

ENTREPRENEURIAL EDUCATION IN MALAYSIA (2012 – 2024): INSIGHTS FROM A COMPREHENSIVE BIBLIOMETRIC REVIEW

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Article history

Received date : 13-3-2025

Revised date : 14-3-2025

Accepted date : 27-4-2025

Published date : 15-5-2025

To cite this document:

Wan Mustapha, W. M., Mat Nawi, F. A., Baistaman, J., & Abu Bakar, H. (2025). Entrepreneurial education in Malaysia (2012 – 2024): Insights from a Comprehensive Bibliometric Review. *Journal of Islamic, Social, Economics and Development (JISED)*, 10 (72), 527 -539.

Abstract: *Entrepreneurial education has become an important component of national development strategies, especially in economies seeking to promote innovation, resilience, and self-employment. In Malaysia, this emphasis has been reflected through various policies and institutional initiatives aimed at promoting entrepreneurship within the educational system. This study conducts a comprehensive bibliometric analysis of 43 scholarly publications on entrepreneurial education in Malaysia between 2012 and 2024. Obtaining data primarily from Google Scholar and employing VOSviewer as a visualization tool, the study maps trends in publication volume, subject area, authorship, funding sources, and co-authorship networks to better understand the intellectual structure and collaborative patterns within the field. The findings reveal a noticeable increase in research activity from 2017 onwards, correlating with the implementation of national policies such as the Malaysia Education Blueprint (2013–2025) and the National Entrepreneurship Policy 2030. Most of publications are concentrated within the social sciences and business-related fields, though there is growing interdisciplinary engagement with science, technology, engineering and mathematics (STEM) and humanities disciplines. Key contributors, such as Mamun, Abdullah Al and Nawi, Noorshella Binti Che, have played pivotal roles in shaping the research landscape, with strong co-authorship ties and a high citation impact. Government ministries and public universities, particularly the Ministry of Higher Education and institutions like UiTM and UKM, emerge as significant funding sponsors, underscoring the strategic importance placed on entrepreneurship research in Malaysia. The study concludes that entrepreneurial education research in Malaysia is*

steadily maturing, with increasing scholarly interest, institutional support, and collaborative networks. It offers valuable insights for policymakers, educators, and researchers seeking to advance the field further. The findings also highlight opportunities to foster more inclusive and interdisciplinary research, strengthen academic partnerships, and align future studies with national economic and educational priorities.

Keywords: *Entrepreneurial education, Malaysia, Bibliometric analysis, VOSviewer*

Introduction

Entrepreneurial education has emerged as a strategic priority for nations striving to equip their populations with the knowledge, skills, and attitudes necessary to thrive in an innovation-driven global economy (Fayolle & Gailly, 2015). In Malaysia, the role of entrepreneurial education has grown significantly over the past decade, driven by national aspirations to develop a resilient, high-income economy and to foster job creators rather than job seekers (Ministry of Education Malaysia, 2013). As academic and educational institutions, policymakers, and industry leaders have increasingly focused on entrepreneurship as a change agent, the academic discourse surrounding entrepreneurial education in Malaysia has expanded in both scope and depth. This research paper addresses that gap through a bibliometric analysis of published research on entrepreneurial education in Malaysia from 2012 to 2024. In entrepreneurial education context, bibliometric analysis can reveal how research interests have shifted over time, identify influential studies and contributors, and highlight emerging themes that may shape future inquiry.

The duration between 2012 and 2024 is particularly significant for this analysis. It encompasses a time of accelerated policy development, digital transformation, and global disruption. Since 2012, the Malaysian Ministry of Education (MOE) and the Ministry of Higher Education (MOHE) have implemented a variety of policies and programs designed to integrate entrepreneurship into both curricular and co-curricular activities. In this period, the Higher Education Entrepreneurship Development Policy (Dasar Pembangunan Keusahawanan Institusi Pendidikan Tinggi) was aimed at fostering an entrepreneurial culture among university students. This policy framework encouraged universities to establish entrepreneurship centers, offer entrepreneurship-focused courses, and engage students in experiential learning opportunities such as business simulations, start-up incubators, and industry collaborations. Besides, key national document such as the Malaysian Education Blueprint (2013–2025) which was developed in response to a growing need for Malaysia's education system to evolve in line with global standards and the country's own economic ambitions. It was driven by concerns over student performance, workforce readiness, and the need for 21st-century skills. Historically, the Malaysia Education Blueprint (2013-2025) was developed and introduced by Malaysia's Ministry of Education to reform and transform the national education system. It's a comprehensive plan that outlines key strategies, goals, and reforms across all levels of education from preschool to post-secondary with the aim of producing holistic, entrepreneurial, and globally competitive individuals. In line with that, the National Entrepreneurship Policy 2030 also emphasized the importance of embedding entrepreneurial competencies across all levels of education (Ministry of Entrepreneur Development and Cooperatives, 2019). Universities were encouraged to develop entrepreneurship centers, introduce startup incubators, and foster industry-academia collaboration, while secondary schools integrated

