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# A Bibliometric Analysis on Vocational Education and Training Institutions in Promoting Entrepreneurial Competencies

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## Abstract

Vocational Education and Training institutions are globally recognized as drivers of technological change. VET institutions focus on producing graduates who are skilled in various professions concerned with the production of goods and services. The role and benefits of VET institutions in entrepreneurship education include promoting self-reliance, improving managerial and technical performance in organizations and industries, supplying qualified workforce to meet future needs, and enhancing employees' proficiency. The objective of this research is to assess the progress made in the field of VET in promoting entrepreneurial competencies. This study aims to provide readers with a full understanding of the current dynamics and shed light on the current status of the literature pertaining to VET in promoting entrepreneurial competencies. Furthermore, this study offers a comprehensive examination of the existing body of literature on VET in developed, developing and underdeveloped countries through the utilization of bibliometric analysis. The Scopus database was utilized for data collecting in this study. The database utilized for this research consisted of a total of 246 documents spanning the years 1981 to 2023. This study examines the theoretical foundations, publication patterns, and citation trends within this field. Additionally, the study investigates commonly referenced journals, frequently employed research keywords, and the formation of research clusters. Based on an analysis conducted using Scopus, it has been determined that the domains of social sciences research in China hold significant prominence in the examination of VET studies. The analysis was conducted using VOSviewer, which revealed that research on VET has exhibited inconsistent progress in scholarly publications.

## KEYWORDS

VET; Entrepreneurship; Tanzania; Scopus Database; VOSviewer.

## INTRODUCTION

Vocational Education and Training (VET) is an essential component of lifelong learning systems. Its primary objective is to provide individuals with the necessary technical knowledge, expertise, skills, and competencies demanded by the labor market. Simultaneously, VET also aspires to

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develop personal talents that will benefit individuals in their future societal endeavors. It is the instrument that facilitates the path to obtaining high-caliber employment and enhanced work prospects. Although VET has been traditionally stigmatized in many countries in favor of university degrees, its significance is undeniable. However, recent socio-economic changes are altering perceptions and attitudes towards VET (Aldossari, A. S. 2020). Vocational training refers to instructional programmes or courses that focus on the different skills required for a particular job function. In vocational training, the students or learners are offered education that is related to their career choice, disregarding the traditional, unrelated academic subjects. It is all about what to do and how to do it (Barakaevich, 2020). Entrepreneurship education focuses on developing practical skills in individuals to make them competitive in the ever-changing world of jobs. These competencies equip learners with various skills and knowledge that will benefit their lives and provide meaning from the content they learn (Bell & Bell, 2020). Entrepreneurial competencies refer to a form of education that equips students with entrepreneurial skills, knowledge and attitudes that prepare them to explore various opportunities in their lives (Tittel, & Terzidis, 2020). The demands of employers are being reshaped by globalization and technological advancements, leading them to seek people who possess proven transversal competencies or soft skills (such as adaptability, leadership, teamwork, and clear communication in several languages). The emergence of this new paradigm has led to the widespread discussion of transversal competencies in the study sector (Oria, 2012).

The primary objective of this study is to provide a thorough and inclusive examination of the existing body of literature and to address the existing knowledge gap by conducting a bibliometric analysis of the current literature on VET in promoting entrepreneurial competencies. This analysis will examine the frequency of citations, volume of publications, years of publication, and journals of publication, contributing authors, contributing countries, and emerging trends and patterns in VET research. The specific objective of this study is to detailed assessment on particular areas that warrant further inquiry, so providing valuable recommendations for prospective inquiries in this crucial field.

## **2. LITERATURE REVIEW**

Entrepreneurial competencies have become a key focus in the global economy, aiming to ignite learners' interest and cultivate a culture of entrepreneurship. It is crucial to have a well-designed entrepreneurship curriculum that translates this vision into reality, as it can contribute to an innovative market (Stuetzer et. al., 2013). Researcher emphasizes the need to start equipping individuals with entrepreneurial competencies from an early stage, as childhood is a critical time

for learning new knowledge. In essence, the impartation of entrepreneurial competencies to the young ones has the potential to resolve the troubling problem of youth unemployment (Hassi, 2016). UNESCO points out that those entrepreneurial competencies should be integrated into entrepreneurship curricula globally to allow trainees to test and apply their skills. This integration should be done by incorporating practical pedagogical approaches and relying on teacher-student feedback & self-assessment (Unesco, 2019).

