Research on Vocational Education in Indonesia: A Bibliometric Analysis

Ronal Watrianthos[1*], Ambiyar[2], Fahmi Rizal[3], Nizwardi Jalinus[4], Waskito[5]

[1]Universitas Al Washliyah, [2345]Universitas Negeri Padang

*Corresponding author, e-mail: ronal.watrianthos@gmail.com

Abstract

Indonesia's education system separates vocational education from academic education. Vocational education, which was previously not a key focus for prospective students, should now be on par with academic education at both the secondary and higher education levels. However, research on Vocational Education in Indonesia is still limited, particularly articles in reliable indexed databases; therefore, research on Vocational Education in Indonesia is still readily available. This research aims to map studies in bibliometrics connected to research trends in Vocational Education in Indonesia. This study does a statistical analysis of the number of publications on "Pendidikan Vokasi" in Bahasa during the previous five years. The Dimensions database is used for the study dataset, which is processed using Bibliometrix utilizing R-Tool and displayed with Vosviewer. The bibliometric study of the "Pendidikan Vokasi" research resulted in 2500 articles crawling in journals or proceedings on the Dimensions database. A. Ambiyar, N. Jalinus, and N. Erizon. Three names are incredibly fruitful in terms of creating research in this sector. At the same time, Padang State University has the most links to the issue. According to the findings of the bibliometric investigation, the Jurnal Pendidikan Vokasi is the leading generator of publications on the topic. Bibliometric mapping of the study subject "Pendidikan Vokasi" using the VOSviewer, on the other hand, discovered that trend research exclusively mentioned schools (SMK) and learning techniques or models. During this period, there was little research on the industry.

Keywords: Pendidikan Vokasi, Vocational Education, Bibliometrics, Bibliometrix, VOSviewer

INTRODUCTION

When it comes to education, the field that has the most extensive reach is vocational education. This is because its development, transformation, and association become the driving force in a nation. The provision of vocational education is carried out through various tertiary systems and in a variety of different methods in nations such as Australia and the UK. On the other hand, in certain countries like Germany, Switzerland, Australia, and Taiwan, vocational education is considered a continuation of the standard schooling that students receive. In some countries and at certain times, the vocational education sector is deliberately separated from the education sector because it needs to be more aligned with the demands of industrial needs compared to other education sectors. The rationale for this separation is that the vocational education sector needs to be more aligned with the demands of industrial needs [1].

Formal education, one of the three recognized education paths in Indonesia, along with non-formal and informal education, includes vocational education as one of its subsets. The other two recognized education pathways are informal education and non-formal education. Formal education involves attending school and progressing through a series of more difficult levels, beginning with elementary school and ending with university education. Academic and vocational education can be thought of as two distinct but interrelated branches of the formal education system. For students interested in pursuing a career in academia, secular academic subjects are taught in public schools, while academic and religious topics are co-taught at religious schools. In the vocational education program, students can take both general academic courses and courses that are specifically geared toward developing their technical abilities[2][3].

The secondary school level was the initial setting for implementing vocational education. Students in Grade 10 who want to pursue an education in a vocational field will continue their education at Vocational High School (SMK). In contrast, students who opt to pursue an education in a general academic field will continue their education at General High School (SMA). Community academies, academies, polytechnics, institutes, and universities all contribute to the educational landscape by allowing students to participate in

vocational programs. On the other hand, students can only enroll in academic programs in their respective high schools, institutes, or universities [2].

Academic education and vocational education are seen as two distinct tracks within the Indonesian education system. At the secondary level, academic education occurs at SMA and MA, whereas SMK and MAK are dedicated to preparing students for careers in specific fields. The primary trait of an educational system that is influenced by the essentialist philosophical stream is that academic education and vocational education are seen as distinct entities. Initially, two components made up Indonesia's Vocational Education System: vocational education and vocational training. Both of these components were governed by distinct regulations. Both the Ministry of Education and the Directorate General of Higher Education are accountable for providing vocational education because it is governed by the National Education System Law and falls under their purview.

Meanwhile, Law Number 13 of 2003 Concerning the Manpower Law and Government Regulation Concerning the National Job Training System control the Training System (Government Regulation Number 31 of 2006). Participating in formal vocational education, attending vocational training, or combining the two can all result in an individual gaining experience in the working world[4][5].

