

GLOBAL RESEARCH TRENDS IN TVET AND ENTREPRENEURSHIP EDUCATION WITHIN PONDOK EDUCATION: A BIBLIOMETRIC ANALYSIS

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Abstract: *Pondok learning institutions have played a key role in preserving the Nusantara intellectual legacy for centuries. However, the emergence of the Fourth Industrial Revolution (IR 4.0) requires an urgent review of their traditional curricula to maintain graduates' competitiveness in today's working environment. This study aims to systematically map the integration of Technical and Vocational Education and Training (TVET) and entrepreneurial education to instill the values in pondok education to enhance graduates' employability in the era of the Fourth Industrial Revolution (IR 4.0) through Knowledge, Skills, and Attitudes (KSA) Theory. A Systematic Literature Review (SLR) method and bibliometric analysis based on PRISMA 2020 for 15 articles from Scopus AI and Semantic Scholar AI from the period 2021–2025, with the assistance of Harzing's Publish or Perish and VOSviewer. Current existing literature remains fragmented, conceptually emphasizing entrepreneurship without structured TVET integration in Pondok institutions. Furthermore, a predominance of qualitative methods indicates that research in this area is still in the exploratory and investigative stages. Nevertheless, results demonstrate that entrepreneurship education significantly bolsters the sustainability of Pondok institutions and enhances students' economic capabilities. This research extends the Knowledge, Skills, and Attitude theory by integrating Tauhidic perspectives, providing a strategic research map for policymakers and Pondok administration. Additionally, the study aligned with the United Nations Sustainable Development Goals (SDGs) by promoting quality education and economic growth. Despite limitations in secondary data and a small number of articles, this study highlights the need for future empirical research to develop a contextual Pondok TVET–entrepreneurship model.*

Keywords: *Bibliometric, entrepreneurship, Pondok education, Sustainable Development Goals, TVET*

Introduction

Islamic education constitutes an essential part of the national education system in majority Muslim countries such as Malaysia and Indonesia, and an equally important cultural pillar for minority Muslims in areas such as Southern Thailand (Tayeb,2024). At the core of this traditional educational system lies the *pondok* school, which is described as the first traditional form of Islamic education introduced in the Malay Archipelago (Abidin,2023). The term "*pondok*" is derived from Arabic "al-Funduk" (a dormitory or hotel) and from the local Malay term describing a wooden hut (Bakar,1992). Traditionally, these schools constitute Islamic residential schools in which pupils stay in small huts surrounding a master teacher referred to as "Tok Guru," Kyai, or Ulama (Thukiman,2002). In the case of Malaysia, the history of *pondok* schooling can be traced back to Melaka, dating around 1450 (Azra,2004).

For many years, *pondok* learning institutions have continued to play a key role in preserving the Nusantara intellectual legacy (Abidin,2023). The education systems within *pondok* are described as being student-oriented and built around an individual teacher referred to as the "*alim*", whose expertise lies in certain disciplines within the Islamic teachings (Thukiman,2002). *Pondok* learners are required to spend their time studying ancient books called "*kitab turath*" or "*kitab kuning*", using practices such as *talaqqi*, *halaqah*, and memorization (Deraman & Osman,2000). In addition to imparting knowledge, *pondok* education acts as a guide to moulding morally upright people.

Even though they have a long history, *pondok* systems have been under pressure since colonial times and the advent of modern education systems (Abidin et. al,2023). Their paths have varied accordingly. In Indonesia, due to the relatively decentralized public discussion, *pondok*, called *pesantren* locally, has managed to survive and thrive through incorporating modern lessons and civic education into its curriculum and teaching practices (Tayeb,2024). On the other hand, in Malaysia, a relatively centralized Islamic sector has often forced traditional *pondok* to fight against obsolescence. Their rigid structures have made it difficult for them to compete on an even footing with modern educational institutions. These *pondok* institutions are considered backward in relation to modernization because of the use of traditional approaches inherited over many years of teaching by religious scholars (Ismail et al., 2014; Rahim, 2010). This issue is compounded by the challenge of accreditation because the lack of certification of their educational credentials hinders their ability to advance their education in universities, thus limiting their options in their fields of specialization (Ishak et.al, 2019).