Vocational Education and Training institutions have the responsibility to promote entrepreneurial Competencies among young adults, as highlighted by Swai in his study on vocational education students in Tanzania. The study revealed that VET programmes do not adequately emphasize learners' interest in starting their businesses. Challenges also exist in terms of content, methodology, and the quality of facilitators who teach entrepreneurial competencies in VET institutions. Furthermore, the issue of gender in learning was identified, with female trainees exhibiting less participation in economic activities compared to their male counterparts (Hakizimana, & Swai, 2019). In Canada, VET institutions are considered essential for all residents to participate in the country's knowledge-based economy actively; hence, a decentralized approach that reaches every Canadian has been adopted there (Akther, J. (2020)). The Canadian VET system, often referred to as skills development, offers a series of courses or multi-year programmes that provide specialized training in various skills directly related to careers, such as vocational training in auto electrics, sewing and clothing design, air conditioning, and fitter mechanics (Mehrotra, et al., 2014).

Individuals with entrepreneurial competencies can enjoy profits from successful business ventures. Effective entrepreneurship education should encourage the development of entrepreneurial capabilities, fostering skills, knowledge, and competencies through effective teaching methods (Hardie, et. al., 2022). Personal entrepreneurial competencies fostered through VET include characteristics such as creativity, innovation, professionalism, risk-taking, passion, systematic planning, goal setting, social skills, open-mindedness, empathy, opportunity seeking, problem-solving, self-confidence, self-efficacy, transparency, merit, productivity (Jardim, 2021). These characteristics contribute to individual development and a strong and competitive global economy and are essential for professional functioning in the rapidly changing community (Boldureanu, et. al., 2020). The global agenda on entrepreneurship education emphasizes the importance of various factors that influence the quality of the teaching and learning environment in Vocational Education and Training (VET) institutions. These factors include teaching and learning methods, availability of qualified instructors, formal entrepreneurship curriculum or syllabus, classroom facilities such as materials, books, and furniture, and instructional materials (Okolie, et al., 2019).

### 3. METHODOLOGY

The present work utilized data sourced from Scopus, a highly recognized and extensively employed comprehensive database among researchers for doing bibliometric analysis across diverse fields. The selection of Scopus as the database of choice was based on its status as one of the most extensive bibliographic resources in the diverse realm of scientific research. The research employed a methodology that involved utilizing a set of keywords with cutoff symbols and Boolean operators. Specifically, the keywords "Vocational Education" was combined with the terms "Entrepreneurship" using the Boolean operator "AND". The indicated years of publication range from 1981 to 2023, with the search conducted in December 2023. The VOSviewer software was utilized by the researcher to conduct bibliometric analysis procedures, including growth analysis and the examination of co-occurrence patterns among key phrases. Upon the completion of the file extraction process, this software generates visual representations in the form of maps, facilitating the analysis of data derived from bibliographic references. These maps are designed to be easily comprehensible and interpretable.

### 4. RESULTS AND DISCUSSION

Table-1: Publications by Year and Annual Growth Rate

Publication Year	No. of Published Articles	Cumulative (%)	Growth Rate	
(N=246)			(%)	
1981	01	0.41	0.41	0.00
1986	01	0.41	0.82	0.00
2001	01	0.41	1.22	0.00
2002	01	0.41	1.63	0.00
2004	02	0.81	2.44	100.00
2005	04	1.63	4.07	200.00
2007	02	0.81	4.88	-200.00
2008	01	0.41	5.29	-100.00
2010	10	4.07	9.35	900.00
2011	04	1.63	10.98	-600.00
2012	05	2.03	13.01	100.00
2013	03	1.22	14.23	-200.00

2014	07	2.85	17.08	400.00
2015	16	6.50	23.58	900.00
2016	16	6.50	30.08	0.00
2017	15	6.10	36.18	-100.00
2018	21	8.54	44.72	600.00
2019	25	10.16	54.88	400.00
2020	31	12.60	67.48	600.00
2021	29	11.79	79.27	-200.00
2022	26	10.57	89.84	-300.00
2023	25	10.16	100.00	-100.00
Total	246	100.00		

