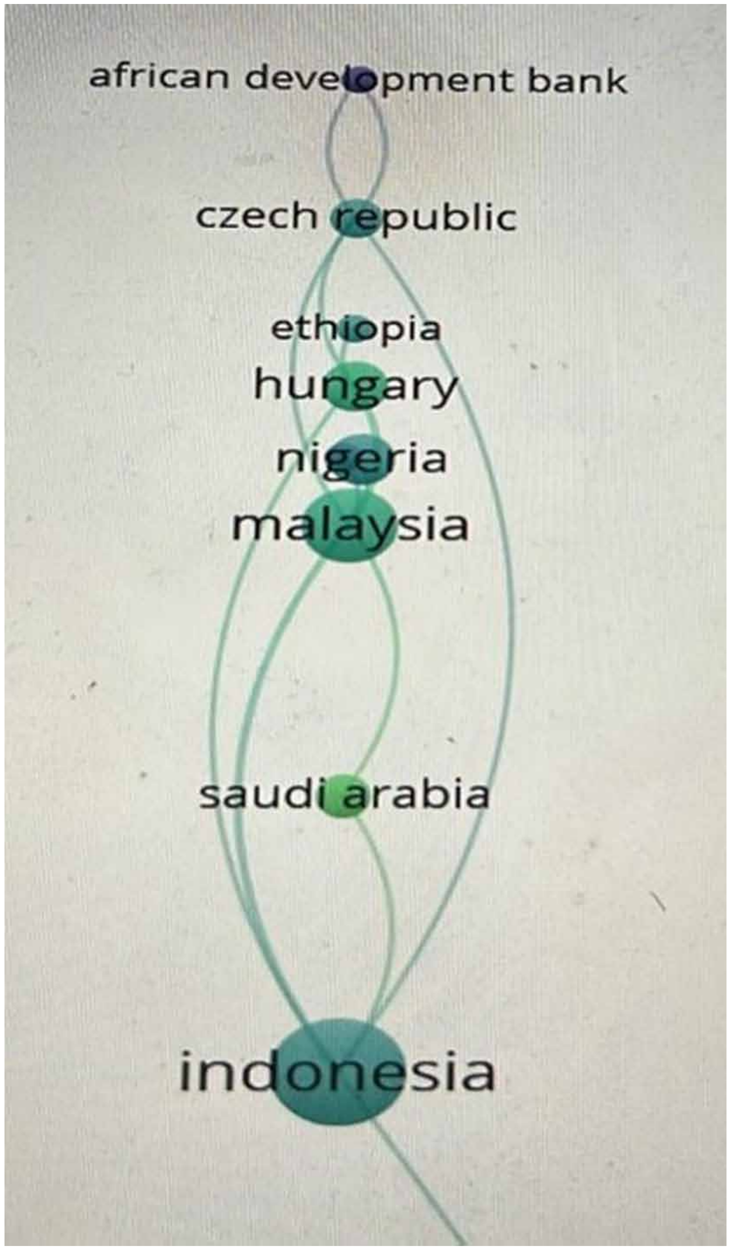


China has a sizable significance in co-authorship collaborations all over the world (Figure 5), Indonesia presents more and focused co-authorship with other OIC countries (Figure 6).

4.3 Co-Citation Analysis

Co-citation analysis is the most commonly used and validated bibliometric method due to its connecting two publications that co-occur in the list of references in another publication (Donthu et al. 2021; Leung et al., 2017). Co-citation is measured by the frequency with which two articles are cited together (Small, 1973), indicating a relatedness of their content (Zupic and Cater, 2015). The analysis helps shaping the

Figure 7. International collaborations – Indonesia



intellectual structure of a research field, uncovering seminal publications, major themes, and developing thematic clusters based on highly co-cited articles (Leung et al., 2017; Donthu et al. 2021).

4.3.1 Author Co-Citation Analysis

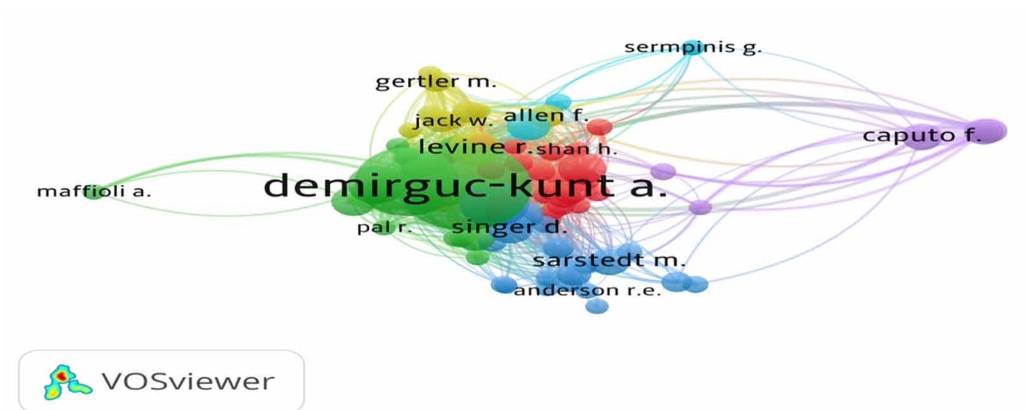
Author co-citation analysis identifies most important authors through their citation records and connects them (Zupic and Cater, 2015). The authors who are frequently co-cited with each other are considered

Table 5. Author Co-citation analysis results

Author	Frequency of Co-Citations	Total Link Strength
demirguc-kunt a.	89	85.72
beck t.	60	58.59
klapper l.	30	29.86
maksimovic v.	23	22.56
levine r.	20	19.86
huang y.	17	16.13
ayyagari m.	15	14.69
singer d.	15	14.98
berger a.n.	14	13.87
caputo f.	13	12.26
sarstedt m.	13	12.93
ansar s.	12	11.98
sarma m.	12	11.99
saviano m.	12	11.11
barile s.	11	10.26
hess j.	11	10.95
udell g.f.	11	10.92

Source:VOSviewer

Figure 8. Author co-citation analysis results (with minimum 5 co-citations of authors)



influential figures in their fields, as their work is widely acknowledged and referenced by other researchers. In Table 4, a high number of co-citations indicates that A. Demirguc-Kunt, T. Beck, L. Klapper and V. Maksimovic are prominent figures who have left a lasting impact on the research field of FI in SMEs and their work is highly regarded. Their work on financial constraints and SME growth, financial inclusion, technology, and new methodological approaches were highly co-cited.

Table 6. Clusters of author co-citation analysis

Cluster	Co-Cited Authors	Their Research Focus
1	Ansar; Ayyagari; Beck; Berger; Cull; Demirguc-Kunt; Hess; Klapper; Levine; Love; Maksimovic; Pais; Perian; Rajan; Singer; Udell	financial & legal constraints, SMEs, growth, SME finance, fintech, financial inclusion and Islamic finance, Africa
2	Hair; Ringle; Sarstedt;	methodological contribution
	Sarma; Taghizadeh-Hesari; Yoshino	Asian SMEs and their challenges, financial inclusion
3	Frost; Gamacorta; Huang; Li; Wang; Wu J	digital financial inclusion, fintech, bigtech credit and its risk, SME finance, SME financing constraints, Asia, China
4	Leyshon	financial geography, financial exclusion
	Zhang X; Zhang Y	digital financial inclusion, SMEs, China
	Khan S	SMEs, financial inclusion, digital financial services, Saudi Arabia, Islamic finance
5	Allen; Gertler; Sari	financial intermediation, fintech, financial inclusion
6	Barile; Caputo F.; Saviano	fintech, financial gap, MENA region, systems (market, decision making, information sharing, stakeholders, digital ecosystems, etc.)

