Entrepreneurial Skills Development in Technical and Vocational Education and Training (TVET): A Systematic Literature Review

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Abstract

In today's context, entrepreneurial skills are an essential part of TVET programmes to achieve employability, self-employment, innovation and economic development. The labor market needs and the vocational education system have undergone profound changes, and entrepreneurship education has become an integral part of the modern vocational education system. Currently, the need for businesses has created business teaching as an important subject in vocational education systems. Therefore, this study uses the Systematic Literature Review (SLR) methodology to collate complete knowledge about entrepreneurial skills in the context of TVET as a whole. The academic literature (2020-2025) was retrieved from the Scopus and Web of Science databases. After initial queries to the database, 19 records were identified, and an appropriate and refined sample of 17 distinct studies was selected for final synthesis. The findings show that entrepreneurship education has a strong influence on the development of basic entrepreneurial skills, the attitude of entrepreneurship and the employability skills and innovativeness of TVET learners. Moreover, the synthesis highlights the significant role that models of digital skill application and inclusive entrepreneurship frameworks are playing in recent years in vocational education models. Overall, the empirical results provide real-world recommendations for vocational education and training providers, policy makers, and instructional designers responsible for developing enterprise-focused curricula when designing their programs to maximize the competencies of their graduates and their future career prospects.

Keywords: Technical and Vocational Education and Training (TVET); Entrepreneurial Skills; Entrepreneurship Education; Employability; Innovation.

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Introduction

TVET is a major pillar of the international framework of policies for workforce development. In past years, TVET was more about imparting occupation-specific technical content and practical skills to learners for immediate employment. But with the advent of rapid technological developments, the fast pace of globalization, changing employment trends and high rates of unemployment, expectations of vocational education systems have been transformed. In addition to technical expertise, graduates need to have entrepreneurial skills to help them cope with changing economic situations, create jobs and promote sustainable economic development and growth. These key entrepreneurial skills are characterized by opportunity recognition, creativity, innovativeness, leadership, risk-taking and business management. The development of these competencies promotes the initiation of self-employment and proactive entrepreneurship, which in turn boosts employability of the population along with other traditional indicators of employment (Letshaba et al., 2025; Ohene Afriyie et al., 2025).

As a result, many countries have identified entrepreneurial skills as essential skills and skills development as part of their TVET curricula. The 21st century academic agenda now considers entrepreneurship education to be one of the main vehicles for the transfer of knowledge, attitudes and skills needed for business success. Earlier works by Harun et al. (2023) have identified vocational training as a crucial factor in raising awareness and preparing individuals for their future careers as entrepreneurs, and Ng and Arshed (2025) have identified the need to incorporate business concepts into vocational education to prepare students to become business-ready. In addition, empirical studies reveal that entrepreneurial education has a positive impact on vocational students' entrepreneurial self-confidence, entrepreneurial readiness, and career intentions (Adeniyi et al., 2022; Shah et al., 2024; Yen et al., 2025).

In recent years, the role of entrepreneurship education for women, persons with disabilities, and other under-represented groups in the field of technology-integrated learning has also been highlighted in the literature (Adarkwah & Islam, 2025; Gul et al., 2025). However, current literature is still largely disjunctive and a specific focus on entrepreneurship education, key entrepreneurial skills, career aspirations, employability and innovation.

Objective of the Study:

This study aims to fill these gaps by performing a Systematic Literature Review (SLR) of scientific articles from 2020 to 2025 from the Scopus and Web of Science databases.

Literature Review

This section summarizes the works of the previous research and sets the theoretical foundation to assess the role of entrepreneurial skills in Technical and Vocational Education and Training (TVET). In addition, the current synthesis sets the groundwork for a systematic analysis of the studies selected and will form the basis for the analysis of the studies presented in the next section.

TVET and Entrepreneurship Education

Traditionally, TVET was about only providing technical and vocational knowledge and skills that were more relevant to traditional jobs. But with the changing nature of labour market demands, entrepreneurship education was linked to vocational programmes and students' own self employment programmes, as well as

macroeconomic entrepreneurship developments were realized (Ohagwu et al., 2023; Harun et al., 2023). Researchers stress the need to intentionally integrate entrepreneurial learning into technical learning, and that qualified teachers are key to the effective delivery of entrepreneurship education (Ng & Arshed, 2025; Omar et al., 2021). In general, the inclusion of business education has been taken as a key element of contemporary TVET systems.