With the emergence of the Fourth Industrial Revolution (IR 4.0), there is an urgent need to revisit these traditional curricula so that the graduates can maintain their competitiveness within the contemporary working environment (Ishak et. al,2019). In light of the above situation, it is imperative to adopt a strategy of combining TVET and EE as part of the process aimed at enhancing the sustainability of the institutions. Even though the Malaysian students of TVET programs have high levels of entrepreneurial intentions, they rarely get an opportunity to put these into practice due to a lack of practical exposure. Besides, such integration will be in line with the current priorities, including the National Entrepreneurship Policy 2030 (DKN 2030), PISH, and the Madani Economy (Ministry of Finance,2023).

Whereas current empirical studies have been devoted to the study of contemporary elements and technological aspects like those seen in the study of Madrasah Muhammadiyah (Pondok Sungai Durian) in Kelantan, the overall scientific literature remains conceptually fragmented. Prior studies have mostly involved either specific cases or qualitative studies about specific

institutions. There is a lack of any quantitative efforts to map out the global intellectual landscape and thematic changes concerning research in this niche field of convergence between religion and vocational education. The absence of a "big picture" view means that researchers will find it challenging to establish a theoretical foundation as well as identify thematic trends such as entrepreneurship in religious schools.

Literature Review

Underpinning Theory: Knowledge, Skills, and Attitudes (KSA)

The basic theory in this study is used in the Theory of Knowledge, Skills, and Attitudes (KSA) to emphasize the importance of the holistic growth of individuals in terms of cognition, psychomotor abilities, and affective attributes. According to Lussier (2019), the Theory of Knowledge, Skills, and Attitudes (KSA) can be used in the theoretical paradigm to help students enhance technical expertise in adhering to professional ethics in Education and Training (Al-Attas, 1980; Salleh, 2011).

The Evolution and Sustainability of *Pondok* Institutions

Pondok education became popular in the early periods of the twentieth century, especially in states like Kelantan, Terengganu, and Kedah. *Pondok* became known as the main place where Islamic knowledge was taught in the Malay Archipelago (Kasim & Othman, 2025; Othman, 1998). However, in the present times, the *pondok* schools cannot be said to fit into the mainstream of education systems, which creates several challenges in terms of curriculum requirements and graduation from the *pondok* educational system. The current sustainability of these institutions revolves around reconciling the knowledge gained from revelation (*naqli*) and reason (*aqli*), which aims at blending divine revelation with scientific findings (Ibrahim, 2017; Surajudeen, 2019).

Synergy of TVET and Entrepreneurship in Religious Education

For *pondok* graduates to survive in the modern economic world, a paradigm shift is needed from focusing solely on *ukhrawi* to incorporating elements of *duniawi* as well (Ishak et al., 2019). In *pesantren*, educational emphasis is placed more on religious and moral teachings while lacking soft and hard skills development (Badruzaman, 2019). The consequence of this educational system is that *pesantren* graduates will have low competitiveness compared to other graduates when facing challenges in the job market. In addition, due to the rise of competition in modern society characterized by technological advancements, many graduates face problems like unemployment or even choose not to look for jobs (Hasim & Ramly, 2021).

In order to solve such a problem, entrepreneurship can be considered as a way that could improve the skill set of *pesantren* graduates. According to Hafidh and Badrudin (2019), entrepreneurship is very compatible with *pesantren*, considering its scientific nature, particularly because *pesantren* is located mostly in rural areas where people can run independent agribusinesses. Moreover, according to Suliswiyadi et al. (2018), the relationship between entrepreneurship and religion in the Islamic context is that both concepts are different but related to each other as they originate from good intentions toward Allah's commandment. Apart from that, it is becoming evident that vocational education is necessary for making up for the discrepancy between the potentialities of human resources and the requirements of the global labor market, as well as being consistent with national developmental objectives (Karim & Mustapha, 2022; Zulmuqim et al., 2020). Within the Southeast Asian context, the role of technical and vocational education and training (TVET) in attaining sustainable developmental

goals and promoting regional competitiveness is emphasized (Abdul Rahim et al., 2022; Abdul Razak et al., 2022; Hasif et al., 2024).

In spite of the great importance of vocational education, the connection between vocational training and the conventional Islamic schools continues to be an understudied topic. Thus, there is an evident shortage of empirical knowledge regarding the incorporation of vocational education and skills training in traditional Islamic schools within the context of various countries and changes in this process since the 1970s, when TVET systems began emerging in this part of the world (Dahalan & Silva, 2020; Sunhaji, 2017). This study has been analyzed through the support of five studies, namely Fauziah et al. (2024), Xu et al. (2021), Dahalan & Silva (2020), Sunhaji (2017), and COMCEC (2018), in stating that there are limited studies on the role of traditional educational institutions in the development of vocational education. For example, *pesantren*, *pondok*, and *madrasah*.