Figure 8 exhibits six clusters of author co-citation analysis. Demirguc-Kunt is at the centre of the co-citation analysis. Her work is exceptionally cited. She and her co-authors consist of a cluster.

VOSviewer provided us with the clusters and we identified the co-cited authors' research focus from the reference lists of our dataset. While main themes FI in SMEs and technology simultaneously run in most of the clusters, the clustered authors distinguish with regard to geographic focus, theoretical vs empirical work, and/or their methodological contribution (Table 6).

4.3.2 Journal Co-Citation Analysis

Journal co-citation analysis indicates intellectual influence and impact within a particular field or discipline by mapping the association between scientific journals. By analyzing the frequency of the citations received by the publications together in other works, researchers can gain insights into influence of journals in a particular academic field, i.e. which ones are the important and impactful journals in that field. In addition, it helps researchers understand the interconnectedness of ideas within a specific field of study.

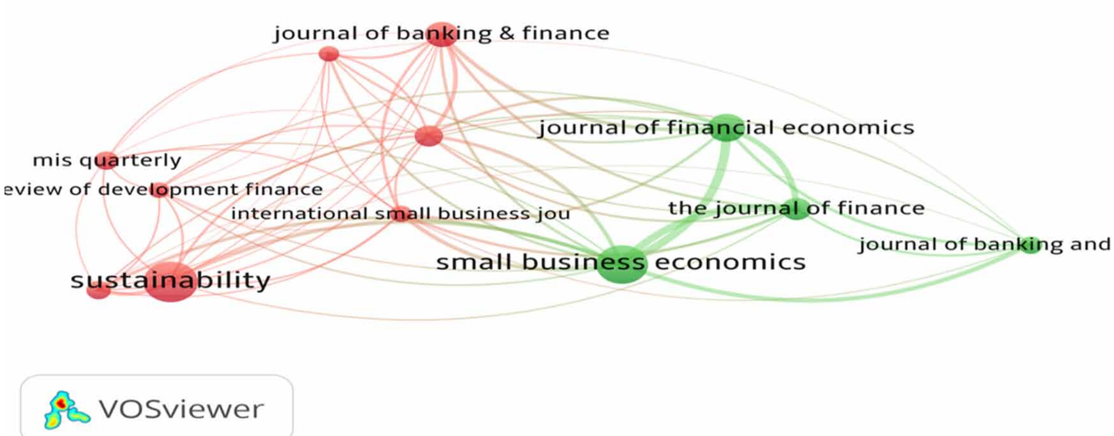
Table 7 and Figure 9 provide information on influential journals which are co-cited by scholars investigating FI in SMEs. Sustainability journal in the dataset is highly influential source for intellectual work with co-citation frequency of 51. Likewise, Small Business Economics journal is second influential source for scholarly publications on FI in SMEs research area with co-citation frequency of 46. The most influential journals listed in Table 7 are by no surprise are the highest ranked journals in CABS.

Figure 9 exhibits the visualization of 12 influential journals into 2 big clusters. Each cluster has a prominent journal that are the first two top journals in our Journal Co-citation Analysis. The first cluster consists of 8 journals where Sustainability journal is prominent and associates with journals in finance, small business and information management disciplines. The formation of this cluster indicates that, in the field of FI in SMEs, co-citations in publications take a multi-disciplinary approach and incorporate

Table 7. Journal co-citation analysis results

Journal	CABS Ranking	Citations	Total Link Strength
Sustainability	-	51	46.85
Small Business Economics	3	46	42.51
Journal of Financial Economics	4*	28	27.01
Journal of Banking & Finance	3	23	21.64
The Journal of Finance	4*	19	18.02
American Economic Review	4*	18	14.88
World Development	3	18	17.74
American Economic Journal: Macroeconomics	4	16	13.55
Journal of Business Research	3	14	13.82
MIS Quarterly (Management Information Systems)	4*	14	13.49
International Small Business Journal	3	12	11.91
Journal of Small Business and Enterprise Development	2	11	10.79
Review of Development Finance	2	11	10.82
Information and Management	3	9	8.33
Internet Research	3	9	8.61

Figure 9. Journal Co-citation analysis results (minimum co-citations 10 per journal)



sustainability and technology into FI and SME literatures. The second cluster however consists of 4 journals where Small Business Economics journal leads the association with journals in Finance discipline, presenting a more focused approach on the FI in SME research.

4.4 Co-Word Analysis

The co-word analysis is based on the co-occurrence of author keywords. It creates clusters of words that meaningfully link to each other to reveal a thematic relationship. Co-word analysis supplements co-citation analysis and uncovers common themes, trends, interdisciplinary connections, and under-represented areas that necessitate further investigation.

Figures 10, 11, 12 clearly demonstrate the strong link between financial inclusion and SMEs. Figure 10, based on minimum three co-occurrences of keywords, provide the main themes in the FI and SME literature in two clusters. The green cluster consists of financial inclusion, financial literacy and fintech, while red cluster consists of SMEs, access to finance, digital financial inclusion, and China. Figure 11, based on minimum two co-occurrences of keywords, indicates additions to the financial inclusion main theme (i.e. financial behavior, financing gap, financial stability), to SMEs main theme (i.e.entrepreneurship), to technology main theme (i.e.Technology Acceptance Model (TAM)), and additional sub-theme of sustainability (i.e. SDGs). These themes appear in six clusters, in which empirical studies in specific geographies are also highlighted, such as China with financial stability (blue cluster), Indonesia with SDGs (purple cluster), and Sri Lanka with TAM (turquoise cluster). Red cluster consists of financial inclusion, financial literacy, fintech, and financial behavior, green cluster consists of SMEs, financing gap and digital financial inclusion, yellow cluster consists of access to finance and entrepreneurship.

