



Trends in the Development of Vocational Education and Training Research Studies in Southeast Asia

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Abstract

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This study examines the development trends of vocational training research studies in Southeast Asia in the period 2014 to 2024 using bibliometric analysis methods. By setting the keyword "vocational training in Southeast Asia," this study collected data from academic databases and produced 1500 relevant journals. After going through the screening process, 844 articles were obtained which were then analyzed to identify trends and patterns in vocational training. The results of the analysis show three main phases: the initial phase (2014–2018) which focuses on aspects of psychology and political science; the development phase (2019–2021) which highlights the importance of physical and mental health; and the mature phase (2022–2024) which shifts attention to the social and economic impacts of vocational training. In addition, this study shows fluctuations in the number of publications, with a significant peak occurring in 2020. Singapore, Thailand, and Malaysia dominate research contributions in this region. The main topics covered include competencies and skills, learning and curriculum, industry partnerships, policies and implementation, and technology and innovation. These findings provide a comprehensive picture of the evolution of thinking in vocational training in Southeast Asia, and suggest further research directions to strengthen the integration between vocational education and industry needs.

Keywords:

Training, Vocational Training, Southeast Asia, Bibliometric Analysis

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INTRODUCTION

The development trend of vocational training research studies in Southeast Asia is growing along with the increasing need for a workforce that is ready to use and responsive to technological developments. Countries in this region, such as Indonesia, Malaysia, Singapore, and Thailand, are actively integrating vocational training into their workforce policies. This is in line with the demands of the global market which are increasingly moving towards technical and practical skills in the industrial, manufacturing, and service sectors.

Indonesia, for example, launched the Kartu Prakerja program in response to existing employment challenges. Through this program, the government provides vocational training to improve people's skills in various fields such as information technology, business services, and manufacturing. Data from the Coordinating Ministry for Economic Affairs shows that by 2023, this program has involved more than 15 million participants, most of whom are young workers. The results of a study by the Ministry of Manpower also show that 84% of training participants



experienced significant improvements in skills and 24% of them got new jobs within 6 months of completing the training.(Susantiningrum et al., 2023).

In Singapore, the government launched the SkillsFuture initiative, which provides funding for people to undertake vocational training and skills development in various sectors. As of 2022, data from SkillsFuture Singapore shows that more than 540,000 people have benefited from this program, most of whom work in the technology and financial services sectors. Through this program, Singapore has successfully integrated vocational education into the national workforce ecosystem and provided easier and more flexible access to training.(Mirchandani & Bhutani, 2022).

Malaysia is also not left behind in supporting the development of vocational training. Technical and Vocational Education and Training (TVET) in Malaysia is encouraged to produce a competent and ready-to-use workforce. Based on the report of the Malaysian Ministry of Human Resources, in 2023, as many as 400,000 students will participate in TVET programs, with a workforce absorption rate of 90% after graduation. This data shows that the TVET program in Malaysia has succeeded in becoming a bridge between vocational training graduates and industries that require specific skills.

Through these concrete steps, countries in Southeast Asia are showing increasing interest and investment in vocational training, both in terms of infrastructure, accessibility, and quality of training that is tailored to the needs of modern industry. Recent research studies also highlight that the integration of technologies such as Augmented Reality (AR) and Virtual Reality (VR) in vocational training is increasingly in demand to improve technical skills in a practical way. The adoption of these technologies, especially in the health and engineering sectors, reflects the commitment of the Southeast Asian region to continue adapting to the industrial revolution 4.0 and 5.0, while also responding to the needs of an increasingly competitive global labor market.(Chettiar, 2020).

In addition to technology adoption, collaboration between governments, educational institutions, and the private sector in Southeast Asia also plays a significant role in advancing vocational training. In Thailand, for example, partnerships between large companies and vocational training institutions have yielded tangible results. The Thai government, through its Dual Vocational Training program, has partnered with companies such as Toyota and Bosch to provide students with hands-on work experience. As a result, a report from Thailand's Ministry of Education in 2022 showed that more than 70% of graduates from this program were directly absorbed into related industries, especially in the fields of automotive engineering and manufacturing technology.(Chalapati & Chalapati, 2020).