Research Objectives

This study attempts to bridge this gap through an SLR and a bibliometric analysis of pondok education literature. These techniques employ the aid of software like VOSviewer and Biblioshiny to examine data collected from reliable sources such as the Scopus database. This technique seeks to discover research trends, prominent researchers, and possible theoretical orientations in the field. Through the creation of a research map, this will assist in orienting the *pondok* towards national objectives through globalization. The main aim of this paper is to conduct an analysis of scholarly work on TVET and Entrepreneurship in a *pondok* setting through bibliometric techniques. In particular, this study aims to:

- i. Analyze the temporal evolution of publications and identify influential sources and authors.
- ii. Map the collaboration networks among countries and institutions.
- iii. Uncover the conceptual structure and thematic clusters using keyword co-occurrence analysis.

Methods

According to Kraus et al. (2020), it was stated that a Systematic Literature Review (SLR) is an analysis conducted systematically to review current literature in a particular field of study. In this context, SLR intends to extract valuable information regarding TVET and entrepreneurship education within the scope of Malaysian *Pondok* Education. Through systematic protocols, SLR ensures that there are certain criteria to consider during data searching, such as selecting appropriate databases, generating search strings, and determining inclusion or exclusion criteria, among others (Pittaway et al., 2014).

Database Resources

The databases that contain articles written by researchers are considered the first sources for the publication of metadata and bibliometric measures. Reliable and exhaustive databases are important prerequisites for the development of further research. In the selection of data resources, researchers need to consider the search not just at the level of articles but also use extensive databases of journals to achieve thoroughness (Bakhmat et al., 2022; Bramer et al., 2017; Prancutè, 2021). According to Bakhmat et al. (2022), data collection can be effective on platforms such as Google Scholar, Scopus, and Web of Science. Moreover, the involvement of Artificial Intelligence (AI) technologies in the research methodology opens up new prospects for studying various phenomena. Artificial Intelligence tools allow researchers to quickly and effectively find literature sources, thus saving time and money spent on the procurement of

bibliographic references. Using platforms such as Perplexity AI, Scopus, SciSpace, and Semantic Scholar allows researchers to easily retrieve necessary metadata and article information (Blaizot et al., 2022; Thakuri et al., 2024).

Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA)

These Systematic literature reviews (SLR) are guided by the 'Preferred Reporting Items for Systematic Reviews and Meta-Analysis' (PRISMA) to ensure quality and systematic data sourcing. PRISMA assists in reviewing the criteria for reporting literature data sources to improve the quality of data reviews by identifying, selecting, evaluating, and summarizing studies. PRISMA was first released in 2009; the updated PRISMA 2020 framework helps researchers present their literature reviews and meta-analyses more effectively. Integrating Artificial Intelligence (AI) into the Systematic Literature Review (SLR) through PRISMA presents a significant opportunity to filter article sources more efficiently and reliably for research synthesis (Dakhli et al., 2024; Moher et al., 2010).

Identification and Inspection

The process of identifying keywords, synonyms, and terms needs to be relevant to the research topic. Researchers need to develop basic keywords through a review of previous literature, database suggestions, online synonym sources, and expert recommendations. This can form an effective search string for a search of relevant literature (Brignardello et al., 2025; Julia H. Littell, 2008; Mohamed Shaffril et al., 2021). This study examines the integration of TVET and entrepreneurship in *pondok* education in Malaysia using the following search string:

TITLE-ABS-KEY ("TVET" OR "technical vocational education" OR "vocational training" OR "skills development") AND ("entrepreneurship" OR "business" OR "start-up" OR "enterprise") AND ("*Pondok*" OR "Islamic school" OR "madrasah" OR "traditional education") AND ("Malaysia" OR "Malaysian" OR "Southeast Asia" OR "ASEAN"). Therefore, the search results using the Semantic Scholar and Scopus platforms found a total of 198 reference sources. The researcher has classified the articles obtained through quantitative, qualitative, conceptual studies, and literature reviews.

Extraction, Synthesis, and Qualification

The researcher conducted a screening process carefully by removing 15 duplicate articles and excluding 137 records based on the established criteria, resulting in 61 sources for initial screening. The researcher also identified the selection of 15 final articles that met the eligibility and relevance criteria to be included in the systematic literature study. The researcher carried out a thorough screening of sources from Scopus and Semantic Scholar to ensure the quality of the study could be enhanced, as presented in Figure 1.