Form of Tertiary Education Institutions	Programs Offered										
	Academic			Vocational							
	Bachelor	Masters	Doctorate	D1	D2	D3	D4	Voc. Masters	Voc. Doctorate	PR*	SP**
Community Academies	-	-	-	✓	✓	-	-	-	-	-	-
Academies	-	-	-	✓	✓	✓	-	-	-	-	-
Polytechnics	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓
Advanced Schools	✓	✓	✓	-	-	✓	✓	✓	✓	✓	✓
Institutes	✓	✓	✓	-	-	✓	✓	✓	✓	✓	✓
Universities	✓	✓	✓	-	-	✓	✓	✓	✓	✓	✓

Source: Higher Education Act (2012)
Note: * PR = professional programs   ** SP = specialist programs

Figure 1. Summary of Tertiary Education Programs in Indonesia[2]

The term "vocational education" refers to training those students get in classes or skills geared to prepare them for the workforce. Young people and adults alike can benefit from the technical and practical skills they gain via participation in vocational education programs. On the other hand, the purpose of both high school and college-level vocational education is to train students to perform the duties of the particular employment[6][5].

In a practical sense, vocational education has to be able to produce graduates who are either professionally prepared to work or capable of engaging in entrepreneurial endeavors to contribute to the nation's progression toward a society that is just, wealthy, and prosperous. In order to assist the growth process and at the same time satisfy the requirements of life and livelihood, graduates of various educational institutions will form a workforce that is prepared to enter the job market. This workforce will help fulfill the demands of life and livelihood. This spurred the government to reinvest in vocational education by releasing Presidential Regulation of the Republic of Indonesia Number 82 of 2019 and establishing the Directorate General of Vocational Education. Both of these steps were taken in 2019[7][8].

In the past, prospective students have not given significant importance to vocational education; nevertheless, this area of study should now be given equal weight to academic education at both the secondary and higher education levels. On the other hand, research about vocational education in Indonesia is still quite limited, particularly in publications on reputable indexed databases; as a result, the field of study on vocational education in Indonesia is still very much uncharted territory. For instance, research on vocational education is connected to implementing the teaching factory model at vocational schools located in Central Java[9]. Another study looks at the impact of using the discontinuity model on the results of student competence tests and the management of competency assessments at SMK [10].

An investigation in a bibliometric study is required to investigate the lack of research concerning Vocational Education in Indonesia. This study aims to map research linked to research trends in Vocational Education in Indonesia using bibliometrics. In this study, a statistical analysis is performed on the number of publications connected to Vocational Education in Indonesia during the past five years. The study dataset is

analyzed using Bibliometrix using the R-Tool, and it is viewed with Vosviewer. The dataset was created using the Dimensions database.

METHOD

For this study, a dataset was taken from the Dimensions database. This is due to the Dimensions database's extensive coverage, which is 30 percent greater than that of other databases. The year 2018 saw the debut of Digital Science's new scientific database known as Dimensions. More than 106 million publications, 3.7 million grant items, 34 million patents, and 9 million citations from scientific papers are all included in Dimensions. The free edition gives users access to a searchable index of publications and links to a variety of other organizations[11][12]. The keyword is 'Vocational Education,' written in Bahasa 'Pendidikan AND Vokasi' in journal papers and conferences during the previous four years.

The Dimensions database crawling results are then processed using bibliometrix. Bibliometrix is a free and open-source quantitative research tool for scientometrics and bibliometrics analytical methodologies. This tool can map science to uncover research trends and research gaps on the topic you're interested in[13].
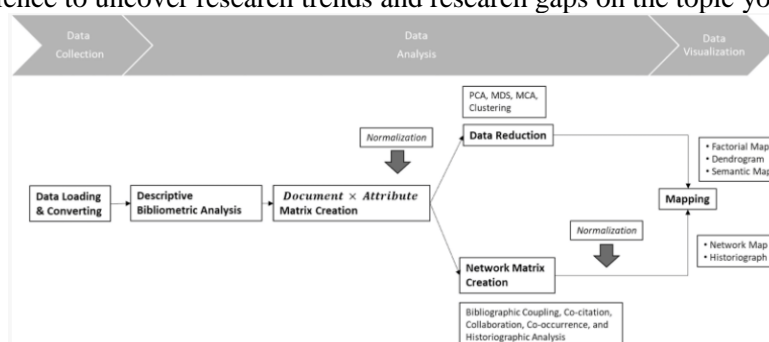