entrepreneurial thinking into curricular and co-curricular activities. These efforts not only reshaped educational practices but also stimulated scholarly inquiry into the effectiveness, challenges, and best practices of entrepreneurship education (Ministry of Higher Education, 2013).

Although research on entrepreneurial education in Malaysia has grown significantly in recent years, a comprehensive review of how this body of work has evolved over time is still missing. Much of the existing literature focuses on specific aspects such as program evaluations, individual case studies, teaching methods, or policy critiques. While these studies offer meaningful insights, they often present a fragmented picture in which limited by context, timeframe, or institutional scope. What's lacking is a broader, more integrated view of the field. A bibliometric approach helps fill this gap by offering a high-level perspective of research activity. It enables us to map publication trends, identify key contributors, and highlight underexplored areas. For researchers, educators, and policymakers, this kind of analysis is especially valuable in which it provides a clearer understanding of where the field has been, where it is now, and where it might be headed, allowing for more informed and strategic decision-making.

This research paper, therefore, aims to conduct a comprehensive bibliometric analysis of scholarly 43 total publications related to entrepreneurial education in Malaysia from 2012 to 2024. Using data sourced from reputable academic databases such as Scopus, the study will examine publication trends in term of year of publication, document by subject area, document by author, document by type, document by funding institution and co-authorship collaboration. The analysis will be supported by visualization tool using VOSviewer, a visualization tool that aids in mapping the bibliometric structure and collaborative networks within the research field (van Eck & Waltman, 2010).

The primary objectives of this study are:

- 1.To identify the growth route and publication patterns of research on entrepreneurial education in Malaysia over the twelve-year period.
- 2.To uncover key authors that have significantly contributed to the field.

Literature Review

Entrepreneurial education and Entrepreneurial education in Malaysia

Entrepreneurship is widely recognized as a key driver of economic growth and development (Carree et al., 2002). While early scholars argued that entrepreneurial qualities are innate and that individuals are “born, not made” entrepreneurs suggesting that educational institutions cannot teach enterprising behavior (Johannison, 1991) this perspective has gradually shifted. In general, people tend to view entrepreneurship as a career path fraught with uncertainty and risk, which often discourages them from pursuing it (Petridou et al., 2009). However, more recent research highlights the positive role of entrepreneurship education and training in fostering entrepreneurial attitudes and capabilities (Petridou & Glaveli, 2008). Entrepreneurial education refers to a structured and purposeful process of equipping individuals with the knowledge, skills, attitudes, and mindset necessary to recognize opportunities, take initiative, innovate, manage risk, and successfully launch and sustain business ventures (Fayolle and Gailly, 2008).

Previous studies by Drucker (1994) have shown that entrepreneurship is a discipline similar to any other discipline and therefore it can be learned. A person is neither born nor fated to be an entrepreneur. Researchers have expressed the belief that entrepreneurs can be created by way of effective education, training, and the nurturing process. Entrepreneurship education has been defined as a structured set of teachings aimed at equipping individuals with the knowledge and competencies required to initiate and manage business ventures (Bechard & Gregoire, 2005). It has the potential to stimulate entrepreneurial initiatives by cultivating a mindset oriented toward innovation, opportunity recognition, and calculated risk-taking (Petridou et al., 2009; Lubis, 2014). For instance, a study conducted among university students in China emphasized the importance of embedding entrepreneurship education within broader institutional frameworks, including curriculum reform, talent development systems, and performance evaluation standards (Zou, 2015).