In the final selection process, the researcher carried out data extraction through abstract examination and in-depth analysis of the full articles according to the appropriate themes. The researcher conducted qualitative content analysis in determining themes related to teaching assessment in TVET and entrepreneurship in the context of *pondok* education in Malaysia. This study can also support a more systematic synthesis of literature review highlights and bibliometric analysis.

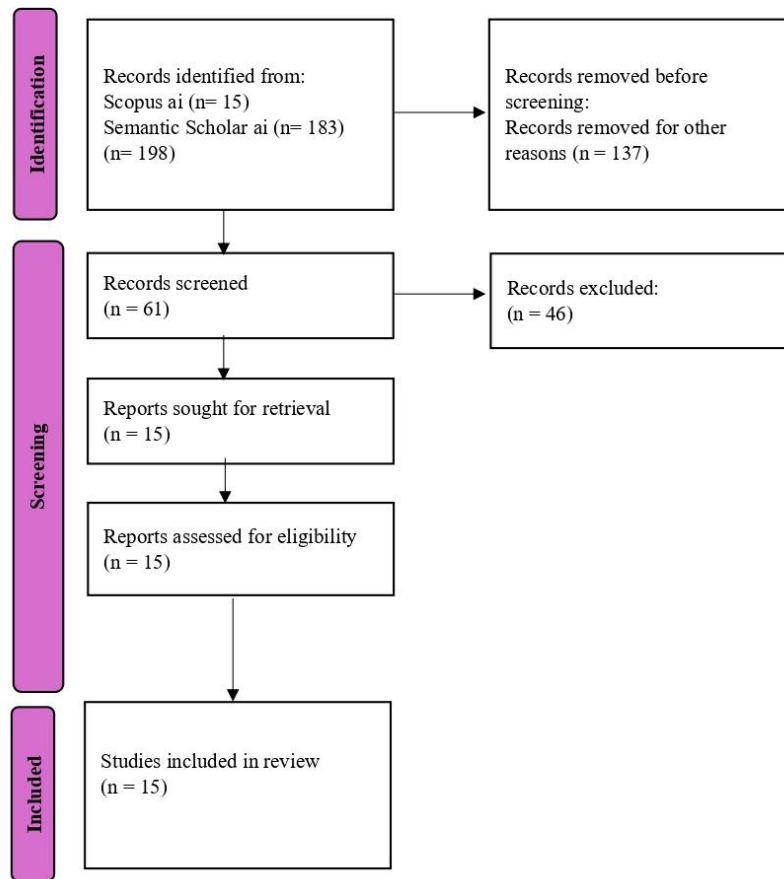


Figure 1: Information Flow Through Different Phases of Systematic Research

Source: Page et al. (2021).

Results

The literature sources analyzed in this review span the timeframe from 2021 to 2025. This timeframe was selected to ensure the inclusion of contemporary research, following the PRISMA screening methodology (Page et al., 2021). A total of 15 data sources were reviewed, focusing on several dimensions of issues and challenges faced by previous researchers associated with teaching values in TVET and Entrepreneurship in *Pondok* Education in Malaysia. Furthermore, the discussion addresses research gaps, the theories utilized in previous studies, and the thematic dimensions of the research landscape. This systematic review aims to provide a comprehensive foundation for future researchers. Accordingly, Table 1 summarizes the key characteristics identified in the literature review.

Table 1: Characteristics in Literature Review Discussions.

Author (Year)	Title	Dimension	Method	Key Findings	Research Gaps
Hong, Ch'ng et al. (2023)	Analytic hierarchy process: A case study of students' tendency in enrolling TVET programme	TVET	Quantitative	Students' inclination towards TVET identified gradually	Lack of integration between socio-cultural, religious, and entrepreneurial factors
Hong, Ch'ng et al. (2023)	Predicting Students' Inclination to TVET Enrolment Using Various Classifiers	TVET	Quantitative	High-performance predictive model for TVET trends	Lack of explanation on policy implications & curriculum integration