In the Philippines, vocational training is also geared towards supporting emerging sectors, such as business process outsourcing (BPO), tourism, and information technology. The Philippines' Technical Education and Skills Development Authority (TESDA) noted that in 2022, nearly 1.8 million people attended government-funded vocational training and more than 85% of them were employed or started their own businesses within 6 months of training. This data shows the success of vocational training in improving job skills and reducing unemployment in the Philippines.(Pusterla, 2022).

Furthermore, recent research studies show that vocational training in Southeast Asia is moving towards a lifelong learning approach. Singapore is a pioneer in this approach, with its SkillsFuture program targeting not only fresh graduates or job seekers, but also workers who want to upgrade their skills to meet changing market needs. By 2023, more than 100,000 adult workers in Singapore will be upskilling in strategic sectors such as healthcare, digital technology, and financial services.

The integration of more flexible and relevant vocational training in Southeast Asia has led to the creation of a more skilled and competitive workforce. However, challenges remain, including in terms of equal access to vocational education in rural areas and strengthening curriculum standards in some countries. However, with various strategic steps that have been taken, this positive trend shows that Southeast Asia has great potential to become a vocational training hub that not only prepares local workers but is also able to compete in the international labor market.

All of these developments are supported by data showing concrete results in reducing unemployment, improving skills, and matching the competencies of vocational training graduates to industry needs. According to a report from the Asian Development Bank (ADB), the unemployment rate in the region has declined by an average of 1.5% annually since 2019, in line with the increase in vocational training. In addition, the World Economic Forum (WEF) noted that by 2022, around 65% of large companies in Southeast Asia have partnerships with vocational training institutions in their training or recruitment programs, indicating the high demand and relevance of vocational training in the region's labor market. (Gallacher, 2018). With ongoing efforts to align curriculum, technology, and industry needs, vocational training in Southeast Asia is projected to grow further and play a strategic role in creating an innovative and adaptive workforce in the future.

This study aims to analyze the trends and developments of vocational training in Southeast Asia, especially in responding to industry needs and technological advances. By identifying vocational training patterns and policies in countries such as Indonesia, Malaysia, Thailand, the Philippines, and Singapore, this study aims to map each country's approach to improving workforce competency.

METHOD

This study uses a literature review method with a bibliometric approach. The literature review was conducted systematically, explicitly, and reproducibly, as suggested by (Fink, 2019) (Garza Reyes, 2015), or by a knowledge mapping method that focuses on the limitations of current understanding (Bibliometric analysis in this study is used to observe the development of studies on the topic of vocational training in Southeast Asia, by looking at the topics, authors, and social, intellectual, and conceptual structures that shape this discipline. (Haas, 1999). This analysis is generally applied in scientific disciplines to conduct quantitative studies of scientific papers, books, or other written communications.

The bibliometric approach in this study follows the five steps introduced by (Fahimnia et al., 2015) The first step is to define keywords, namely "vocational training in Southeast Asia" to start the literature search (Defining Search

Keywords). The second step is to obtain initial search results (Initial Search Results) based on these keywords. Furthermore, the search results are narrowed (Refinement of the Search Results) to only include sources that are relevant to the topic discussed. The fourth step is to compile statistics from the initial data that has been collected (Compiling Statistics on the Initial Data), and finally to analyze the data to explore patterns and trends in research related to vocational training in Southeast Asia (Data Analysis).

1. Defining Search Keywords

The first step is to determine relevant keywords to start the literature search. In this study, the main keyword "vocational training in Southeast Asia" is used to focus the search on a specific topic. The selection of these keywords is important so that the scope of the literature found is truly relevant to the research objectives and covers developments and trends in the Southeast Asia region.

2. Initial Search Results

After defining the keywords, the next step is to conduct an initial search using these keywords in various academic databases. The results of this initial search serve as the basis for the literature review. All documents identified in this initial search will be checked for completeness and relevance to the topic of vocational training in Southeast Asia.