In recent years, entrepreneurial education (EE) has gained significant global attention as a strategic tool for fostering innovation, promoting self-employment, and driving sustainable economic development. Recognizing its potential, many countries have begun integrating EE across all levels of education from primary schools to universities, making it a key component of national education strategies. This global trend has been mirrored in Malaysia, where EE has evolved in line with broader national goals aimed at cultivating a resilient, innovation-driven economy and preparing future generations to become job creators rather than job seekers. A growing body of literature has explored the impact of EE on students' cognitive, behavioral, and emotional development, with findings generally affirming its positive influence in shaping entrepreneurial mindsets and skills. In the Malaysian context, recent studies have delved into various dimensions of EE implementation, revealing both notable progress and areas that still require attention, such as curriculum design, experiential learning opportunities, and institutional support. While the benefits of EE are widely acknowledged, both globally and within Malaysia, scholars emphasize the importance of tailoring these educational approaches to local contexts to enhance their relevance, accessibility, and long-term effectiveness. (Sulaiman et al., 2024).

The primary objective of entrepreneurship education in Malaysia's public institutions of higher learning is to produce not only entrepreneurial-minded graduates but also successful graduate entrepreneurs. This educational approach is grounded in the belief that entrepreneurial skills and mindsets can be cultivated through structured learning and experiential exposure. Continuous involvement in entrepreneurship-related activities is seen as a key factor in increasing students' willingness and readiness to pursue entrepreneurial ventures. While acquiring entrepreneurial knowledge and experience through formal education is essential, other factors such as family background, personal experiences, and the broader external environment also significantly influence students' entrepreneurial intentions. For instance, individuals who come from families with business backgrounds are generally more inclined to engage in entrepreneurial activities compared to those without such exposure (Dahlan, Hakim, & Azwin, 2010). Reinforcing these educational efforts, the Malaysian government introduced the National Entrepreneurship Policy (NEP) in July 2019, aiming to cultivate a robust entrepreneurial culture throughout society. The policy emphasizes the development of a competitive entrepreneurial ecosystem aligned with the demands of the global economy and Industrial Revolution 4.0. Ultimately, the NEP aspires to position Malaysia as a leading entrepreneurial nation by the year 2030. (New Straits Times, 11 July 2019).

Methods

This study utilized bibliometric analysis to examine scholarly publications on entrepreneurial education in Malaysia from year 2012 to 2024. The data were collected using Google Scholar, with the keywords of “Entrepreneurial Education” and “Malaysia” serving as the primary search terms. As suggested by Donthu et al. (2021), bibliometric analysis is a robust and systematic method for analysing large datasets, enabling researchers to explore the development of a research field and identify emerging themes within it.

The retrieved records were exported in CSV format and systematically categorized according to publication year, source, author, and document type. To further enhance the analysis, VOSviewer software was employed to build and visualize bibliometric networks. This tool facilitated the identification of patterns and connections in the literature, including co-authorship, citation linkages, and keyword co-occurrences. The results of the bibliometric analysis are discussed in detail in the following section, providing insights into the intellectual and collaborative structure of entrepreneurial education research in the Malaysian context.

Result and Discussion

Document by Year

The line graph below (Figure 1) illustrates the annual publication trend for scholarly documents related to entrepreneurial education in Malaysia over the period from 2012 to 2024. Between 2012 and 2016, the volume of research output remained minimal, with only a single publication in 2012 and none recorded from 2013 to 2016. This period may reflect the growing stage of scholarly interest in entrepreneurial education within the Malaysian context. Several factors could explain this initial gap. Initially, according to Ren et al., (2024), the incorporation of entrepreneurship into higher education curricula was still in its early stages of development., with policies such as the Higher Education Entrepreneurship Development Policy (HEEDP) and the Malaysian Education Blueprint (2013–2025) in their formative stages of implementation. These policies, although forward-looking, may not have yet produced immediate research outcomes, as educational institutions were likely still in the process of adapting their curricula, establishing entrepreneurship centres, and developing relevant teaching capacities. Moreover, between 2012 and 2016, Malaysia's educational reforms, as outlined in the Malaysia Education Blueprint 2013–2025, emphasized enhancing basic literacy, strengthening coincided with a broader national focus on other educational reforms, such as improving basic literacy, STEM education, and digital transformation in teaching and learning (Ministry of Education Malaysia, 2015). As a result, entrepreneurship may not have been positioned as a research priority at that time, even though it was beginning to gain policy recognition.

A significant expansion in publications is evident in 2017, where output rose sharply to 8 documents, marking the first major growth point. This surge likely coincides with increased government initiatives promoting entrepreneurship and innovation, such as Malaysia's National Entrepreneurship Policy 2030 (NEP 2030) and educational reforms emphasizing entrepreneurial competencies. The following years show fluctuating output, with 4 documents in 2018 and a rebound to 7 in 2019. However, output inclined again in 2020 with 3 published documents, possibly reflecting the disruption caused by the COVID-19 pandemic, which affected research productivity globally. In 2021, publication levels dropped to 2 documents,

indicating a temporary research slowdown. However, the field recovered in 2023, which marks the highest recorded number of 11 documents. This peak may indicate the maturing of entrepreneurial education as a recognized field in Malaysia, boosted by strategic emphasis from educational institutions and policymakers.