Figure 12, based on minimum one co-occurrences of keywords, is a nice depiction of the bigger picture. It produced 29 clusters, which we will not go into detail. The most novel finding in this analysis is the coupling of specific countries with specific concepts. While linking to SMEs and financial inclusion main themes, China being coupled with financial stability is instructive for other emerging economies and Sri Lanka with TAM indicates the influence of technology adoption in developing countries. Indonesia, on the other hand, is coupled with SDGs when linked only with financial inclusion indicates a strong emphasis on achieving sustainability in relation to FI. In Chinese context, financially fit SMEs can survive in evolving environment and upgrade with latest trends. For Sri Lankan context, among the FI-SME trends, technological advancement is crucial. It is considered a critical driver for development

Figure 10. Main themes (keywords minimum three co-occurrences)

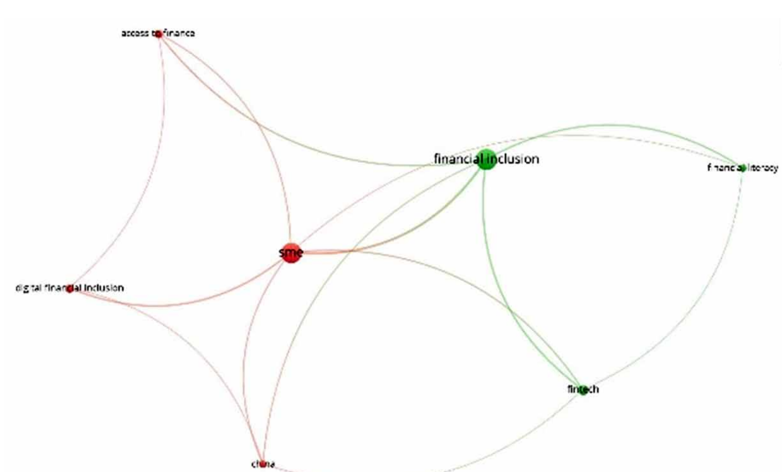


Figure 11. Keywords minimum two co-occurrences

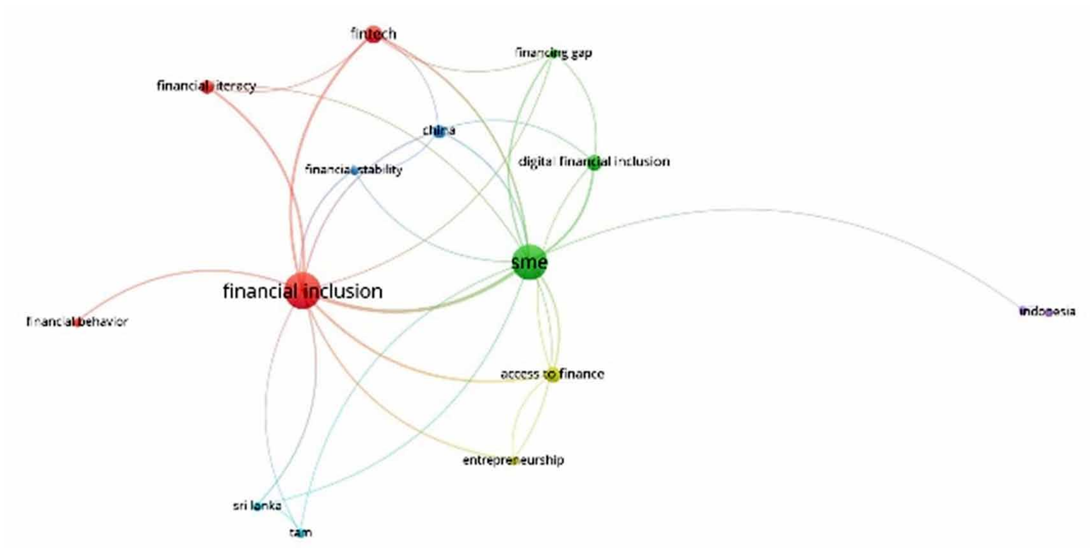
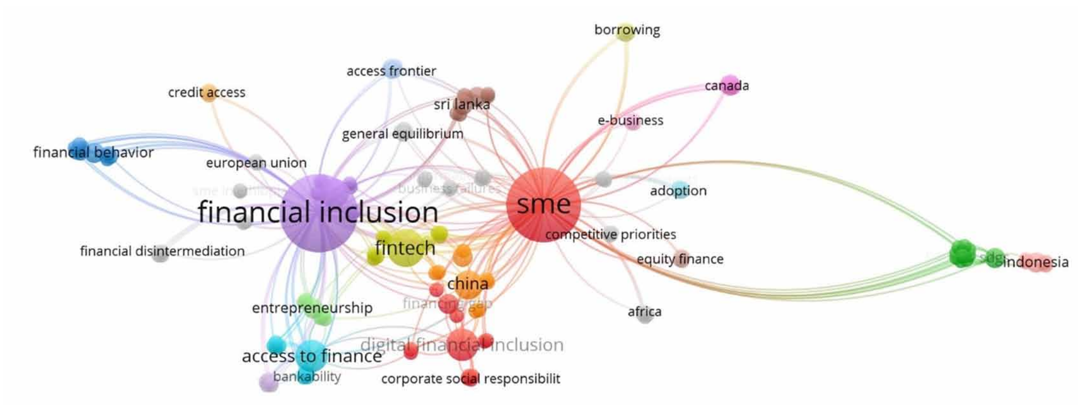


Figure 12. Keywords minimum one co-occurrence



as it leads to efficiency and productivity. However, fintech, which through various technological applications are enabling entrepreneurs to deal with finances and business transactions without getting support from accounting and finance experts, is linked to China and financial stability rather than Sri Lanka.

4.5 Thematic Analysis

The co-citation analyses of authors and journals and co-word analyses above highlight three main themes in the scholarly area of FI in SMEs (Table 8).

The first is financial inclusion in SMEs, which are pivotal to the economic growth of countries. However, because they face challenges in accessing finance, the extant literature discusses determinants of their financial inclusion in the form of enablers and hindrances, such as firm size, high costs, collateral, internal credit rating, bank concentration, supply-side factors, demand-side factors, institutional framework factors and information asymmetry between lenders and SMEs. They argue that community development financial institutions, community banking, credit and repayment schemes for SMEs and cost-effective technological solutions can reduce the financing gap.

A concept that has both direct and indirect relationship with FI-SME nexus, financial literacy is crucial for individuals and SMEs to make informed financial decisions. It improves access to financial services and decision-making, however, research on financial literacy receives least citations. Findings, however, reveal that financial knowledge, financial behavior, and digital financial capability significantly influence financial inclusion. They do not significantly affect SME performance individually, but financial inclusion and financial concerns positively influence SME performance. Financial literacy also moderates fintech's impact on FI; FI enhances financial performance, thereby fostering SMEs' business growth. SMEs are advised to enhance financial literacy, while governments work towards refining regulations regarding financial literacy, fintech, and financial inclusion, especially for SMEs.

In addition, greater financial inclusion for SMEs can lead to both positive and negative impacts on financial stability. While it can diversify bank assets and reduce riskiness, it can also erode credit standards and increase the loan-to-GDP ratio. However, implementing policies like credit databases and expanded collateral options can generate positive spillover effects on financial stability.