Figure 2. Science Mapping Workflow Using Bibliometrix[13]

As shown in Figure 2, the scientific mapping on bibliometrix uses the previously transformed Dimensions information. After that, the data analysis is developed in R Language to be versatile and capable of assisting statistical and other graphical programs. However, in this work, the analysis use biblioshiny to speed up and simplify the mapping procedure. Bibliometric mapping is a vital tool in bibliometrics that may display regions of knowledge and the links between articles, journals, and other publications. Based on the available literature, the findings of bibliometric mapping are intended to identify areas of expertise and research trends. A VOSviewer will be used in the bibliometric visualization process in research. VOSviewer examines the co-occurrence of keywords and the co-occurrence of authors in the area of Vocational Education over the previous four years to identify current research orientations and research hotspots[14].

RESULTS AND DISCUSSIONS

The Dimensions database dataset is generated with the keywords "Pendidikan AND Vokasi" and a time frame of 2019 – 2022. Table 1 summarizes the key points of this dataset.

Table 1. Main Information About Data

Description	Results
Timespan	2019:2022
Sources (Journals, Books, etc.)	988
Documents	2500
Average years from publication	1.75
Average citations per documents	0.528
Average citations per year per doc	0.1776
References	6074
Authors	5358
Authors of single-authored documents	511
Authors of multi-authored documents	4847

Figure 3. Most Relevant and Top-Authors' Production

The findings of the Bibliometrix analysis indicate the most relevant and top authors associated with "Pendidikan Vokasi." Figure 3 shows the names of the top three authors on this topic: Ambiyar A, Jalinus N, and Erizon N. This demonstrates that these three names are pretty fruitful in research in "Pendidikan Vokasi." These three names also yield distinct clusters, as seen in Figure 4.
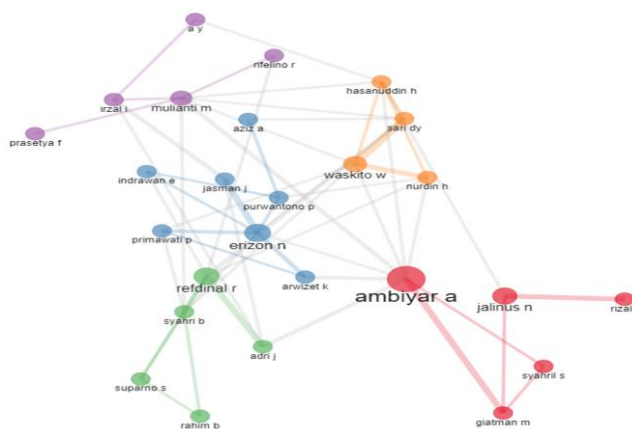

Figure 4. Collaboration Network

It is clear that there are five main research clusters relating to "Pendidikan Vokasi". The author leads these five clusters with an enormous circle in a distinct color. Each author creates collaborations with other writers in a cooperation network. While each author's uniqueness is depicted in Figure 5.
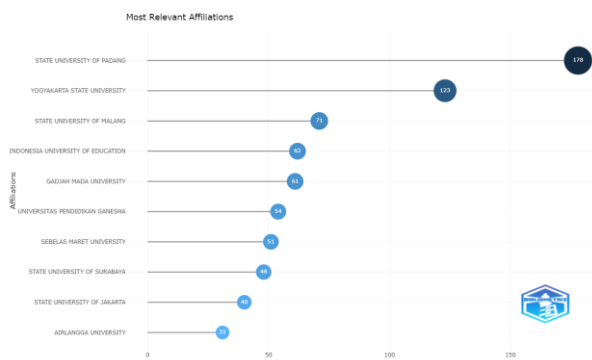

Figure 5. Most Relevant Affiliations

According to Figure 5, the writers from Universitas Negeri Padang had the most significant associations connected to "Pendidikan Vokasi," followed by Universitas Negeri Yogyakarta and Universitas Negeri Padang. Universitas Negeri Padang published the most articles of any affiliate in the 2019-2022 period, at

178. According to a bibliometric study, Universitas Negeri Padang is the most prolific affiliate in discussing the issue of Vocational Education.