The slight decline in 2024 with 4 published documents. This figure provides compelling evidence of the evolving research landscape in entrepreneurial education in Malaysia. After a slow start, the field has gained substantial momentum, especially in the recent years. The observed growth not only highlights the increased scholarly attention but also aligns with national educational and economic objectives aimed at fostering innovation and self-employment among Malaysians.

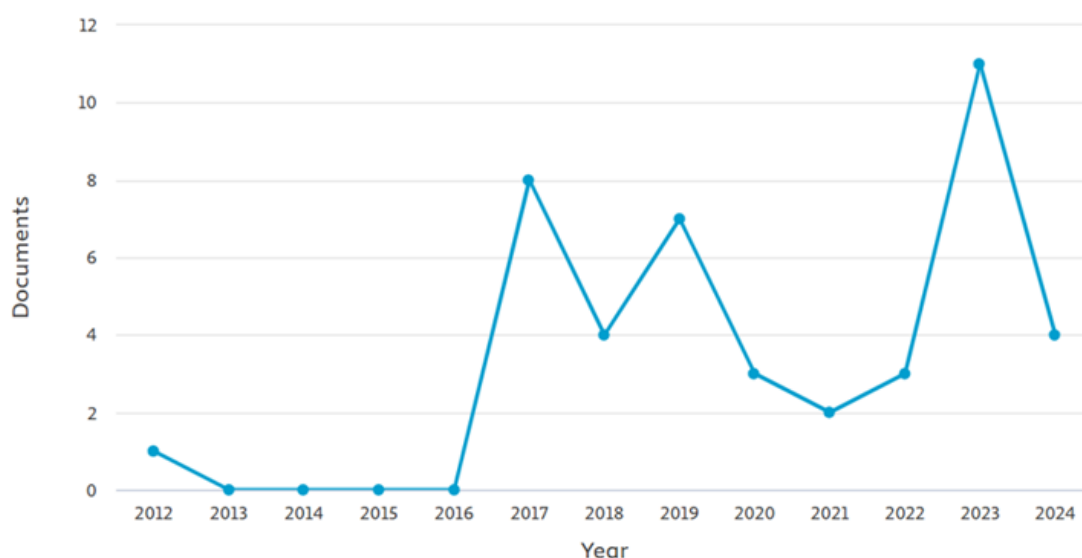


Figure 1: Number of Document Published by Year

Document by Subject Area

The analysis of publication sources for research on entrepreneurial education in Malaysia (refer to Figure 2) reveals a diverse disciplinary engagement, reflecting the interdisciplinary nature of entrepreneurship as both an academic and practical field. The distribution of documents by sources, as illustrated in the chart (refer to Figure 2), offers valuable insight into the academic domains that have most actively contributed to this area of study from 2012 to 2024 encompassing a total of 43 documents.

The Social Sciences account for the largest proportion of publications at 24.7%, indicating that research on entrepreneurial education in Malaysia is predominantly framed within sociocultural, educational, and policy-related contexts. This dominance suggests a strong academic interest in understanding how entrepreneurial mindsets and skills are cultivated within societal structures, educational systems, and community settings. In addition, Business, Management, and Accounting represents 23.6% of the total documents. This reflects the practical orientation of entrepreneurship education, which often emphasizes business planning, innovation, and managerial competencies. The strong representation of this domain highlights

the relevance of entrepreneurial education in addressing Malaysia's broader economic and workforce development objectives.

The Economics, Econometrics, and Finance category contributes 14.6%, signifying a considerable body of work examining the macroeconomic impacts of entrepreneurship education, policy analysis, and the role of education in driving economic growth. Research within this domain often intersects with national initiatives such as the National Entrepreneurship Policy 2030, aiming to strengthen Malaysia's entrepreneurial ecosystem. Fields such as Computer Science (11.2%) and Engineering (10.1%) also demonstrate significant contributions, pointing to the increasing integration of entrepreneurship within science, technology, and innovation (STI) curriculum. This reflects national educational trends promoting technopreneurship and the development of Industry 4.0-aligned competencies, which are increasingly embedded in Malaysian higher education institutions.