The transformative power of digital technologies in financial inclusion is a second dominant concept in the literature, in particular, through e-business, fintech and other digital apps for finance increase ef-

Table 8. Thematic analysis results based on co-citation analysis, key publications and their citations

Themes	Key Articles
Financial inclusion in SMEs Financial literacy Financial stability	(Kundid A.; Ercegovac R., 2011) Cited by 32 (Appleyard L., 2013) Cited by 21 (Brixiová Z.; Kangoye T.; Yogo T.U., 2020) Cited by 20 (Lu Z.; Wu J.; Liu J., 2020) Cited by 16 (Oshora B, Fekete-Farkas M., et al., 2021) Cited by 14 (Eton et al., 2022) Cited by 10 (Ali M.et al., 2017) Cited by 10 (Shinozaki S., 2014) Cited by 7 (Sari Y.W.; Nugroho M.; Rahmiyati N., 2023) cited by 0 (Mutamimah M.; Indriastuti M., 2023) Cited by 1 (Garba M.; Salleh F.; Hafiz U.A.; Bakar N.M.A., 2022) Cited by 2 (Irman M.; Budiyanto; Suwitho., 2021) Cited by 0 (Morgan P.J.; Pontines V., 2018) Cited by 38
Technology adoption in FI	(Ifinedo P., 2011) Cited by 163 (Lu Z.; Wu J.; Li H.; Nguyen D.K., 2022) Cited by 70 (Najib M.; Fahma F., 2020) Cited by 43 (Coffie et al., 2021) Cited by 35 (Nugraha D.P.; Setiawan B.; Nathan R.J.; Fekete-Farkas M., 2022) Cited by 17 (Thathsarani U.S.; Jianguo W., 2022) Cited by 10 (Kame Babilla T.U., 2023) Cited by 10 (Bui T.Q.; Do A.V.P., 2022) Cited by 8 (Zhang X.; Li J.; Xiang D.; Worthington A.C., 2023) Cited by 6 (Mamaro L.P.; Sibindi A.B., 2022) Cited by 4
Islamic Finance	(Hudaefi F.A., 2020) Cited by 42 (Okfalisa et al., 2022) Cited by 5 (Sabiu T.T.; Abduh M., 2021) Cited by 3 (Ibrahim A.-J.; Kahf M., 2020) Cited by 1

ficiency and productivity of SMEs while reducing the barriers in accessing finance. These technologies have been shown to boost access to financial goods, raise awareness, and facilitate transactions. The importance of financial technology gradually increases in developing countries where FI is one of major constraints for SMEs. However, these technological advancements are also accompanied by issues such as behavioral resistance in acceptance of these advancements, management support and commitment, government support, user innovativeness, trust, and regulatory challenges. Moreover, fintech, Technology Acceptance Model (TAM), digital payment system, digital funding, and crowdfunding are suggested to increase efficiency by providing easy and affordable access to finance. The evidence for effectiveness of financial technology in FI-SME relationship are found in OIC and non-OIC countries, yet leveraging technology and fostering an innovative ecosystem can empower SMEs and promote FI. Digital innovation complements inclusive banking in addressing credit discrepancies among firms, easing collateral and borrowing constraints for SMEs, and enhancing productivity growth. Digitalization is becoming more effective than traditional methods in alleviating SMEs' financing constraints and enhancing financial inclusion and play a pivotal role in mitigating information asymmetry.

Third main theme that arose from the co-citation analyses is Islamic finance. A subset of studies by S. Khan focuses on the relationship between SMEs and Islamic finance, especially in countries that are members of the OIC. Islamic finance plays a vital role in financial inclusion of SMEs as a Shariah-compliant alternative financing solution for faith-based and others who do not want interest-based financing. It offers potential for financial inclusion in OIC countries and caters to unbanked communities and promotes SME growth with instruments like as Ijarah and trade finance. However, knowledge and proper utilization of shariah complaint tools is crucial to get benefit from it. In addition, proper knowledge of Islamic principles becomes more important in revolution of financial technology. Furthermore, Shariah-compliant instruments can be used to protect investments and incentivize potential investors to promote investments in SMEs. Evidence from Nigeria indicates positive effect of Islamic financing on MSMEs' employment growth and recommends enhancing the Islamic banking system by emphasizing Profit and Loss Sharing (PLS) financing, particularly Musharakah for FI and job creation of MSMEs. Another evidence from Indonesia reveals the FI of SME sector through Islamic social funds which subsequently promotes SDGs as well. Quadruple Helix (government, investors, academics, and communities) ensures SMEs' financial stability through Shariah Fintech presents new post-Covid-19 challenges and opportunities. There's a recommendation to develop a new Shariah Fintech quadruple helix model that assesses SMEs' digital readiness to enhance proper Shariah Fintech product utilization.

5. COMPARISON OF OIC AND NON OIC COUNTRIES

Table 9 exhibits the frequency of the articles published by authors or institutions in OIC and non-OIC countries. It also shows the impact of research generated in OIC and non-OIC countries through citation rate.

These publications are recognized in other countries. High citations from a country not only reflect the strength of its research output, but also highlight the country's ability to foster collaboration and establish meaningful partnerships with researchers and institutions worldwide.

Table 9 depicts that Indonesia is first major contributor with 11 publications, followed by Malaysia with 6 and Nigeria with 3 articles. With regard to average citations, Uganda ranks first with 23.5 citations per article (47/2) while Indonesia and Malaysia share second position with 11 citations per publication.

Table 9. Frequency of publications and citation on FI and SMEs in OIC and non-OIC countries

OIC Countries	Citation	Pub	Avg cit.	Non-OIC Countries	Citation	Pub	Avg cit.	Non-OIC Countries	Citation	Pub	Avg cit.
Saudi Arabia	6	2	3	China	201	13	15	Greece	2	1	2
Indonesia	121	11	11	South Africa	7	2	4	India	0	1	0
Uganda	47	2	24	Spain	7	2	4	Japan	38	1	38
Malaysia	66	6	11	Sri Lanka	10	2	5	Philippines	17	3	6
Bangladesh	10	1	10	Italy	73	3	24	Kenya	3	1	3
Cameroon	10	1	10	Viet Nam	78	2	39	Mexico	3	1	3
Nigeria	6	3	2	United Kingdom	121	5	24	New Zealand	17	1	17
Pakistan	2	2	1	Australia	23	3	8	Poland	33	3	11
Brunei Darussalam	3	1	3	Hungary	35	3	12	United States	13	3	4
Jordan	0	1	0	Canada	163	1	163	Switzerland	1	1	1
Qatar	1	1	1	Croatia	32	1	32	Thailand	10	1	10
Sudan	1	1	1	Ethiopia	14	1	14	Taiwan	52	1	52
Turkey	1	1	1	France	70	1	70	Czeck Republic	37	2	19
				Ghana	35	1	35	Tanzania	0	1	0
				Germany	52	2	26	Ukraine	6	1	6
				Netherlands	52	2	26				

Note: Decimals are rounded due to lack of space.

Bangladesh and Cameroon bot have one article published on FI in SMEs and received 10 citations each, so they come third in the ranking of OIC countries. When compared with the non-OIC countries, it is clear that OIC countries do not perform as good as non-OIC countries.

Among non-OIC countries, China has the highest contribution to FI in SMEs literature with 13 publications and 201 citations, corresponding to an average of 15 citations per publication. However, it needs to be noted that Canada with one publication on technology perspective to FI in SMEs receives 163 citations. Similarly, France and Taiwan with one publication receive 70 and 52 citations respectively. While these mean high impact publications, the United Kingdom follows them with 5 publications receiving 121 citations, which comes to an average or 24 citations per publication. Italy shares the same average citation with the UK.

Despite two publications produced on FI in SMEs by Vietnamese authors, Vietnam has an average of 39 citations, which ranks the country above West European countries, such as Germany and the Netherlands which also have two publications each but received 26 citations on average.