**Source: Authors Calculation using Scopus data**

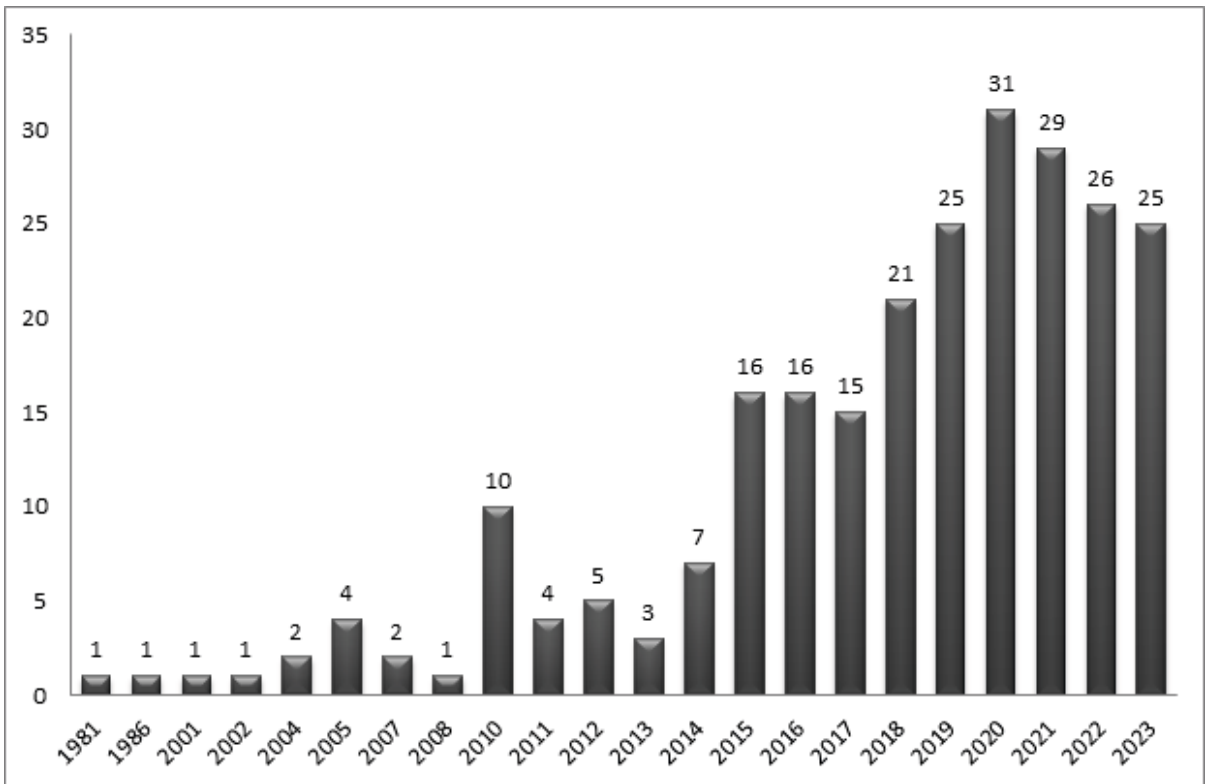


Figure – 1: Publications on VET and Entrepreneurship Competencies

The scholarly discourse on VET in promoting entrepreneurial competencies had exhibited limited growth in the years leading up to its widespread recognition in 2015. Subsequently, there has been a significant increase in the quantity of published works on an annual basis. Table 1 presents a comprehensive overview of the entire quantity of papers published on the topic of VET in promoting entrepreneurial competencies, together with their respective proportions, cumulative percentages, and growth percentages. In the year 2020, there was a notable increase in the number of publications, as evidenced by Figure 1 and Table 1. Specifically, a significant proportion of these publications, amounting to 31 or 12.60% of the total VET in promoting entrepreneurial competencies publications, were observed. The projected increase in numbers for the year 2023 is attributed to the advent of Industry 4.0 and the ongoing technological advancements.