Moreover, fields like Arts and Humanities (4.5%) and Environmental Science (4.5%) also contribute to the growing body of research on entrepreneurial education. This reflects how entrepreneurship is no longer confined to just business or economics—it's finding relevance in areas such as the creative industries and sustainability. The presence of these disciplines' points to an emerging interest in social entrepreneurship, green entrepreneurship, and how cultural and environmental contexts influence entrepreneurial thinking and behavior. It shows that the entrepreneurial mindset is becoming increasingly valued across diverse sectors, not just for economic gains, but also for driving meaningful social and environmental change. Other represented fields such as Mathematics (3.4%), Energy (2.2%), and Biochemistry, Genetics and Biotechnology (1.1%) indicate that while entrepreneurial education is primarily concentrated in the social sciences and business domains, its reach is gradually extending into technical and scientific disciplines.

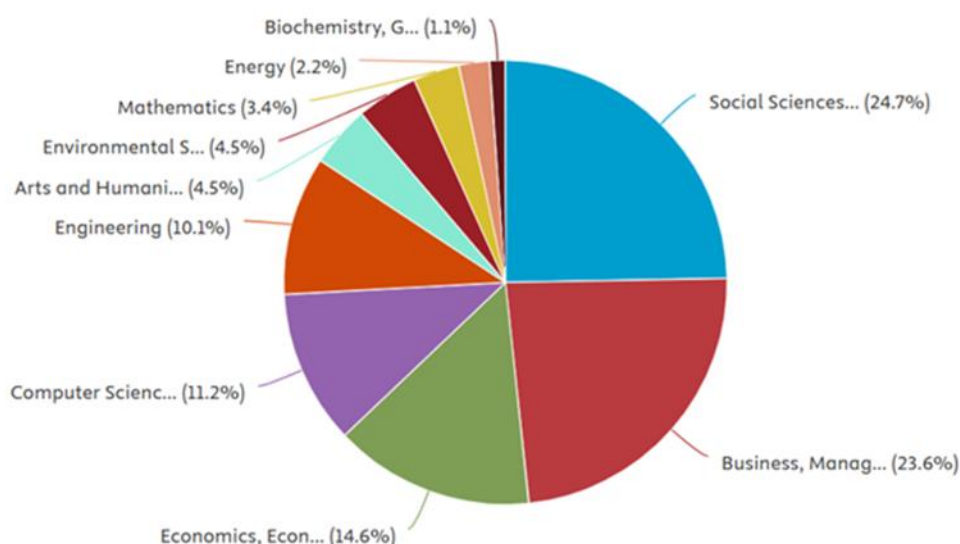


Figure 2: Document by Subject Area of Entrepreneurial Education in Malaysia

Document by Author

The analysis of authorship in Figure 3 reveals that Mamun, A.A. is the most active contributor to research publications on entrepreneurial education in Malaysia, with a total of 4 publications. Following closely is Nawī, N.B.C. who has authored 3 documents, while Othman, N., Said, N.M., Shamsudin, S.F.F.B. and Zulkiffli, W.F.W. each contributed 2 documents. Other notable contributors, including Abd Wahid, N.H.B., Abdul, M., Abdullahi, I.M. and Ahmad, A.M. have each produced one publication in this field.

This distribution of authorship highlights a relatively concentrated group of researchers actively engaged in advancing entrepreneurial education studies within the Malaysian context. Their works contribute significantly to the development of localized insights and best practices, especially as Malaysia seeks to strengthen its entrepreneurial ecosystem through educational reform and policy initiatives.