Entrepreneurial Competencies, Mindset and Intentions

Entrepreneurship education through TVET institutions creates a basic entrepreneurial skills and abilities such as opportunity identification, creativity, innovation, leadership, and proactive solving of problems (Kissi et al., 2020). Collaborative ecosystems between educational institutions, instructors, students and industry partners (Novijen & Birnaz, 2022) greatly improve such attributes. Moreover, empirical evidence suggests that entrepreneurial self-efficacy, psychological mindsets, and career intentions have significant impacts on entrepreneurial readiness and entrepreneurial actions (Adeniyi, et al., 2022; Shah, et al., 2024; Yen, et al., 2025). The entrepreneurial psychological capital is also an important enabler of entrepreneurial behaviour, although there are also systemic and personal challenges that affect actual entrepreneurial intentions (Bakar et al., 2024; Sooknannan et al., 2024). Finally, research in the field shows that the psychological and structural factors highlighted are still the most important aspects in the context of holistic skill development of entrepreneurs in the TVET sector.

Entrepreneurship, Employability, Innovation and Inclusive Development

Entrepreneurship education is important for improving the overall employability indicators and encouraging entrepreneurship among students of TVET. There is empirical evidence that focused entrepreneurial training and structured government support has a direct impact on the entrepreneurial participation, while strong entrepreneurship education has a positive impact on the general employability and career adaptability in the long term (Salisu, 2020; Wafi et al., 2023; Mack et al., 2021). Modern studies also highlight the need for digital skills and models of learning with the aid of information technology in the entrepreneurship education context (Mustaffa et al., 2025; Adarkwah & Islam, 2025). Female empowerment and building entrepreneurial core competencies are promoted through vocational business instruction by using skill-based vocational education and innovative learning methodologies (Ahamad et al. 2016; Rathore et al., 2019). Last but not least, the effectiveness of experiential pedagogies, structured online learning platforms and emerging pedagogies further contribute to entrepreneurial development (Afreen & Chaubey, 2020; Prasanthi & Arjun, 2023; Lawan & Gujrati, 2019).

Research Gap

Entrepreneurship education is an integral component of TVET, which directly contributes to student employability and the economic growth of the country. Most of the studies conducted so far, however, are very sector-specific and show a lack of broad research into the impact of entrepreneurship education on the TVET sector as a whole. There are significant differences in knowledge about key thematic areas such as long-term entrepreneurial behaviour, actual rates of venture formation, environmental sustainability and advanced learning paradigms based on technology. As a result, the present Systematic Literature Review (SLR) was carried out to synthesize the findings of previous studies, clarify the most prominent overarching themes and cluster critical areas of scholarly interest that can be used

to inform future research agendas, institutional policies, and instructional teaching practices.

Research Questions

RQ1: What are the major research themes explored in the literature on entrepreneurial skills within TVET?

RQ2: How does entrepreneurship education contribute to entrepreneurial competence, entrepreneurial mindset, employability, and innovation among TVET learners?

RQ3: What are the challenges, opportunities, and future research directions from the existing literature on entrepreneurial skills development in TVET?

Research Methodology

Research Design

A Systematic Literature Review (SLR) was used in this study to explore the literature regarding entrepreneurial skills in Technical and Vocational Education and Training (TVET). The SLR method was chosen due to its systematic approach, transparency, and replicability in the review of existing research and reduced selection bias.

Data Sources

The literature was gathered from two widely used academic databases, the Scopus database and Web of Science (WoS). The choice of these databases was made because they are well covered by high quality, peer-reviewed publications and are widely used in a research study of systematic reviews.