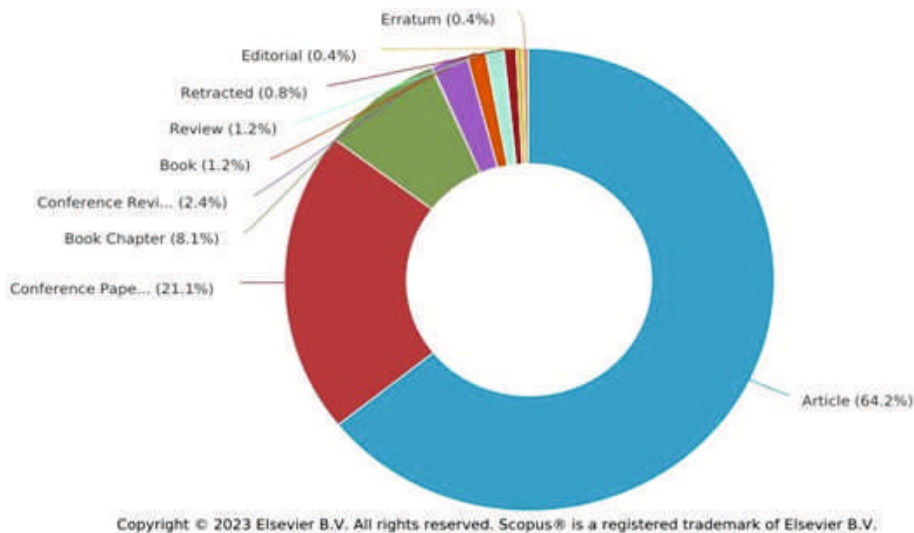


Figure – 2: Documents type of published articles

In addition to analyzing the documents, source types, and source titles, we also conducted an examination of the record retrieved from the database maintained by Scopus. The potential document types encompass data paper, books, book chapters, conference papers, reviews, and articles. Figure 2 displays the evaluation of document types conducted in this study. The predominant form of publishing in the field of VET in promoting entrepreneurial competencies is journal articles, accounting for 64.2% (158) of the total papers published. This is followed by conference papers, which constitute 21.1% (52) of the publications. Book chapter make up 8.1% (20) of the total, while conference review represent 1.2% (3) of the overall publications.

This study has identified other kinds of source types in addition to the numerous document forms commonly used for documents on VET in promoting entrepreneurial competencies. Table 2 illustrates that, in contrast to proceedings and books, most of papers are published in journals.

Table-2: Source Type

Source Type	No. of published articles	% (N=246)
Journals	163	66.26
Conference Proceeding	46	18.70
Book Series	21	08.54
Book	16	06.50
Total	246	100.00

*Source: Authors Calculation using Scopus data*

Table 3 presents a compilation of the primary source titles that have published articles pertaining to the topic of VET in promoting entrepreneurial competencies. The data presented in the table indicates that the journal "Journal of Technical Education and Training" has published the most number of publications pertaining to the topic of Vocational Education and Training (VET) institutions in promoting entrepreneurial competencies.

Table-3: Top Six Sources

Source Title	Total Publication	% (N-246)
Journal Of Technical Education And Training	09	3.70
Sustainability Switzerland	05	2.03
Journal Of Vocational Education And Training	05	2.03
Journal Of Small Business And Enterprise Development	05	2.03
International Journal For Research In Vocational Education And Training	05	2.03
International Journal Of Innovation Creativity And Change	04	1.63

Source: Authors Calculation using Scopus data

The author's chosen keywords are analyzed using VOSviewer in order to identify their co-occurrences. The network representation of the authors' keywords, generated using VOSviewer, is depicted in Figure 3. The visual attributes, such as color, size of the arcs, font used and the width of

the connecting lines, serve as indicators of the degree of association between the terms. Keywords that are frequently referenced together are indicated by the same color, suggesting a relationship between them. The diagram presented provides a visual representation of the interconnectedness and frequent co-occurrence of several elements within the realm of Vocational Education and Training (VET) institutions in promoting entrepreneurial competencies, including red-colored vocational education, vocational training, entrepreneur, employment, labor market and integration.