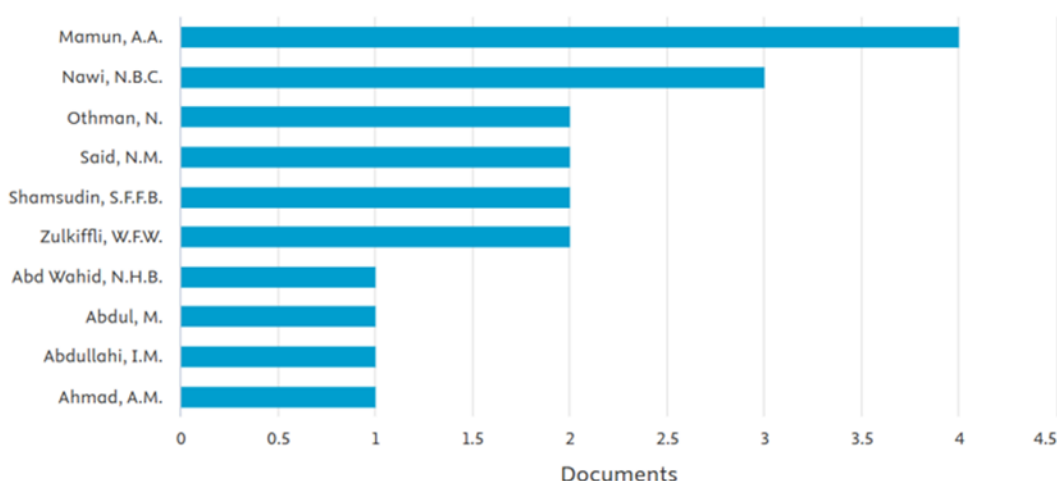


Figure 3: Documents by Author of Entrepreneurial Education in Malaysia

Document by Type

Figure 4 explains the distribution of document types related to entrepreneurial education in Malaysia. It reveals that journal articles dominate the academic landscape, accounting for 72.1% of the total publications. Conference papers make up 18.6% of the published documents, highlighting the role of academic conferences in facilitating early-stage research sharing, scholarly discussions, and networking among researchers in this field. Meanwhile, book chapters represent 9.3% of the total output, indicating a smaller yet meaningful contribution, often used to present in-depth theoretical insights or case studies within broader edited volumes.

Overall, the predominance of journal articles reflects the maturity and scholarly focus of research on entrepreneurial education in Malaysia, while the presence of other formats illustrates the diversity of academic communication and knowledge dissemination.

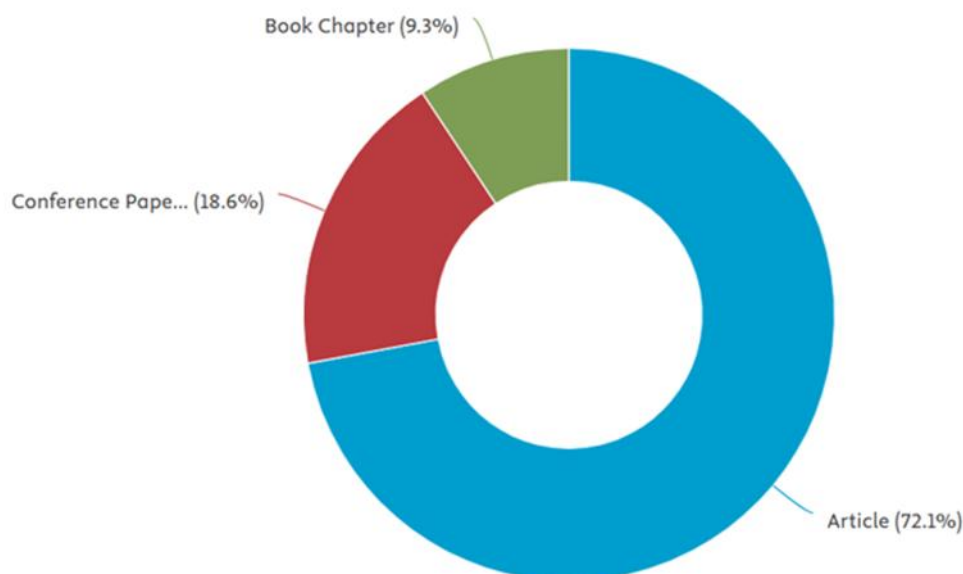


Figure 4: Documents by Author of Entrepreneurial Education in Malaysia

Document by Funding Sponsor

Figure 5 shows the number of research publications related to entrepreneurial education in Malaysia that are linked to different funding sponsors. There are eight top sponsors listed, highlighting the key organizations that fund such studies. From the finding, the Ministry of Higher Education, Malaysia, stands out as the primary contributor, having funded the highest number of documents (4 published documents). This indicates a strong commitment at the national level to promote and support entrepreneurial education through research initiatives. Among public higher education institutions, Universiti Teknologi MARA (UiTM) and Universiti Kebangsaan Malaysia (UKM) are notably active, with 3 and 2 published documents funded respectively, reflecting their leadership in fostering academic development in this field.

Other Malaysian universities, including Universiti Malaysia Kelantan (UMK), Universiti Utara Malaysia (UUM), and Universiti Teknikal Malaysia Melaka (UTeM), have each contributed to 1 document, suggesting growing participation and awareness of entrepreneurial education across various institutions. The inclusion of the National Science Foundation, an international funding body, signifies some level of global academic interest in Malaysia's entrepreneurial education landscape.