Search Strategy

A systematic search strategy was used to identify the relevant studies on entrepreneurial skills development in Technical and Vocational Education and Training (TVET). The keywords used in the search process were a mix of the keywords for TVET and for entrepreneurship. The first search string that was employed was:

("Technical and Vocational Education and Training" OR TVET) AND ("Entrepreneurial Skill" OR "Entrepreneurial Competence")

Only peer-reviewed journal articles, conference papers, and book chapters, which are relevant to entrepreneurial skills and entrepreneurship education in TVET contexts were included.

Inclusion and Exclusion Criteria

The studies included in this review were selected based on the predefined inclusion criteria presented below:

Inclusion Criteria	Exclusion Criteria
English language studies	Non-English studies
Published between 2020–2025	Published before 2020
TVET-related entrepreneurship studies	General entrepreneurship studies without TVET context
Peer-reviewed journal articles, conference papers, book chapters	Editorials, notes, dissertations, reports
Indexed in Scopus/WoS	Non-indexed publications

Study Selection and Screening Process

The studies were identified using a systematic search and screening procedure. Duplicate records were eliminated and relevant ones were retrieved. The information on the process of selecting the studies for the review is summarized in Table 1.

Table 1. Study Selection Process

Stage	Number of Records
Records identified from Scopus	10
Records identified from Web of Science	9
Total records identified	19
Duplicate records removed	2
Final studies included	17

A total of 19 records (10 from Scopus and 9 from Web of Science) were identified and 2 duplicate records were excluded, leaving 17 studies to be screened for relevance. Every 17 studies identified met the inclusion criteria and progressed to the thematic analysis stage.

Quality Assessment

Before the final analysis, a quality check was carried out to ensure that all selected literature was of high academic standards and relevant to the research. Each study was assessed in relation to the following four key pillars: (i) alignment with the TVET entrepreneurship framework, (ii) explicit research aims, (iii) solid research methodology, and (iv) meaningful insights added to the field of entrepreneurial education and outcomes.

Data Analysis Technique

To identify the common patterns and concepts that emerged, thematic analysis was used as the methodology for data synthesis and proved very effective in the TVET domain. All the analytical process was done manually by intensive reading and detailed coding, and then categorisation. In Section 4 a detailed account of the three themes found is given.

Analysis and Discussion of Findings from the Systematic Literature Review

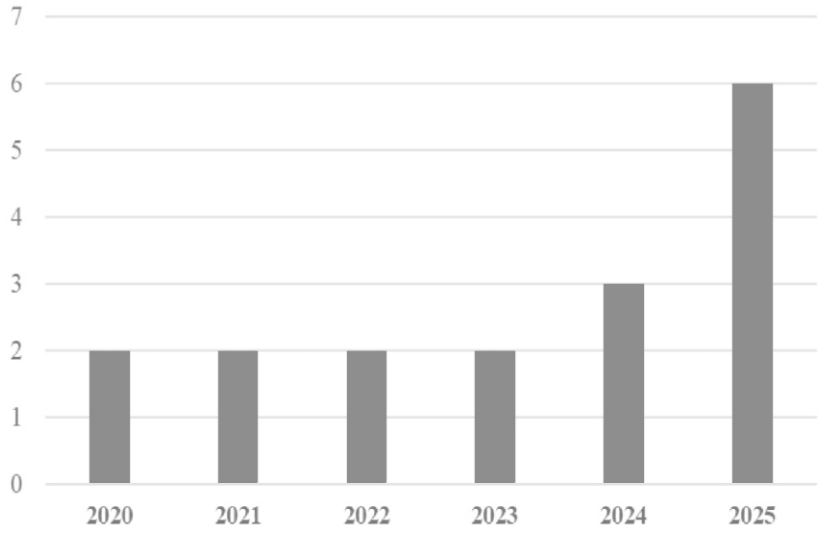
This section analyses the descriptive and thematic aspects of the chosen literature. Data trends, including the publication times, geographic origins, subject classification and sourcing databases, are examined in the first section of the review. Thematic synthesis describes the major discussions around entrepreneurial skills in TVET, following this descriptive overview. Individual study profiles are described in the next section.

Descriptive Analysis of the Selected Studies

The section covers all the studies across four categories – by year, country, subject area and by database source – to gain broad picture of TVET entrepreneurial skills research trends. The year-wise distribution of the studies included in the review is shown in table 2. The distribution emphasizes both the publishing trends and the increasing research on entrepreneurial skills in TVET from 2020 to 2025.