Ibrahim et al. (2025)	Enabling Information Technology in Designing the TVET Model for TVET Education Program	TVET	Conceptual Review	IT enhances the effectiveness of the TVET model design	No empirical testing on student outcomes
Lopez et al. (2021)	Design framework based on TEC21 educational model and Education 4.0 implemented in a Capstone Project: A case study of an electric vehicle suspension system	Education	Qualitative	The TEC21 model supports complex project-based learning	Less focus on the context of TVET & developing countries
Mack et al. (2021)	The benefits of exposing post-secondary students to entrepreneurship training in Trinidad and Tobago	Entrepreneurship	Quantitative	Entrepreneurship Training enhances intentions and skills	Does not assess students with special needs
Mishra and Althal (2023)	Modern multidisciplinary education: Challenges and opportunities of modern learning pedagogy	Education	Conceptual Review	A multidisciplinary approach is important for the future of education	Lack of practical applications in TVET
Nashihin et al. (2025)	Empowering creativity of disabled students through sustainable agropreneur education at Ainul Yakin Islamic boarding school in Yogyakarta to support the SDGs	Entrepreneurship	Qualitative	Agropreneur education enhances the creativity of people with disabilities	Small scale, less generalization
Nijhoff (2021)	Refugees starting a business: experiences of barriers and needs in the Netherlands	Entrepreneurship	Qualitative	Structural barriers and support identified	Less connection with the formal education system
O'Brien and Cooney (2025)	Enhancing inclusive entrepreneurial activity through community engagement led by higher education institutions	Entrepreneurship	Qualitative	HEI plays an important role as a community catalyst	Lack of quantitative evidence of effectiveness
Ramadani et al. (2023)	Business strategy in Islamic boarding school: A case study of Pesantren Hidayatullah Depok Indonesia	Entrepreneurship	Qualitative	Business strategies strengthen the sustainability of pesantren	Less focused on the development of students' skills
Seman et al. (2024)	Enhancing TVET Education in Malaysia Via HETVET@UiTM Framework	TVET	Conceptual	The HETVET model enhances HEI-TVET collaboration	Lack of long-term outcome measurement
Sutarsih (2023)	Literacy and Inclusion: Sharia Finance as a Foundation for UMKM Welfare: Business Education on Access to Sharia Finance for Santri UMKM in Yogyakarta	Education	Qualitative	Sharia financial literacy improves the well-being of UMKM	Lack of quantitative impact assessment
Thoha (2024)	Visionary leadership and dynamic capabilities: Transforming pesantren into a social enterprise	Education	Conceptual Review	Visionary leadership drives social transformation	No integration of TVET or technology
Tohiroh et al. (2021)	Skills, Interests, and Talents Education to Improve the Economic Prosperity of the Nation's Generation at Baitul Quro Islamic Boarding School	Education	Qualitative	Improving skills supports the santri economy	Lack of structured models & scalability
Yudianto et al. (2023)	Enhancing E-Marketing Competence of Islamic Boarding School Students: A Case Study of Al Muin Syarif Hidayatullah	Entrepreneurship	Qualitative	The students' e-marketing competence has increased significantly	Less related to the formal TVET framework

This discussion identifies the dimensions and methodologies employed by previous researchers in studies related to teaching values within TVET and Entrepreneurship in *Pondok* Education in Malaysia. Consequently, a statistical analysis of these research dimensions was conducted by previous researchers. Table 2 illustrates the various study dimensions identified by previous researchers.

Table 2: Dimensions of Studies Conducted by Previous Researchers.

Dimension	Number of Dimensions
TVET	4
Entrepreneurship	6
Education	5

Source: Page et al. (2021).

As illustrated in Table 2, the dimension of entrepreneurial values in *Pondok* Education is the most prominent theme in existing literature. This prevalence is attributed to the fact that entrepreneurial values in Islamic education demonstrate a positive relationship in successfully bridging TVET and education. According to Ramadini et al. (2023), prioritizing the quality of human resources by improving students' "mindsets and skillsets" through business units like agribusiness and trading drives this vocational competence. Therefore, this study will also conduct a statistical analysis on the research methods developed by previous researchers.

Table 3: Dimensions of Research Methods Developed by Previous Researchers.

Method Used	Number of Methods Used
Quantitative	3
Qualitative	8
Conceptual Review	4
Total	15

Bibliometric Analysis

In the results and discussion section, findings from the bibliometric review method are presented to explain secondary data sourced from Scopus AI and Semantic Scholar AI platforms. This bibliometric analysis will be presented using tables, data analysis, and graphical forms. The examination focuses specifically on the intersection of the keywords "TVET and Entrepreneurship in *Pondok* Education." Therefore, the following table outlines the results obtained from the Harzing Publish or Perish software.