Overall, the diagram suggests that entrepreneurial education is a national priority in Malaysia, with significant backing from government and higher education institutions. While a few universities lead the way, there is a broader institutional engagement that supports the country's vision of building a more innovative and entrepreneurial economy. The presence of international collaboration also hints at the potential for expanding global partnerships in the future.

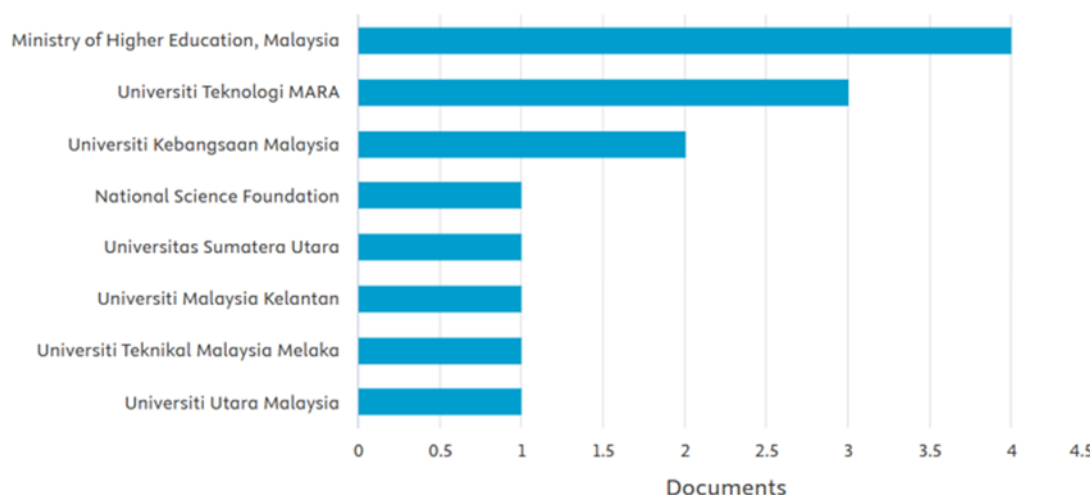


Figure 5: Documents by Funding Sponsor

Bibliometric analysis of the Co-authorship

The VOSviewer diagram (refer to Figure 6) illustrates the co-authorship network within the scope of entrepreneurial education research in Malaysia between 2012 and 2024. This visualization captures collaboration patterns among researchers, offering insights into how knowledge production is structured within this field of study. The nodes in the diagram represent individual researchers, while the connecting lines indicate co-authorship relationships. The size of each node reflects the author's publication frequency or prominence within the network, and the thickness of the connecting lines denotes the strength of co-authorship ties—that is, how frequently two authors have collaborated.

From the diagram, it is evident that Nawī, Noorshella Binti Che and Mamun, Abdullah al are the central and influential figure, represented by a relatively large node and multiple connections. This indicates that they are highly active contributors to the field of entrepreneurial education in Malaysia with a total link strength of 5 respectively (refer to Table 1). Based on figure 6, Nawī, Noorshella Binti Che collaborates extensively with other researchers, including Shamsudin, Siti Farhah Fazira and Mamun, Abdullah Al. Among her collaborators, Shamsudin, Siti Farhah Fazira stands out as a primary partner. Similarly, Shamsudin, Siti Farhah Fazira and Mamun, Abdullah Al are also shown as active participants in the network, though their collaborative ties are somewhat fewer and thinner. This may imply more specialized or selective partnerships.

In addition, the diagram illustrates a moderately connected research network, with several distinct clusters representing active collaboration among researchers in the field of entrepreneurial education in Malaysia. These clusters likely correspond to specific thematic research groups. The strong connection between Nawī, Noorshella Binti Che and Shamsudin, Siti Farhah Fazira suggests a shared research focus or frequent co-authorship, possibly within the same institution or under joint funding. In comparison, Mamun, Abdullah Al maintains weaker but still meaningful links to these authors, which may reflect interdisciplinary research interests or a focus on a niche area within the broader field.