As a result, the data analysis reveals that the contribution of OIC countries to this research field is low as compared to non-OIC countries. More production of scholarly work from OIC countries can have positive implications for policymakers, and industrialists due to the provision of better insight into developing strategies and policies. Moreover, future research can add value by adopting qualitative or mixed-method approaches to the literature of FI-SME in OIC and non-OIC countries.

Table 10. Major gap in the FI in SMEs literature

Major Gap	Key Articles
Policies, Rules & Regulations (Sandbox, Regtech, Fintech development 2.0)	(Tsai C.-H.; Peng K.J., 2017) Cited by 52 (Hua X.; Huang Y., 2021) Cited by 48 (Agyekum F.K.; Reddy K.; Wallace D.; Wellalage N.H., 2022) Cited by 17 (Tasak P. 2022) Cited by 14 (Lam W.R.; Liu Y., 2020) Cited by 10 (Gómez Urquijo L., 2015) Cited by 4 (Arvind T.T., 2021) cited by 1

6. DISCUSSION AND CONCLUSION

Financial inclusion is a vital factor in the success and sustainability of SMEs. This chapter reviews the literature on FI in SMEs employing bibliometric analysis methods. A sample of 62 publications from various journals is used to understand the main themes, new emerging trends and the gaps that needs addressing through future research. The main themes are identified as (i) FI in SMEs with financial literacy and financial stability as sub-themes, (ii) technology adoption in FI (fintech, digital FI) and its impact on SMEs, and (iii) Islamic finance and explained in detail in Section 4.5.

A major gap in the literature is in policies, rules and regulations that align with the fast penetration of technology into FI (Table 10). Despite the pivotal role of financial technology in promoting FI, and supporting business, and bridging the financing gap, some regulatory issues are risen. Policymakers need to pay attention towards revisiting their policies and make regulatory reforms in various dimension. For instance, regulatory sandboxes and a risk-based approaches are proposed to strike a balance between supporting FinTech start-ups and managing potential systemic risk.

Furthermore, improved coordination of regulatory policies, innovative policy tools and a balance between innovation and stability are required. Enhancing technological infrastructure can help reduce information asymmetry and transaction costs, while donor agencies can play a crucial role in supporting these efforts. There is need for communication between policymakers and the private sector and implementation of other ways of financing such as microfinance and crowdfunding. Advancing towards a banking union and, crucially, a fiscal union can promote a more uniform and inclusive financial market, addressing challenges faced by vulnerable European citizens and enterprises amid the current crisis. To avoid financial distress to SMEs caused by opportunistic lenders, policymakers should focus on reshaping lender practices to ensure and foster responsible and sustainable financing for SMEs.

6.1 Future Directions for Main Themes

In the main field of FI in SMEs, there are still many research areas are waiting to be explored, such as understanding the determinants of FI among developing country SMEs other than African countries. Investigating the role of banks and formal and informal institutions, exploring credit access dynamics, assessing transmission mechanism from access to finance to job creation, the effects of formal and informal firms, and the role of gender in FI and SME nexus could enhance our knowledge of differences between OIC and non-OIC and developed and developing countries. Conducting sector specific analysis could bring a different perspective to FI in SMEs than country level studies, and lead to targeted sectoral policy development. In addition, relationship between SMEs and networking for FI can be investigated.

Future research can explore primary data sources to implement community banking for converting micro-savings into micro-investments to promote social justice.

As one of the main determinants of FI, financial literacy is another theme that needs further studies, such as evaluating financial literacy and FI relationship from both demand and supply sides by incorporating other variables in developing and developed countries or OIC and non-OIC countries context. We also suggest exploring effective methods for financial literacy education for SMEs and evaluating the impact of financial literacy programs on SME outcomes.

Technology has significant bearing on the FI research through e-business, fintech, digital financial inclusion and so on. The adoption of internet and e-business technologies (IEBT) could be examined in other regions of developed countries and government support could be factored in into the analysis. Banks, SMEs and digital financial inclusion relationship can be investigated in regions where technology adoption is widely observed. Exploring different digital business models across emerging markets would provide valuable insights. A possible extension of the study could look at an open economy model to experience whether the adoption of a flexible exchange rate regime may affect the dynamics of digital innovation in SMEs relative to the fixed exchange rate. We suggest examining the effect of digital finance on business financing at different stages of business cycle and the long-term impact of FinTech on SME development and sustainability. Finally, identifying best practices for integrating FinTech into SME financial services would serve as exemplars to the SMEs in OIC countries.

While technology is widely integrating into finance, public sector delays in devising policies, rules & regulations in fintech area that facilitate digital financial inclusion. There is urgent need for studies that investigate the effect of regulation apps (Sandbox, Regtech, Fintech development 2.0) in OIC and non-OIC countries and assess the impact of policy recommendations from extant literature in terms of fintech, FI and SMEs development.

In the area of Islamic finance, there is lack of research on evaluating Quadruple Helix Engagement for Shariah Fintech-Based SMEs' Digitalization Readiness. More research needed to generate in this area. Further studies are needed, especially to understand some of the instruments used for Islamic Venture Capital to protect investors in practice and attract investments that can finance SMEs. We suggest conducting empirical studies on the effectiveness of Islamic finance for SME inclusion, exploring Islamic finance's role in promoting sustainable finance and ethical business practices, and investigating the regulatory landscape for Islamic finance in different countries.

6.2 Directions for Future Research: Emerging Trends

A major emerging trend in this field is economic empowerment of women entrepreneurs. Women entrepreneurs in the MENA region face challenges due to scarcity of collateral & credit history. Customized financial products & access to savings services can help them overcome these barriers & flourish as entrepreneurs (Saviano, et al., 2017). Likewise, evidence revealed that female entrepreneurs in Ethiopia encounter several obstacles, such as collateral requirements, limited start-up capital, illiteracy, high-interest rates, bureaucratic procedures, and a lack of technical expertise. To address these barriers and to improve financial inclusion for women entrepreneurs, it is crucial to provide women with customized financial products and services, to streamline credit processes, offer training programs on financial literacy, integrate financial technology, and reduce interest rates. Improving access to savings services can be just as critical as access to credit for women business owners. However, the role of government and policymakers can play a crucial role in the economic empowerment of women by promoting their financial inclusion (Nguse, T., et al., 2022).

Government policies and regulations positively impact women's economic empowerment, both directly and indirectly through financial inclusion. However, various constraints like collateral requirements, start-up capital, illiteracy levels, high-interest rates, bureaucratic procedures, and lack of technical skills hinder women's economic empowerment, evidenced particularly in Ethiopia. simplifying credit processes and training programs of financial literacy, incorporating financial technology and reducing interest rates can enhance financial inclusion in women entrepreneurs.

Future studies can extend theoretical work by conducting empirical research on women entrepreneurs' challenges in accessing finance in regions other than MENA region and compare developing countries with developed countries in this research area. Exploring the role of government support and available financial access opportunities for women-led SMEs in OIC and non-OIC countries can add value to the literature.