3. Refinement of the Search Results

This step aims to narrow the scope of the initial search results to include only truly relevant literature. The narrowing is done by evaluating the title, abstract, and keywords of each document to ensure their suitability. Literature that is less relevant or not directly related to the development of vocational training in Southeast Asia will be removed from the research data set.

4. Compiling Statistics on the Initial Data

In this step, basic statistics of the filtered search results are compiled. These statistics include the number of articles by year of publication, country of origin of the study, main topic, and author. This statistical information provides an overview of the development and distribution of literature related to vocational training in Southeast Asia, helping to identify trends and patterns in existing studies.

5. Data Analysis

The final step is to analyze the data to highlight the evolution of research on vocational training in Southeast Asia. This analysis includes identifying key themes, collaborative networks between authors or institutions, and the conceptual structure underlying the research. Through this data analysis, research trends, under-recognized areas, and important contributions of related studies can be identified, providing useful guidance and insights for further research development.

RESULTS & DISCUSSION

Defining Search Keywords

The initial step in this research begins with determining the main keywords, namely "vocational training in Southeast Asia." These keywords were chosen to

ensure that the literature search focuses on studies that are relevant to the research objectives, namely understanding the trends and developments in vocational training in the Southeast Asia region. Selecting the right keywords is an important basis for compiling an appropriate literature list and ensuring that this research gets a comprehensive and in-depth coverage of the main theme by using databases from <https://www.scimagojr.com/>.

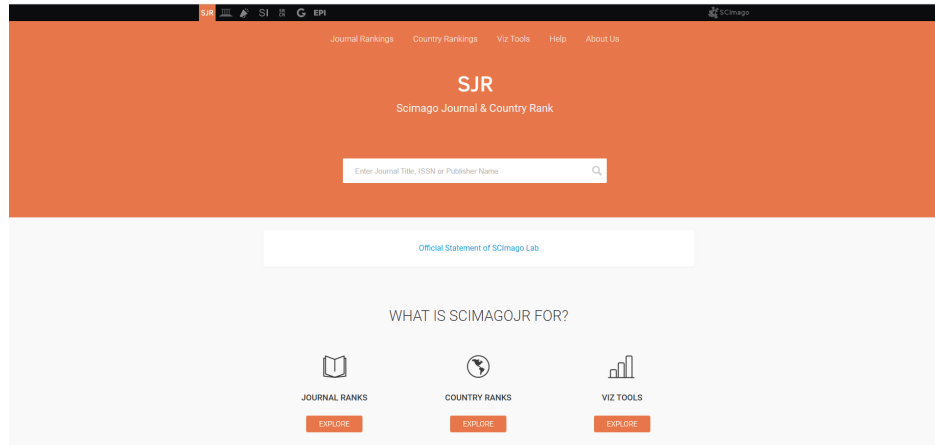


Figure 1. Database view <https://www.scimagojr.com/>

Initial Search Results

After determining the keywords, an initial search was conducted in various academic databases to collect documents related to vocational training in Southeast Asia. At this stage, all articles found were screened based on initial matches, with the aim of creating a strong foundation of literature that will be reviewed further. The results of this initial search became the basis for starting the analysis and identifying which literature needed to be retained, reviewed, or eliminated which is shown in table 1 with a total of 1500 journals.

Table 1. Initial search results

Year	Scimago Journal Rank						Sub-Total
	Q1	Q2	Q3	Q4	NQ	NI	
2014	2	45	0	11	0	22	80
2015	1	44	11	3	0	43	102
2016	3	33	14	0	0	39	89
2017	0	64	0	6	0	40	110
2018	3	4	46	4	0	57	114
2019	36	5	15	1	0	56	113
2020	95	28	7	1	0	70	201
2021	3	95	24	0	0	54	176
2022	61	17	3	1	0	81	163
2023	64	26	8	1	0	105	204
2024	47	32	8	1	0	60	148
Total results							1500

Refinement of the Search Results

The next step was to narrow the scope of the initial search results to include only articles that were relevant to the focus of vocational training in Southeast Asia.