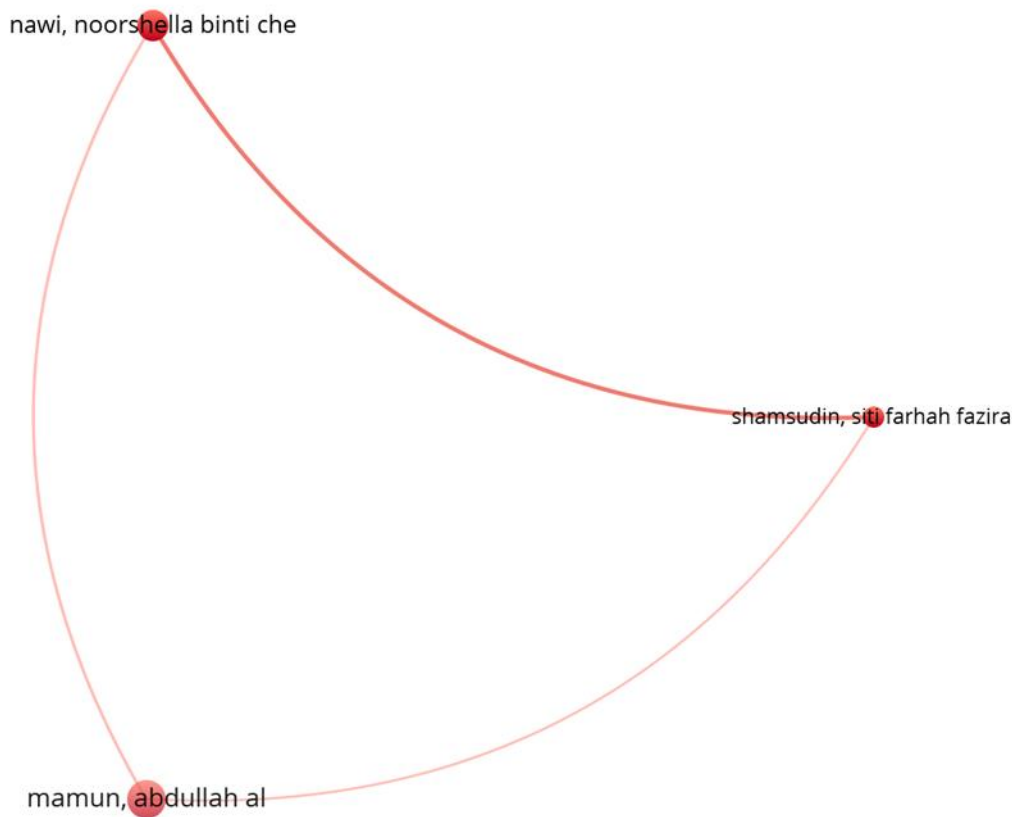


Figure 6: Co-authorship Analysis.

Table 1: Top Authors in Entrepreneurial Education Research in Malaysia Based on Publications, Citations, and Collaboration Strength

Author	Documents	Citations	Total Link Strength
mamun, abdullah al	4	89	5
nawi, noorshella binti che	3	63	5
shamsudin, siti farhah fazira binti	2	58	4
said, nadzirah mohd	2	4	2
zulkiffli, wan farha wan	2	4	2
othman, norasmah	2	12	0

Conclusion and Future Research

This study has explored the evolution pictures of entrepreneurial education study in Malaysia through a bibliometric lens from 2012 to 2024. The findings reveal a steady and encouraging growth in academic output, particularly after 2017, impact from the positive influence of national policies and institutional efforts that have emphasized the importance of entrepreneurship as a critical component of education. The prominence of publications within the social sciences and business domains shows that entrepreneurship is being viewed not just as a business endeavor, but as a broader societal and educational movement. The analysis also highlights the important role played by a small group of highly active authors such as Mamun, Abdullah Al and Nawi, Noorshella Binti Che who have helped shape the research landscape

through consistent publishing and collaboration. The co-authorship network analysis reveals that while there is a moderate level of collaboration across institutions, there is still an opportunity to foster stronger and more interconnected research communities especially in this field. The involvement of various universities and support from key funding bodies, especially the Ministry of Higher Education, further underscores the national commitment to developing an entrepreneurial culture through education. Altogether, the findings portray a research environment that is gradually maturing while aligning with Malaysia's broader vision of becoming a high-income, innovation-driven nation. This study not only presents the progress of scholarly work in this area but also lays the groundwork for more targeted and strategic efforts to enhance entrepreneurial education in the years to come.

Acknowledgement

This research is funded by Geran Dalaman Dana Universiti Teknologi MARA Cawangan Kelantan 2022 File No:600-TNCPI 5/3/DDN (03) (007/2022).

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