Another emerging trend in FI-SME literature is the importance of ethical and socially responsible finance options for the sustainable growth of SMEs and their financial stability. For instance, Islamic finance can help boost the financial stability of SMEs through multiple channels. It prioritizes ethical and fair financial dealings and offers benefits like Risk-Sharing Mechanisms, Asset-Backed and interest-free Financing, Islamic Socially Responsible Investments, and Flexible Repayment Structures. By collaborating with SME-Islamic finance institutions, businesses can achieve stability and promote responsible economic development. In addition, Shariah-compliant instruments also protect investments and promote SME investments (Ibrahim, A. J., & Kahf, M. (2020).

Encouragingly, SMEs' employment growth in Nigeria experiences a positive impact from Islamic financing. To further financial inclusion and job creation, the Islamic banking system should prioritize Profit and loss sharing (PLS) financing, particularly the beneficial Musharakah option (Sabiu, T. T., & Abduh, M., 2021). However, for long-term sustainability, SMEs are stressed to embrace digitalization. Faith-based SME owners are inclined toward Shariah-compliant financial technology solutions. Shariah-compliant Fintech firms promote financial inclusion and collect/distribute Islamic social funds. They also initiate charity programs for underprivileged communities to achieve the SDGs of ending poverty, and hunger, and reducing inequalities (Hudaefi, F. A., 2020). Nevertheless, the Quadruple Helix approach is considered vital in sustaining and strengthening industry creativity, capability, and competitiveness. Islam recognizes this approach as pivotal in SMEs' sustainability and compliance strategies during disasters in developing countries. The rise of Shariah Fintech presents both challenges and opportunities for the quadruple helix to support SMEs. Therefore, to fully leverage the benefits of Shariah Fintech products, it's recommended that a new quadruple helix model be developed, specifically tailored to assess SMEs' digital readiness (Okfalisa, O. et al., 2022).

To conclude, our bibliometric analysis gave useful insights into the literature on FI in SMEs. This thorough analysis explored a number of influential publications to pinpoint themes, major contributors, and emerging trends. Our bibliometric study in this chapter paved the way for future research and policy interventions. The identified study directions highlight the importance of targeted financial education programs for financial literacy, regulatory issues in FinTech adoption, a better knowledge of the role of Islamic finance in FI and SME development, and creative policies to increase SME financial inclusion. Ultimately, resolving these issues will help to create a more equitable and sustainable financial situation for SMEs worldwide.

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APPENDIX A.

Table 11. Publications dataset used in the bibliometric analysis

	Authors	Title	Year	Source Title	Cited by	Country
1	Ifinedo P.	Internet/e-business technologies acceptance in Canada's SMEs: An exploratory investigation	2011	Internet Research	163	Canada
2	Lu Z.; Wu J.; Li H.; Nguyen D.K.	Local Bank, Digital Financial Inclusion and SME Financing Constraints: Empirical Evidence from China	2022	Emerging Markets Finance and Trade	70	UK/ France/ China/ Viet Nam
3	Tsai C.-H.; Peng K.-J.	The FinTech Revolution and Financial Regulation: The Case of Online Supply-Chain Financing	2017	Asian Journal of Law and Society	52	Taiwan/ Netherlands
4	Hua X.; Huang Y.	Understanding China's fintech sector: development, impacts and risks	2021	European Journal of Finance	48	China
5	Najib M.; Fahma F.	Investigating the adoption of digital payment system through an extended technology acceptance model: An insight from the Indonesian small and medium enterprises	2020	International Journal on Advanced Science, Engineering and Information Technology	43	India/ USA
6	Hudaefi F.A.	How does Islamic fintech promote the SDGs? Qualitative evidence from Indonesia	2020	Qualitative Research in Financial Markets	42	Indonesia
7	Morgan P.J.; Pontines V.	FINANCIAL STABILITY AND FINANCIAL INCLUSION: THE CASE OF SME LENDING	2018	Singapore Economic Review	38	Malaysia/ Japan
8	Coffie C.P.K.; Hongjiang Z.; Mensah I.A.; Kiconco R.; Simon A.E.O.	Determinants of FinTech payment services diffusion by SMEs in Sub-Saharan Africa: evidence from Ghana	2021	Information Technology for Development	35	China/ Ghana/ Uganda
9	Kundid A.; Ercegovac R.	Credit rationing in financial distress: Croatia SMEs' finance approach	2011	International Journal of Law and Management	32	Croatia
10	Appleyard L.	The Geographies of Access to Enterprise Finance: The Case of the West Midlands, UK; [Les géographies de l'accès au financement des entreprises: Étude de cas de la région des West Midlands, au Royaume-Uni]	2013	Regional Studies	21	UK
11	Brixiová Z.; Kangoye T.; Yogo T.U.	Access to finance among small and medium-sized enterprises and job creation in Africa	2020	Structural Change and Economic Dynamics	20	Czech Republic
12	Saviano M.; Nenci L.; Caputo F.	The financial gap for women in the MENA region: a systemic perspective	2017	Gender in Management	17	Italy
13	Agyekum F.K.; Reddy K.; Wallace D.; Wellalage N.H.	Does technological inclusion promote financial inclusion among SMEs? Evidence from South-East Asian (SEA) countries	2022	Global Finance Journal	17	Australia/ New Zealand
14	Nugraha D.P.; Setiawan B.; Nathan R.J.; Fekete-Farkas M.	Fintech Adoption Drivers for Innovation for SMEs in Indonesia	2022	Journal of Open Innovation: Technology, Market, and Complexity	17	Hungary/ Indonesia/ Malaysia/ Czech Republic
15	Lu Z.; Wu J.; Liu J.	Bank concentration and SME financing availability: the impact of promotion of financial inclusion in China	2020	International Journal of Bank Marketing	16	UK/ China
16	Oshora B.; Desalegn G.; Gorgenyi-Hegyes E.; Fekete-Farkas M.; Zeman Z.	Determinants of Financial Inclusion in Small and Medium Enterprises: Evidence from Ethiopia	2021	Journal of Risk and Financial Management	14	Hungary/ Ethiopia
17	Łasak P.	The role of financial technology and entrepreneurial finance practices in funding small and medium-sized enterprises	2022	Journal of Entrepreneurship, Management and Innovation	14	Poland
18	Li Y.; Stasinakis C.; Yeo W.M.	A Hybrid XGBoost-MLP Model for Credit Risk Assessment on Digital Supply Chain Finance	2022	Forecasting	13	UK
19	Czerwonka L.; Jaworski J.	Capital structure determinants of small and medium-sized enterprises: evidence from Central and Eastern Europe	2021	Journal of Small Business and Enterprise Development	13	Poland