This narrowing process involved evaluating the title, abstract, and keywords of each document. In this way, literature that was not relevant or that discussed the topic of vocational training outside of Southeast Asia or that did not directly fit the context of trends in the region was excluded. This filtering ensured that the collected literature data was of high quality and in accordance with the research objectives with a total of 844 journals that had been selected.

Table 2. Filtering results

Year	Scimago Journal Rank						Sub-Total
	Q1	Q2	Q3	Q4	NQ	NI	
2014	2	45	0	0	0	0	47
2015	1	44	11	0	0	0	56
2016	3	33	14	0	0	0	50
2017	0	64	0	0	0	0	64
2018	3	4	46	0	0	0	53
2019	36	5	15	0	0	0	56
2020	95	28	7	0	0	0	130
2021	3	95	24	0	0	0	122
2022	61	17	3	0	0	0	81
2023	64	26	8	0	0	0	98
2024	47	32	8	0	0	0	87
Total results							844

Compiling Statistics on the Initial Data

Following the refinement process, basic statistics from the filtered search results are compiled to provide an overview of the distribution of the literature. These statistics include information such as the number of articles by year of publication, country of origin, main topic, and author. The compilation of these statistics helps identify trends and patterns in the study of vocational training in Southeast Asia and allows researchers to understand how the literature has evolved over time and identify topics or countries that may have received less attention in the study.

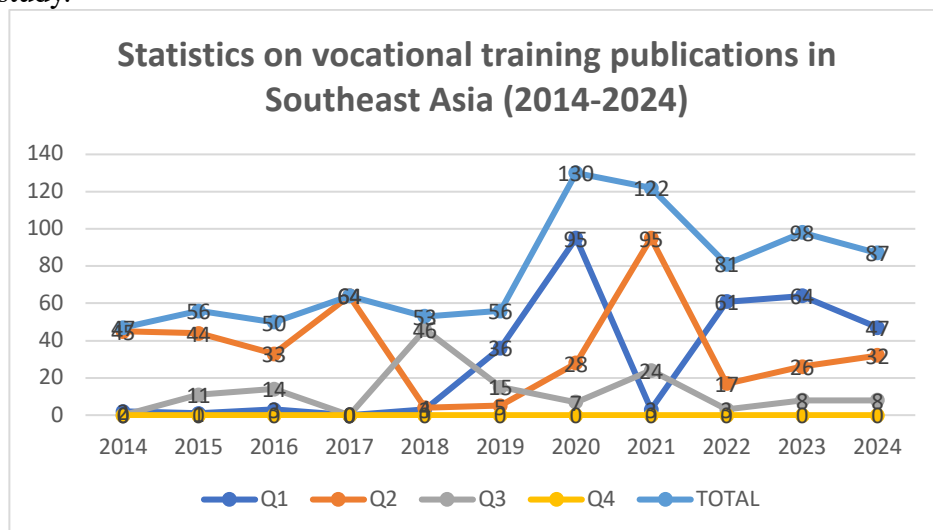


Figure 2. Statistics per year

Scientific publications on vocational training in Southeast Asia (2014-2024) show interesting dynamics during the period 2014-2024. In 2014, the total number of publications was recorded at 47 articles, which then experienced a moderate increase in 2015 to 56 articles. The year 2016 showed a slight decrease with 50 publications, but increased again in 2017 to 64 articles. The year 2018 experienced a slight decrease with 53 publications, and in 2019 the number of publications remained stable at 56 articles.

A significant spike occurred in 2020 with a total of 130 publications, marking the most productive year in that time span. This momentum continued into 2021 with 122 publications. However, there was a sharp decline in 2022 with a total of 81 publications. 2023 showed a recovery with an increase to 98 articles, and the latest data for 2024 showed a slight decline with 87 publications. Overall, the 2020-2021 period was an important turning point that marked a substantial increase in research productivity, although the following years showed a normalization to a more moderate level but still higher than the period before 2020.

Interestingly, despite the fluctuations, the long-term trend shows an increase in the average number of publications. The early period (2014-2019) had an average of around 54 publications per year, while the late period (2020-2024) showed a significant increase with an average of 103 publications per year. This indicates a continuous increase in research capacity and productivity, although with quite dynamic annual variations.