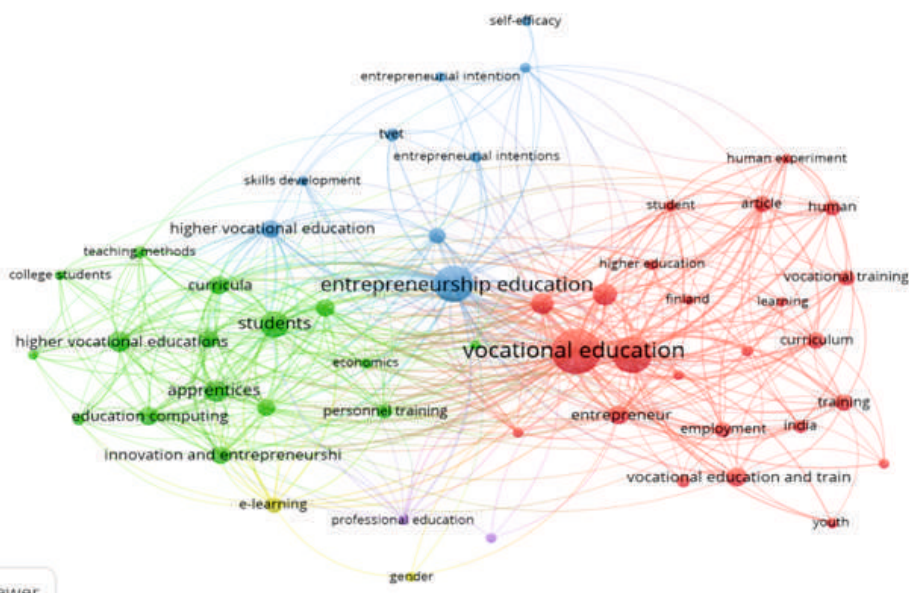


Figure – 3: Co-occurrence analysis of keywords

Writings on VET in promoting entrepreneurial competencies were contributed by 159 institutions from various nations. Figure 4 presents a visual representation of the leading ten institutions that have made significant contributions. The majority of scholarly investigations pertaining to the concept of Vocational Education and Training and VET in promoting entrepreneurial competencies have been conducted at the Universiti Kebangsaan Malaysia, Helsingin Yliopisto, Universitas Negeri Yogyakarta, Universitas Negeri Malang and Universitas Negeri Padang. The notion of VET, while relatively recent, has garnered significant attention and interest among organizations. This is evidenced by a comprehensive analysis of 246 research documents sourced from 159 institutions, which indicates that a majority of organizations actively engage with and demonstrate awareness of the importance of VET in promoting entrepreneurial competencies.



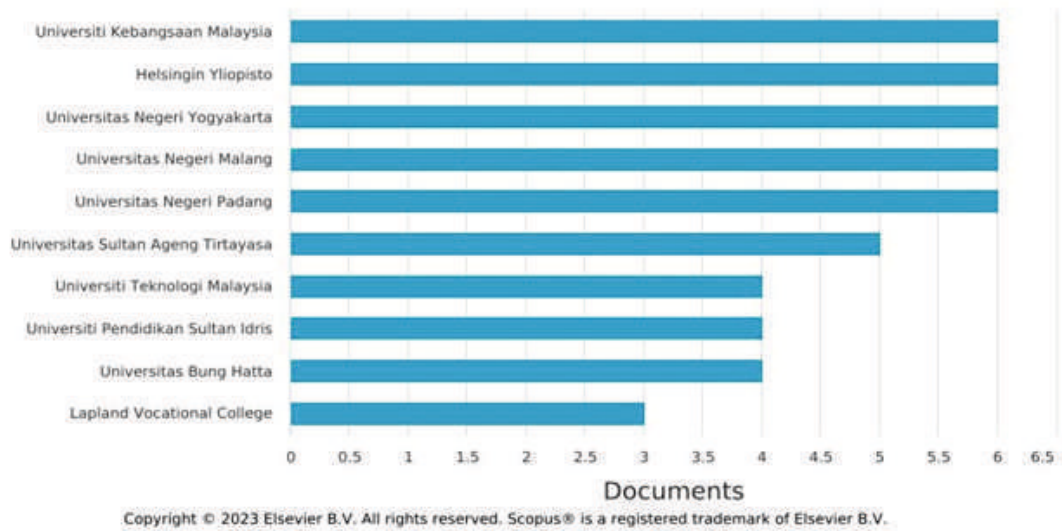


Figure – 4: Top 10 institutions contributed to publish on VET in promoting entrepreneurial competencies.

A total of 64 discrete nations made contributions to the body of literature on VET in promoting entrepreneurial competencies. China produced the most number of articles, totaling 40, with the Indonesia following closely behind with 26 pieces. United State also contributed 19 articles, while Finland, Malaysia and United Kingdom produced 18, 18, and 18 articles, respectively. This suggests that the issue of achieving a VET in promoting entrepreneurial competencies is increasingly recognized and that all nations are prepared to address this equilibrium.