	Authors	Title	Year	Source Title	Cited by	Country
20	Yanto H.; Handayani B.D.; Solikhah B.; Mula J.M.	The behavior of Indonesian SMEs in accepting Financial Accounting Standards without Public Accountability	2016	International Journal of Business and Management Science	12	Indonesia/ China
21	Eton M.; Mwosi F.; Okello-Obura C.; Turyehebwa A.; Uwonda G.	Financial inclusion and the growth of small medium enterprises in Uganda: empirical evidence from selected districts in Lango sub-region	2021	Journal of Innovation and Entrepreneurship	12	Uganda
22	Lam W.R.; Liu Y.	Tackling small and medium-sized enterprises (SMEs) financing in China	2020	Annals of Economics and Finance	10	World Bank
23	Ali M.M.; Rattanawiboonsom V.; Perez C.M.; Khan A.A.	Comparative positioning of Small and Medium Enterprises in Bangladesh, Thailand and the Philippines	2017	Economy of Regions	10	Bangladesh/ Philippines/ Thailand
24	Thathsarani U.S.; Jianguo W.	Do Digital Finance and the Technology Acceptance Model Strengthen Financial Inclusion and SME Performance?	2022	Information (Switzerland)	10	Sri Lanka/ China
25	Kame Babilla T.U.	Digital innovation and financial access for small and medium-sized enterprises in a currency union	2023	Economic Modelling	10	Cameroon
26	Bui T.Q.; Do A.V.P.	Does technological inclusion reduce financial constraints on small and medium sized enterprises? The case of Vietnam	2022	Finance Research Letters	8	Viet Nam
27	Shinozaki S.	A New Regime of SME Finance in Emerging Asia: Enhancing Access to Growth Capital and Policy Implications	2014	Journal of International Commerce, Economics and Policy	7	Asian development Bank
28	Zhang X.; Li J.; Xiang D.; Worthington A.C.	Digitalization, financial inclusion, and small and medium-sized enterprise financing: Evidence from China	2023	Economic Modelling	6	China/ Australia
29	Dluhopolskyi O.; Pakhnenko O.; Lyeonov S.; Semenog A.; Artyukhova N.; Cholewa-Wiktor M.; Jastrzębski W.	Digital Financial Inclusion: COVID-19 Impacts and Opportunities	2023	Sustainability (Switzerland)	6	Poland/ Ukrain
30	Okfalisa; Mahyarni; Anggraini W.; Saeed F.; Moshood T.D.; Saktioto	Quadruple Helix Engagement: Reviews on Syariah Fintech Based SMEs Digitalization Readiness	2022	Indonesian Journal of Electrical Engineering and Informatics	5	Indonesia/ Saudi Arabia/ Malaysia
31	Gómez Urquijo L.	Financial Exclusion in the European Union: Addressing Difficulties in Accessing Finance within the Current Integration Framework	2015	Journal of Contemporary European Studies	4	Spain
32	Onodugo C.; Onodugo I.; Ogbo A.; Okwo H.; Ogbaekirigwe C.	Moderating role of social capital on the effect of financial behavior on financial inclusion	2021	Problems and Perspectives in Management	4	Nigeria
33	Nguse T.; Desalegn D.; Oshora B.; Tangl A.; Nathan R.J.; Fekete-Farkasne M.	ENHANCING WOMEN ECONOMIC EMPOWERMENT THROUGH FINANCIAL INCLUSION:EVIDENCE FROM SMEs IN ETHIOPIA; [ZWIĘKSZANIE WŁASNOŚCI GOSPODARCZEJ KOBIET POPRZEZ WŁĄCZENIE FINANSOWE: DOWODY Z MŚP W ETIOPII]	2022	Polish Journal of Management Studies	4	Hungary/ Malaysia
34	Mamaro L.P.; Sibindi A.B.	Entrepreneurial Financing in Africa during the COVID-19 Pandemic	2022	Journal of Risk and Financial Management	4	Africa
35	Arcuri M.C.; Pisani R.	Is trade credit a sustainable resource for medium-sized italian green companies?	2021	Sustainability (Switzerland)	4	Italy
36	Nanziri L.E.; Wamalwa P.S.	Finance for SMEs and its effect on growth and inequality: evidence from South Africa	2021	Transnational Corporations Review	3	South Africa/ Kenya
37	Roa M.J.; Villegas A.; Garrón I.	Interest rate caps on microcredit: evidence from a natural experiment in Bolivia	2022	Journal of Development Effectiveness	3	Mexico/ Spain
38	Sabiu T.T.; Abduh M.	IMPACT OF ISLAMIC BANKING INCLUSION ON SME EMPLOYMENT GROWTH IN NIGERIA	2021	Journal of Islamic Monetary Economics and Finance	3	Brunei Darussalam
39	Kotsios P.	Business resilience skills for SMEs	2023	Journal of Innovation and Entrepreneurship	2	Greece
40	Garba M.; Salleh F.; Hafiz U.A.; Bakar N.M.A.	INSURANCE LITERACY, RISK KNOWLEDGE MANAGEMENT, RISK-TAKING PROPENSITY AND ECONOMIC SUSTAINABILITY AMONG SMEs: THE MODERATING EFFECT OF FINANCIAL INCLUSION	2022	Journal of Social Economics Research	2	Malaysia/ Nigeria

	Authors	Title	Year	Source Title	Cited by	Country
41	Fazal H.; Muhammad J.; Zahoor U.H.	Operational Perspective of SMEs Performance and Competitive Priorities Practices: Path Analytic Approach	2020	Studies in Business and Economics	2	Pakistan
42	Hu D.; Fang X.; DiGiovanni Y.M.	Technological progress, financial constrains, and digital financial inclusion	2023	Small Business Economics	2	China/ USA
43	Khan S.; Alhadi F.A.F.	Fintech and Financial Inclusion in Saudi Arabia	2022	Review of Economics and Finance	1	Saudi Arabia
44	Huang Y.; Li Z.; Qiu H.; Tao S.; Wang X.; Zhang L.	BigTech credit risk assessment for SMEs	2023	China Economic Review	1	China/ Switzerland/ United States
45	Ibrahim A.-J.; Kahf M.	Instruments for investment protection when structuring Islamic venture capital	2020	Journal of Islamic Accounting and Business Research	1	Qatar/ Turkey
46	Arvind T.T.	Too Big To Care?:Financial Contracts And The Problem Of Transactional Asymmetry	2021	Law and Contemporary Problems	1	UK
47	Yang Y.; Shi S.; Wu J.	Digital Financial Inclusion to Corporation Value: The Mediating Effect of Ambidextrous Innovation	2022	Sustainability (Switzerland)	1	China
48	Mutamimah M.; Indriastuti M.	Fintech, financial literacy, and financial inclusion in Indonesian SMEs	2023	International Journal of Entrepreneurship and Innovation Management	1	Indonesia
49	Garang J.A.	How to leverage oil resources to enhance SME financing in South Sudan	2015	International Journal of Economic Policy in Emerging Economies	1	Sudan
50	Yakubi Y.A.Y.; Basuki B.; Purwono R.	Financial inclusion and digital finance in the Arab world: Current status and future priorities	2019	International Journal of Innovation, Creativity and Change	1	Indonesia
51	Sari Y.W.; Nugroho M.; Rahmiyati N.	The effect of financial knowledge, financial behavior and digital financial capabilities on financial inclusion, financial concern and performance in MSMEs in East Java	2023	Uncertain Supply Chain Management	0	Indonesia
52	Alrababah Z.	BARRIERS TO CLOUD COMPUTING ADOPTION AMONG SMEs IN THE MIDDLE EAST: A SYSTEMATIC REVIEW	2023	Journal of Theoretical and Applied Information Technology	0	Malaysia
53	Mahmood S.; Shuhui W.; Aslam S.; Ahmed T.	Financial Inclusion: Does it matter in Alleviating Poverty in Pakistan	2023	Social Indicators Research	0	Pakistan
54	Toni N.; Theng B.P.; Calen	Investigating the effect of financial literacy and financial inclusion on operational and sustainable supply chain performance of SMEs	2024	Uncertain Supply Chain Management	0	Indonesia
55	Al-Hakim M.S.; Al-Hamad A.A.-S.; Ghaith M.A.	The Role of Financial Inclusion in Bridging SMEs Financing Gap The Viewpoint of Credit Employees at Jordanian Islamic Banks	2021	Islamic Quarterly	0	Jordan
56	Mabula J.B.; Dong Ping H.; James M.	The Impact of African Firms' Utilization of Financial and Technology Resource on Innovation: A Simple Mediation	2023	SAGE Open	0	China/ Tanzania
57	Bhattacharyya A.; Rahman M.L.; Wright S.	Improving small and medium-size enterprise performance: Does working capital management enhance the effectiveness of financial inclusion?	2023	Accounting and Finance	0	Australia
58	Irman M.; Budiyanto; Suwitho	Financial inclusion as mediator in the relationship of social capital and financial literacy towards business performance of the trade sector SMEs in Pekanbaru, Indonesia	2021	Economic Annals-XXI	0	Indonesia
59	Dela Cruz N.A.; Villanueva A.C.B.; Tolin L.A.; Disse S.; Lensink R.; White H.	Effects of interventions to improve access to financial services for micro-, small- and medium-sized enterprises in low- and middle-income countries: An evidence and gap map	2023	Campbell Systematic Reviews	0	Philippines/ Netherlands/ India
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61	Thathsarani S.; Jianguo W.; Alariqi M.	How Do Demand, Supply, and Institutional Factors Influence SME Financial Inclusion: A Developing Country Perspective	2023	SAGE Open	0	China
62	Wasiu Adebisi A.; Uket Eko E.; Oka Felix A.	Microfinance Banks Dynamics Effect on Small-Scale Enterprise Development in Nigeria	2020	International Journal of Applied Economics, Finance and Accounting	0	Nigeria