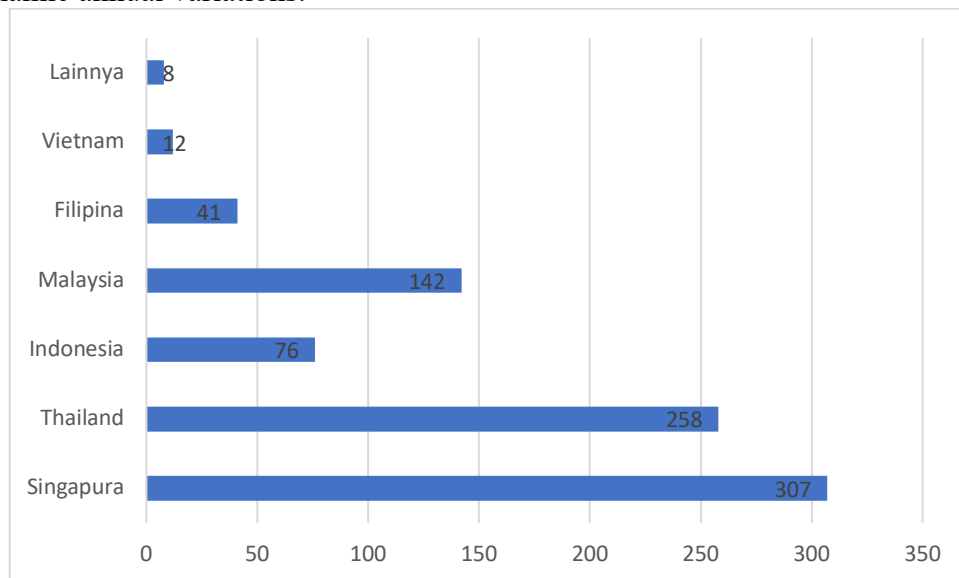


Figure 3. Country of origin of research

Data on the number of TVET research projects in Southeast Asia shows interesting variations in the contributions of each country. Singapore, with a total of 307 research projects, tops the list in terms of the number of research projects. This reflects the country's strong focus on TVET development. As a developed economy, Singapore has a vested interest in preparing a globally competitive and skilled workforce. Programmes such as SkillsFuture, which are fully supported by the government, support the growth of research in this area and ensure that the skills of Singapore's workforce remain relevant to the needs of the evolving industry.

Thailand follows in second place with 258 studies, indicating that the country is also very focused on developing vocational education. The Thai government has long been committed to upgrading the skills of its workforce to meet the demands of industry, especially in the tourism and manufacturing sectors that are the mainstays of the country's economy. With various initiatives to strengthen vocational education, Thailand is seeking to strengthen economic growth and increase its international competitiveness.

Malaysia ranks third with 142 studies focused on vocational training. The Malaysian government's heavy investment in vocational education reflects its national vision to achieve high-income country status. The Technical and Vocational Education and Training (TVET) program is designed to produce a workforce that can adapt to industrial developments. This initiative not only strengthens national competitiveness but also demonstrates Malaysia's commitment to building competitive human resources.

Indonesia, with 76 studies, is still lagging behind the three countries. As the most populous country in Southeast Asia, Indonesia faces a major challenge in preparing a workforce that is able to compete at the regional and international levels. Although the government has launched various programs such as the Revitalization of Vocational High Schools, the limited number of studies indicates that the development of vocational training in Indonesia is still in its early stages. Further efforts are needed to improve the quality and quantity of the workforce through vocational education that is relevant to market needs.

In the next position, the Philippines recorded 41 studies on vocational training. Although relatively lower, the Philippines is starting to show increasing attention to vocational education to improve the quality of its workforce. The country's focus is mainly on the health and information technology sectors, which are growing rapidly in the Philippines and have the potential to make major contributions to the national economy.

Vietnam has 12 studies related to vocational training, a relatively low number. Although the country is experiencing rapid economic growth, especially in the manufacturing sector, attention to vocational education is still limited. This limitation indicates the need for greater support to improve the skills of the Vietnamese workforce, so that they can compete in an increasingly demanding market environment.