Table 4: Total Number of Searches, Total Research Sources in Scopus AI and Semantic Scholar AI

Summary	
Creterion	Sum
Book Chapter	0
Book	0
Citation	193
Review	0
Article	13
Conference Paper	2
Source	Scopus AI and Semantic Scholar AI
Number of References Systematic Review	15

Based on the information presented in Table 4 above, a literature search conducted through Scopus AI and Semantic Scholar AI using the string "TVET and Entrepreneurship in *Pondok Education*" yielded 15 relevant sources published from 2021 to 2025. Consequently, the following tables and figures illustrate the total number and distribution of sources identified for this systematic review.

Table 5: Publication from 2021 to 2025

Row Labels	Count of Publisher
2021	1
2023	2
2024	1
2025	1
Grand Total	5

According to the publication analysis results illustrated in Table 5, within the timeframe of 2021 to 2025, the highest number of publications occurred in 2023, with a total of 2 publications recorded. Comprehensive details regarding the citations, source titles, authors, and publication years are presented in Table 6.

Table 6: The Number of Citations from 2021 to 2025

Citation	Author's	Title
42	Hong, Ch'ng, et al. (2023)	Analytic hierarchy process: A case study of students' tendency in enrolling TVET programme
24	Hong, Ch'ng, et al. (2023)	Predicting Students' Inclination to TVET Enrolment Using Various Classifiers
20	Ibrahim et al. (2025)	Enabling Information Technology in Designing the TVET Model for TVET Education Program
16	Lopez et al. (2021)	Design framework based on TEC21 educational model and Education 4.0 implemented in a Capstone Project: A case study of an electric vehicle suspension system
16	Mack et al. (2021)	The benefits of exposing post-secondary students to entrepreneurship training in Trinidad and Tobago
14	Mishra and Aithal (2023)	Modern multidisciplinary education: Challenges and opportunities of modern learning pedagogy
13	Nashihin et al. (2025)	Empowering the creativity of disabled students through sustainable Agropreneur education at Ainul Yakin Islamic Boarding School in Yogyakarta to support the SDGs
12	Nijhoff (2021)	Refugees starting a business: experiences of barriers and needs in the Netherlands
11	O'Brien and Cooney (2025)	Enhancing inclusive entrepreneurial activity through community engagement led by higher education institutions
9	Ramadini et al. (2023)	Business strategy in Islamic boarding school: A case study of Pesantren Hidayatullah Depok Indonesia.
8	Seman et al. (2024)	Enhancing TVET Education in Malaysia Via HETVET@UiTM Framework
7	Sutarsih (2023)	Literacy and Inclusion: Sharia Finance as a Foundation for UMKM Welfare: Business Education on Access to Sharia Finance for Santri UMKM in Yogyakarta

1	Thoha (2024)	Visionary leadership and dynamic capabilities: Transforming Pesantren into a social enterprise
0	Tohiroh et al. (2021)	Skills, Interests, and Talents Education to Improve the Economic Prosperity of the Nation's Generation at Baitul Quro Islamic Boarding School
0	Yudianto et al. (2023)	Enhancing E-Marketing Competence of Islamic Boarding School Students: A Case Study of Al Muin Syarif Hidayatullah

Related research on "TVET and Entrepreneurship in *Pondok* Education" was further optimized using Harzing's Publish or Perish (PoP) retrieve search results spanning from 2021 to 2025. The primary authors involved, the average number of citations, and the citations per year are shown in Table 7.

Table 7: Average Citation Per Year

Author's	Journal	GSRank
Thoha (2024)	AIP Conference Proceedings	1
Hong, Ch'ng, et al. (2023)	Sustainability	1
Hong, Ch'ng, et al. (2023)	International Journal of Case Studies in Business, IT, and Education	2
Ibrahim et al. (2025)	Journal of Lifestyle and SDGs Review	3
Lopez et al. (2021)	Journal of Small Business and Enterprise Development	4
Nijhoff (2021)	Pertanika Journal of Science and Technology	4
Mack et al. (2021)	As-Syar'i: Journal of Family Guidance & Counselling	5
Mishra and Aithal (2023)	Journal of Enterprising Communities: People and Places in the Global Economy	6
O'Brien and Cooney (2025)	Indonesian Journal of Cultural and Community Development	7
Yudianto et al. (2023)	13th International Conference on Engineering Education: Dissemination and Advancement of Engineering Education using Artificial Intelligence	7
Nashihin et al. (2025)	Humanities and Social Sciences Communications	8
Tohiroh et al. (2021)	CREATIVE: Nusantara Community Service Journal	8
Seman et al. (2024)	International Journal of Islamic Business Ethics	9
Sutarsih (2023)	Bukhori: Study of Islamic Economics and Finance	10

Source: Table by author

Table 7 indicates that AIP Conference Proceedings and Sustainability achieved the highest ranking (GSrank 1), based on the highest number of citations received over the past five years. Additionally, the following table outlines the top three positions regarding the highest average annual citations identified in this study.