Table 2. Year-wise Distribution of Publications

Year	Number of Studies
2020	2
2021	2
2022	2
2023	2
2024	3
2025	6
Total	**17**



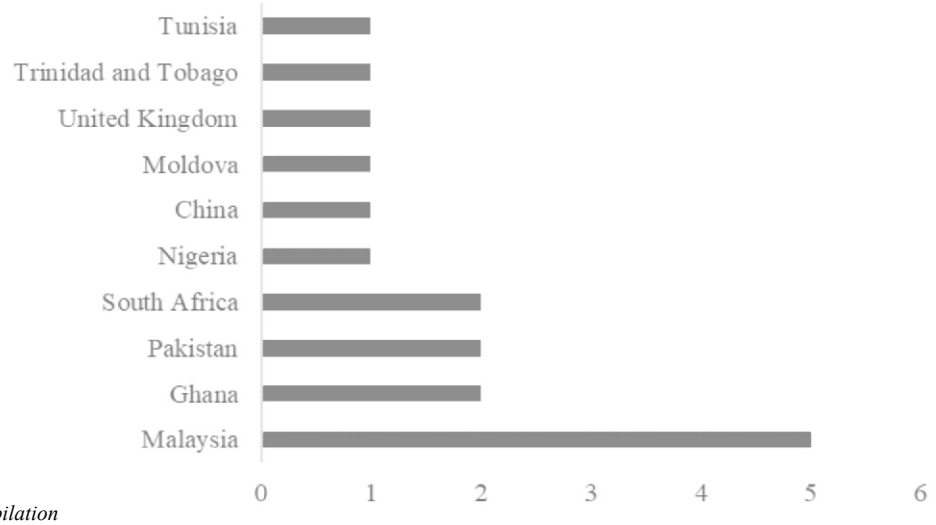
Source: Author's Compilation

Figure 1. Publication Trend (2020–2025)

The results show an increasing level of research interest in entrepreneurial skills in TVET, with 2025 having the highest number of publications (n = 6). This is an indication of the growing importance of entrepreneurship education, entrepreneurial competence, employability and self-employment in vocational education. Table 3 provides information on the distribution of the selected studies by country.

Table 3. Geographic Distribution of Included Studies

Country	Frequency
Malaysia	5
Ghana	2
Pakistan	2
South Africa	2
Nigeria	1
China	1
Moldova	1
United Kingdom	1
Trinidad and Tobago	1
Tunisia	1
Total	17



Source: Author's Compilation

Fig. 2: Geographic Distribution of Included Studies

Malaysia had the highest number of publications with n = 5 which showed that the research focus in entrepreneurship education in TVET was high. The results show that entrepreneurship has become a major focus of attention as a tool for job creation, economic diversification and sustainable development.

The studies reviewed are summarized by subject area in Table 4.

Table 4. Subject Area Classification of Studies

Subject Area	Frequency
Education and Educational Research	6
Business, Management and Entrepreneurship	5
Social Sciences	4
Economics and Finance	2
Psychology	2
Engineering and Technology	2
Rehabilitation and Disability Studies	1
Humanities	1



Source: Author's Compilation

Figure 3. Subject Area Classification of Studies

The major subject area was Education and Educational Research (6 studies) followed by Business, Management and Entrepreneurship (5 studies). There was also a considerable amount of literature in the areas of Social Sciences. A range of studies in different disciplines illustrates the interdisciplinary nature of studies on entrepreneurial skills in TVET. This implies that entrepreneurial skills are now seen to have relevance in both educational and economic, technological and social settings.

Thematic Analysis of the Selected Studies

After descriptive analysis, a thematic analysis was performed to determine the main themes identified in the selected studies. The themes and key findings identified are described in the following sections.