In the data provided, the "Others" category includes countries in Southeast Asia with very few studies on vocational training, namely 8 studies. These countries include Brunei Darussalam, Laos, Myanmar, and Timor Leste. These countries have lower research contributions compared to countries such as Singapore, Thailand, or Malaysia. This may be due to limited resources, lack of policy support, or the absence of a priority on the development of vocational education in these countries.

DISCUSSION

Map of the Development of Vocational Education and Training Research Studies in Southeast Asia (2014–2024)



Figure 5. Map of Development of Vocational Education and Training Research Studies in Southeast Asia 2014–2024 (Source: VOSviewer)

This VOSviewer map illustrates the development trends of vocational training research in Southeast Asia between 2014 and 2024, and through this analysis, we can see a significant evolution in research focus over the past decade. In the early phase (red), which lasted from 2014 to 2018, research was more oriented towards aspects of psychology and political science. Here, researchers sought to understand the individual factors that influence participants' motivation and behavior in vocational education. They explored how the social environment and political policies impacted the effectiveness of training programs. This focus underscores the importance of understanding motivation and social context in designing relevant and adaptive programs. Research in this phase provides a strong foundation for developing more effective training.

Then, in the development phase (blue) between 2019 and 2021, the research trend began to shift to pay attention to health aspects, both physical and mental. In this period, the importance of training participants' health is increasingly highlighted. Researchers focus on how health conditions affect training outcomes, as well as the influence of mental health on participants' ability to absorb material and adapt in the training environment. Awareness of these health factors shows that the success of vocational training depends not only on the material taught, but also on the physical and mental well-being of participants. Research in this phase contributes to the development of more inclusive policies and supports the well-being of training participants. Entering the mature phase (red) which runs from 2022 to 2024, the research focus shifts again, this time towards the social and economic aspects of vocational training. During this time period, studies begin to highlight the impact of training on the lives of individuals and communities, as well as its contribution to economic development. Research in this phase further emphasizes the role of vocational training in creating jobs, reducing poverty, and supporting sustainable economic growth. With an emphasis on sociology and business, this research shows the importance of integration between vocational

education and industry needs, and how training can provide broad benefits to society.

During the period from 2014 to 2024, the close connections between the various disciplines are evident. The connections between psychology, political science, and medicine in the early phases demonstrate an attempt to understand the complex interactions between individuals and the environment that influence the success of training. However, over time, the focus of research has begun to broaden its perspective to include the collective impact of vocational training. This illustrates how training benefits not only individuals, but also society as a whole.

CONCLUSION

The analysis shows interesting dynamics in vocational training publications over the last decade, demonstrated by a significant evolution in research focus. In the early phase (2014–2018), studies were oriented towards psychological and political science aspects, where researchers sought to understand individual factors that influence participants' motivation and behavior. This research explores how the social environment and political policies impact the effectiveness of training programs, emphasizing the importance of the social context in designing relevant programs.

The development phase (2019–2021) shows a shift in the trend towards paying attention to the physical and mental health of participants. Research in this phase focuses on how health conditions affect training outcomes, as well as the importance of participants' mental well-being in the learning process. This awareness of health factors underlines that the success of vocational training depends not only on the material taught but also on the well-being of participants.

Entering the mature phase (2022–2024), the research focus shifts to the social and economic aspects of vocational training. Studies during this period highlight the impact of training on individuals' lives and its contribution to economic development. The research further emphasizes the role of vocational training in creating jobs, reducing poverty, and supporting sustainable economic growth.

During the period 2014 to 2024, there is a close connection between disciplines. The connection between psychology, political science, and medicine in the early phases shows an effort to understand the complex interactions that influence the success of training. Over time, the focus of research has broadened to include the collective impact of vocational training on society.

Overall, this analysis reflects the evolution of thinking in TVET research in Southeast Asia over the past ten years. From an initial focus on individual factors, to the importance of health, to an emphasis on social and economic impacts, the research demonstrates an integration across disciplines that provides holistic insights. The findings not only illustrate the developments that have occurred, but also provide a basis for developing TVET policies that are more effective and responsive to future challenges.

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