Figure 6 depicts a publisher named Jurnal Pendidikan Vokasi as the journal that publishes the most articles linked to subjects, with 388 articles produced throughout the 2019-2022 timeframe. One hundred sixty-six papers were published in the Journal Procedia – Social and Behavioral Science, and 105 articles were published in the Journal of Physics Conference Series.

Figure 6. Most Relevant Sources and Most Global Cited Documents

Despite the fact that the Jurnal Pendidikan Vokasi is the most prolific publisher, the most globally referenced work is in Scholaria Jurnal Pendidikan dan Kebudayaan with the author Anugrahana A, 2020. Figure 7 indicates that the journal garnered 170 citations worldwide, with Al Asma Journal of Islamic Education receiving 52 citations with author Mustakim M, 2020, and Placentum Jurnal Ilmiah Kesehatan dan Aplikasinya receiving 32 citations with author Argaheni NB, 2020.

VOSviewer uses visualization connected to research subjects to detect research gaps and trends. This serves as a supplement to the bibliometric analysis associated with Vocational Education. VOSviewer is software that allows for the construction and visualization of bibliometric networks[14][15].
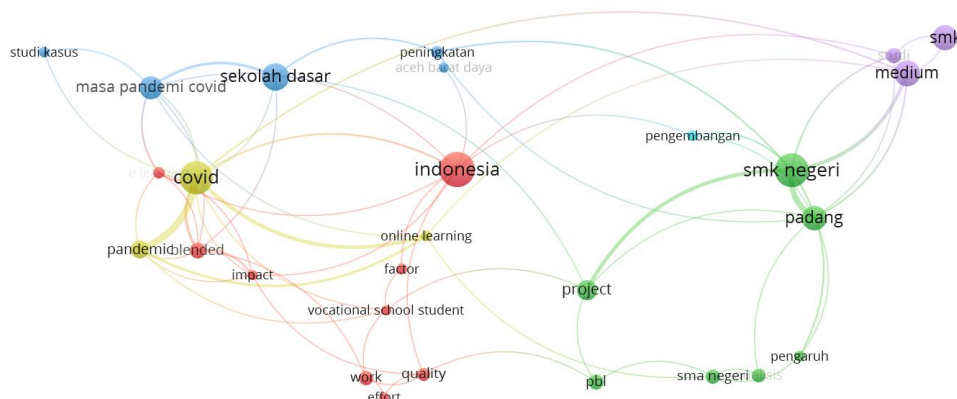

Figure 7. Research Trend in Pendidikan Vokasi

As seen in Figure 8, the Vocational Education research trend is divided into five distinct groupings. Each cluster, however, shares characteristics since it falls under the same umbrella as SMK and School. Because they mainly study learning techniques and learning models in vocational schools, research trends in vocational education are currently quite restricted. Even though this is included in Vocational Education, there has not been much study done on industry and employment. However, the research trend discovered Covid and Pandemic in the study subject, which might be connected to the influence of the pandemic on education, whether general education or vocational education.

CONCLUSION

As a result of the bibliometric analysis of the "Pendidikan Vokasi" research, the Dimensions database crawled 2500 articles in 988 journals or proceedings from 2019 to 2022. Ambiyar A, Jalinus N, and Erizon N are the top three authors who have written about this topic. When it comes to research in this field, these three names are advantageous. At the same time, Universitas Negeri Padang had the most connections to the topic. Based on the results of the bibliometric analysis, the Jurnal Pendidikan Vokasi is also the largest publication that publishes articles about the subject. However, bibliometric mapping of the research topic "Vocational Education" using the VOSviewer showed that trend research only talked about schools (SMK) and learning methods or models. There was not much research done on the world of the industry this time. This bibliometric analysis can be improved by adding English words to the search terms for research development.

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