APPENDIX B: CLASS ACTIVITIES FOR STUDENTS

Class Assignment 1

Analysing the Regional Differences in Financial Inclusion of SMEs

Instructions: Based on the provided information in this chapter, conduct further research and answer the following questions:

- Identify cultural, legal, and religious differences in OIC and non-OIC countries.
- Evaluate the impact of these differences on varying magnitudes of access to finance barriers for SMEs in OIC and non-OIC countries.
- Identify influential publications in this research area and explain their contribution and collaboration of OIC and non-OIC countries to develop this FI-SME research area.

Class Assignment 2

Role of Regulatory Policies in Fostering or Hindering FinTech Development for SMEs

Instructions: Based on the provided information in this chapter, conduct further research and answer the following questions:

- Discuss the challenges and opportunities presented by the integration of advanced models and technologies.
- Provide insights into how policy-makers can strike a balance between innovation and stability to ensure sustainable growth of SMEs.
- Analyze the regulatory issues in OIC and non-OIC countries.

Class Assignment 3

Women-Led SMEs and Islamic Finance

- **Discuss the specific challenges faced by women entrepreneurs in accessing finance in OIC and non-OIC countries.**
- **Compare and contrast the potential of Islamic finance products and services in addressing these challenges in both regions.**
- **What policy recommendations could be made to enhance the effectiveness of Islamic finance for women-led SMEs?**

Class Assignment 4

Digitalization and Sustainability in SMEs

- **Analyze the key features and benefits of Shariah-compliant Fintech solutions for SMEs.**
- **Discuss the potential challenges and limitations of adopting these solutions, particularly in developing countries.**
- **Propose a revised Quadruple Helix model tailored to assess the digital readiness of SMEs and leverage Shariah Fintech for sustainable growth, especially in disaster-prone areas.**

Assessment Questions

Question 1: What is a major barrier hindering SME potential?

Question 2: How can access to loan financing impact employment growth in labor-intensive sectors in OIC country Africa?

Question 3: How does digital innovation benefit SMEs, and what's the impact of digital financial services on SMEs in the Currency Union?

Question 1: How can Islamic finance contribute to SME financial stability, and what are the mentioned benefits?

Question 2: What challenges do SMEs in the United Kingdom (West Midlands) face for credit access, and what solution is proposed to address the financing gap created after the 2007 crisis?

Question 3: How is the economic empowerment of women entrepreneurs discussed in the text, and what barriers do female entrepreneurs in the MENA region and Ethiopia face?

Assessment MCQs

1. **The main driver behind financial inclusion (FI) research is:** (a) Understanding the specific challenges faced by SMEs. (b) Comparing FI across OIC and non-OIC nations. (c) Reducing poverty and stimulating economic growth. (d) Analyzing the effectiveness of existing FI policies.
2. **A major barrier to FI for SMEs in developing countries is:** (a) Lack of government support. (b) Complex regulatory frameworks. (c) Limited access to collateral options. (d) All of the above.
3. **Which factor does NOT positively impact FI for Ethiopian SMEs?** (a) Market opportunities. (b) Institutional framework. (c) Supply-side factors. (d) Borrowing costs.
4. **According to the study, excessive financial inclusion in China can:** (a) Reduce the benefits of bank concentration. (b) Increase access to finance for large firms. (c) Encourage innovation in the financial sector. (d) Lead to higher borrowing costs for SMEs.
5. **A key challenge for Community Development Financial Institutions (CDFIs) in the UK is:** (a) Lack of regulatory support. (b) Limited geographical reach. (c) Insufficient funding. (d) All of the above.
6. **How do digital financial services benefit SMEs in China?** (a) Reduce information asymmetry. (b) Facilitate access to various financial products. (c) Increase borrowing limits. (d) Both (a) and (b).
7. **What factor is considered MOST crucial for successful Fintech adoption by SMEs?** (a) Regulatory support. (b) User-friendliness of technology. (c) Management understanding. (d) All of the above.
8. **According to the paper, financial literacy has a:** (a) Negative impact on SME performance. (b) Positive impact on financial stability. (c) No significant impact on financial inclusion. (d) Positive impact on SME performance and financial stability.

9. **Regtech and Fintech development 2.0 are examples of:** (a) Risk management tools for SMEs. (b) Innovative policy tools for the Fintech industry. (c) Regulatory sandboxes for new financial products. (d) Both (b) and (c).
10. **The paper recommends flexible monetary policies and differential fiscal consolidation for:** (a) OIC countries with high financial inclusion. (b) Non-OIC countries with limited access to finance. (c) Countries aiming to promote a more inclusive financial market. (d) All of the above

Answers to MCQs

1. (c) Reducing poverty and stimulating economic growth
2. (d) All of the above
3. (b) Institutional framework
4. (a) Reduce the benefits of bank concentration
5. (d) All of the above
6. (d) Both (a) and (b)
7. (d) All of the above
8. (d) Positive impact on SME performance and financial stability
9. (b) Innovative policy tools for the Fintech industry
10. (a) OIC countries with high financial inclusion