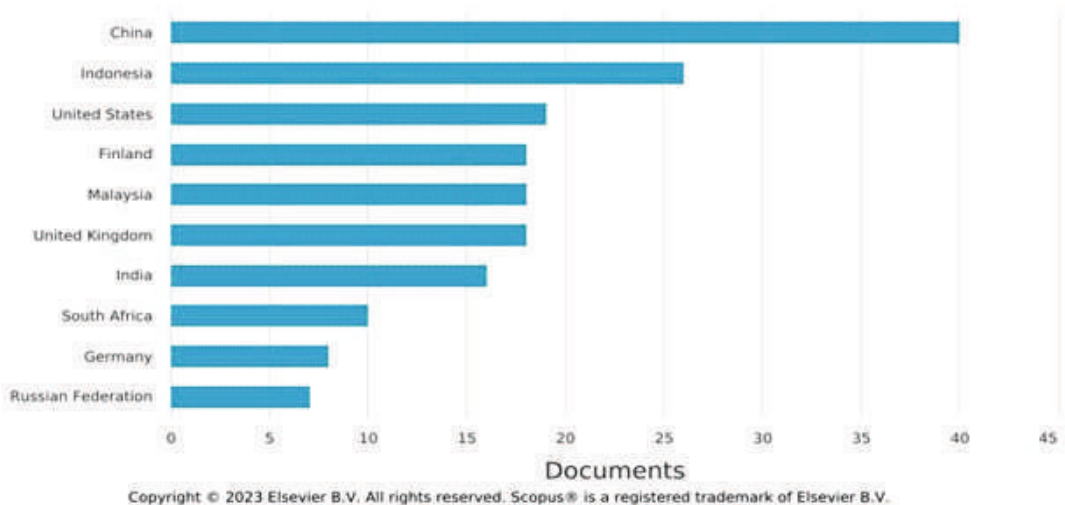


Figure – 5: Top 10 countries contributed to publish on VET in promoting entrepreneurial competencies.

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## 5. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Bibliometric analysis is an effective approach for scrutinizing extensive datasets. Nevertheless, the identification of latent structures does not imply that the identified structures may be elucidated. Our investigation has discovered a novel method for assessing the contributions of different countries. However, there is still a lack of adequate interpretation and explanation. Regarding this matter, the SciMAT tool outperforms VOSViewer by arranging the detected clusters according to their centrality and density values on a strategic map, so generating meaning. The scoping review, which focuses on mapping, is used for the purpose of aggregation, which can be seen as both a strength and a downside. Aggregation allows researchers to comprehensively capture the scope of a research topic in terms of its breadth, but only to a limited extent in terms of its depth. A critical evaluation, conducted for the purpose of interpretation, possesses both strengths and faults that are diametrically opposed to each other. A critical review has a restricted scope in terms of covering the entire subject, yet it can go into a specific area with great depth. The conundrum of this review cannot be reconciled, yet it necessitates a decision between encompassing a wide range of topics or delving into a specific subject in great detail. It is expected that future study would establish better connections between these conflicting aim viewpoints.

## 6. CONCLUSION

This study aims to investigate the rising trends of VET in promoting entrepreneurial competencies. The study employed descriptive analysis by doing an examination of Scopus analysis and bibliometric analysis. The utilization of bibliometric analysis was employed in order to ascertain the progression of scholarly inquiry pertaining to the concept of VET in promoting entrepreneurial Competencies, utilizing co-occurrence data or keywords. The data set was obtained by utilizing Scopus metadata and subsequently analyzed using VOS viewers software. It may be inferred that during the course of two decades of study on VET in promoting entrepreneurial competencies, there has been a consistent and progressive growth in the number and quality of research papers. The final mapping pertains to the advancement of VET in promoting entrepreneurial Competencies through the utilization of co-occurrence analysis, specifically focusing on keywords (Calero López, & Rodríguez-López, 2020). The present mapping serves to establish a correlation between scientific principles and the prevailing groupings. In conclusion, this bibliometric analysis of research on VET in promoting entrepreneurial Competencies offers a more comprehensive comprehension of the worldwide landscape, collaborative networks, and developing patterns in this particular domain. The results of this study provide a solid basis for future research efforts, delivering valuable insights to

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academics and professionals as they explore relevant topics and contribute to the existing body of knowledge on Vocational Education and Training and its contribution in promoting entrepreneurial Competencies.

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