Table 8: Very Most High Citation Per Year

Author's	Journal	GSRank
Thoha (2024)	AIP Conference Proceedings	1
Hong, Ch'ng, et al. (2023)	Sustainability	1

Bibliometric data sourced from Scopus AI and Semantic Scholar AI, comprising 15 documents within the bibliometric analysis framework, were analysed using VOSviewer software. Figure 5 illustrates the clustering relationships between these sources, providing a visual representation of the citation and author analysis identified through the AI Website Research Tool.

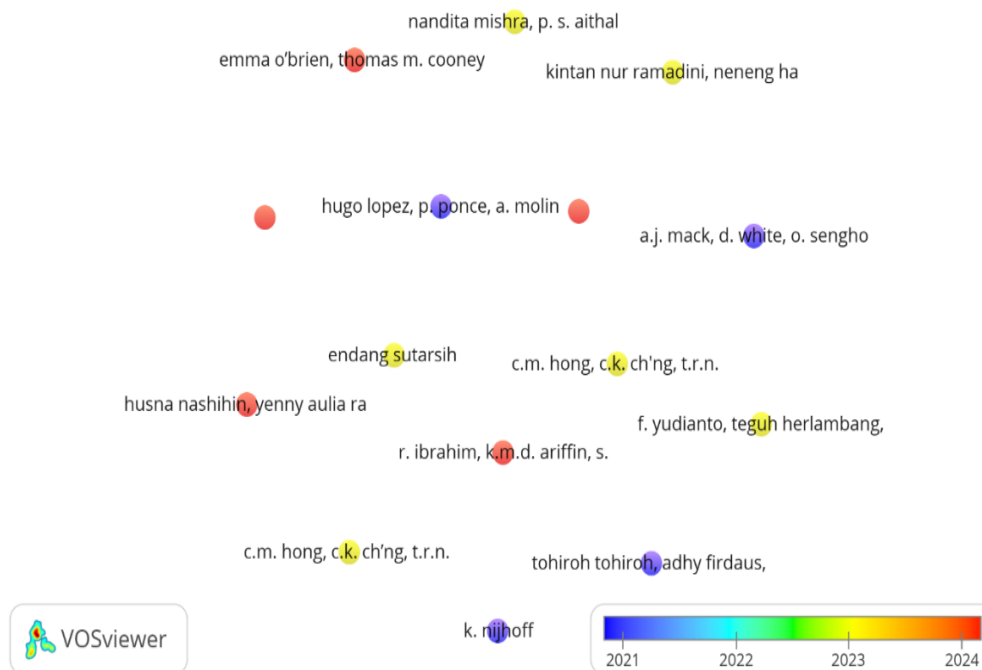


Figure 2: The Number of Author Sources

From the mapping from Figure 2 above, three main sources in the excerpt analysis using VOSviewer software for the keyword 'TVET and Entrepreneurship in *Pondok* Education' can be seen. The following Table 9 discusses the top 3 positions for CitesPerAuthor assigned to the source titles analyzed in 15 AI Scopus and AI Semantic Scholar sources.

Table 9: The Number of High Cites Per Author

Author's	Title	High Cites Per Author
Lopez et al. (2021)	Design framework based on TEC21 educational model and Education 4.0 implemented in a Capstone Project: A case study of an electric vehicle suspension system	16
Mack et al. (2021)	The benefits of exposing post-secondary students to entrepreneurship training in Trinidad and Tobago	16
Hong, Ch'ng, et al. (2023)	Predicting Students' Inclination to TVET Enrolment Using Various Classifiers	12
Hong, Ch'ng, et al. (2023)	Analytic hierarchy process: A case study of students' tendency in enrolling TVET programme	8

As shown in Table 9 above, the highest citation values within the "TVET and Entrepreneurship in *Pondok* Education" discussion are attributed to Lopez et al. (2021) and Mack et al. (2021), both achieving the highest CitesPerAuthor value of 16. Among the 15 citations analyzed by the researcher, a significant finding is that the lack of TVET dimensions is a critical factor limiting the learning performance of *Pondok* education that attempts to combine TVET with religious values. The study results indicate that the insufficient integration of *Pondok* education values with entrepreneurship poses a significant challenge for *Pondok* students in managing entrepreneurship according to the Islamic principles established by the ulama. Furthermore, the bibliometric analysis reveals a distinct research gap, while existing literature showed that most journal citations were dominated by TVET Education but lacked in Education, there is a notable lack of studies specifically addressing the intersection of *Pondok* education and entrepreneurship (Hong, Ch'ng, et al., 2023; Ibrahim et al., 2025). Consequently, there is substantial potential for researchers to have broader potential for future research to contribute to the significant development of this specialized field.

Discussion and Conclusion

Discussion

This study presents a systematic literature review and bibliometric analysis of research related to TVET and entrepreneurship within the context of *Pondok* education for the period 2021 to 2025. Based on the 15 selected articles in this study, the findings indicate that the existing literature remains fragmented, with a conceptual emphasis on entrepreneurship that lacks structured TVET integration within *Pondok* institutions. Additionally, qualitative methods dominate previous studies, suggesting it is still in the exploratory and investigative stages. The results demonstrate that entrepreneurship education significantly supports the sustainability of *Pondok* institutions and enhances students' economic capabilities; this finding is supported by (Mack et al., 2021; Ramadini et al., 2023). However, the bibliometric analysis reveals a lack of a comprehensive and Islamically-oriented TVET model tailored for *Pondok* education, aligning with the gaps identified by (Hong, Ch'ng, et al., 2023; Ibrahim et al., 2025). This research gap has highlighted the urgent need for stronger alignment between TVET, entrepreneurship, and Islamic educational philosophy.

This study has contributed to the body of knowledge on TVET, entrepreneurship, and the philosophy of Islamic education for *Pondok* institutions. From a theoretical perspective, the development of the Knowledge, Skills, and Attitude (KSA) Theory application by integrating the perspective of Islamic education philosophy can emphasize the concept of monotheism among TVET students. From a practical contribution standpoint, this study provides input for a landscape map to focus on strategic guidance for *Pondok* policies and administration in implementing the values of TVET, entrepreneurship, and the philosophy of Islamic education. The methodological contribution emphasizes that a robust framework with the integration of the PRISMA protocol with bibliometric analysis can ensure a comprehensive and systematic literature review.

The United Nations Sustainable Development Goals (SDGs) agenda also needs to emphasize the necessity of integrating TVET and entrepreneurship in *Pondok* education as a catalyst for inclusive and sustainable human capital development. This study supports SDG 4 (Quality Education) by advocating for a skills- and values-based curriculum, while also contributing to SDG 8 (Decent Work and Economic Growth) by fostering the entrepreneurial capabilities of *Pondok* students. Despite these contributions, this study is limited by its small number of

articles and the use of secondary data only. Consequently, future research should prioritize large-scale empirical research using mixed methods approaches to develop a validated and contextual *Pondok* TVET-entrepreneurship model, particularly within the ASEAN context.

Limitations

This study is primarily limited by its small sample size of fifteen articles and its exclusive reliance on secondary data. To enhance generalizability, future research should employ large-scale, mixed-methods empirical designs to develop and validate a contextualized *Pondok* education, TVET and entrepreneurship framework within the ASEAN region.

Conclusion

This study systematically maps the research landscape of TVET and entrepreneurship integration within *Pondok* education from 2021 to 2025. The findings reveal a fragmented literature base dominated by qualitative methods, highlighting a critical lack of structured TVET models and empirical evidence. Theoretically, this research extends the Knowledge, Skills, and Attitude (KSA) theory by integrating a *Tauhidic* perspective. Practically, it provides a strategic roadmap for policymakers while aligning with UN Sustainable Development Goals 4 and 8. Future empirical, mixed-methods research is recommended to validate a contextualized *Pondok* TVET-entrepreneurship model within the ASEAN region.

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Declarations

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Declaration of Generative AI: During the preparation of this work, AI tools (Gemini AI, ChatGPT, and Grammarly) were used for text refinement and assistance. The use of Scopus AI, Semantic Scholar AI, Harzing's Publish or Perish, and VOSviewer was subsequently used in supporting the bibliometric analysis conducted in this study

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