Theme 1: Entrepreneurship Education Integration in TVET

One of the most prominent themes that was prevalent in the reviewed studies was entrepreneurship education. Literature consistently shows that the modern TVET institutions no longer only teach technical and vocational skills, but also a focus on entrepreneurial learning in order to equip learners with skills for self-employment, innovation and business creation. According to Harun et al. (2023), entrepreneurship education has been integrated into the TVET systems, especially in Malaysia, as educational institutions are increasingly emphasizing on entrepreneurial readiness and practical skills in business. Learning through entrepreneurship combined with technical training will build technical and entrepreneurial skills. Similarly, good entrepreneurship education and proficiency in TVET teaching skills contributes to improving opportunity recognition and entrepreneurial outcomes (Omar et al., 2021; Letshaba et al., 2025).

Key Findings

- There is growing integration of entrepreneurship education to TVET curriculum.
- Curriculum Integration: An increase in entrepreneurial awareness and business readiness.
- The instructor competency is very important in successful delivery of entrepreneurship education.
- Entrepreneurship education enhances the opportunity recognition and opportunity exploitation skills.
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Challenges Identified

- Limited entrepreneurial expertise among instructors.
- Lack of integration of the vocational disciplines with entrepreneurship.
- Lack of industry oriented & experiential learning opportunities.
- Limited resources to put into programmes focused on entrepreneurship.

Practical Implications

TVET institutions need to integrate entrepreneurship education into the vocational programmes and enhance their training of TVET trainers. Opportunities for experiential learning will be more easily achieved and the outcomes of entrepreneurship among the learners will be better if there is more collaboration with industry stakeholders.

Theme 2: Entrepreneurial Competence Development

The development of entrepreneurial competence is a focal aspect of in TVET entrepreneurship education. Entrepreneurial competencies involve the knowledge, skills, attitudes and behaviours needed to recognise opportunities, innovate, problem solve, make decisions and establish a business. All of the reviewed studies confirmed that entrepreneurial competence is an important result of vocational education. The following issues were highlighted by Kissi et al. (2020) regarding the improvement of entrepreneurial competence: Practical training, Mentorship, Industry partnership and institutional support. Their findings pointed out that the experiential learning method is very important in developing entrepreneurial skills of vocational students. Similarly, Entrepreneurship education improves

Entrepreneur competencies and Opportunity recognition (Novijen & Birnaz, 2022; Letshaba et al., 2025). Entrepreneurial competence also boosts self-efficacy and entrepreneurial behaviour (Ohene Afriyie et al., 2025).

Key Findings

- Entrepreneurial competence is a core outcome of entrepreneurship education.
- Competence development is assisted by experiential learning and industry collaboration.
- The entrepreneurial competence has a positive effect on self-efficacy and entrepreneurial behaviour.
- The entrepreneurial competency of opportunity recognition and opportunity exploitation is important.

Challenges Identified

- Limited opportunities for practical entrepreneurial experience.
- Low level of cooperation between TVET institutions and industry.
- Variations in measuring entrepreneurial competence.
- Lack of a standard entrepreneurial competency frameworks.

Practical Implications

TVET institutions should focus on competency based learning strategies, industry linkages and ensure they devise a competency framework to assess entrepreneurial competency effectively.

Theme 3: Entrepreneurial Self-Efficacy and Entrepreneurial Intentions

The entrepreneurial self-efficacy and entrepreneurial intentions were found to be significant themes in the reviewed literature. Entrepreneurial self-efficacy is the degree of self-efficacy that a person has in conducting entrepreneurial tasks successfully, entrepreneurial intention is the readiness to conduct entrepreneurial activities and build new ventures. Results from the literature consistently show that TE has a positive impact on strengthening both constructs of the TVET learners. Entrepreneurship education has a positive effect on entrepreneurial competence, self-efficacy, confidence and entrepreneurial intentions of the TVET learners (Ohene Afriyie et al., 2025; Shah et al., 2024; Yen et al., 2025). Further, psychological capital and self-efficacy have a positive influence on students' business innovation intentions (Sooknannan et al., 2024).

Key Findings

- The entrepreneurial self-efficacy positively affects entrepreneurial readiness.
- Entrepreneurship Education reinforces entrepreneurial intentions of the TVET learners.
- Entrepreneurial competence is a key factor in entrepreneurial confidence.
- Psychological capital and self-efficacy have a positive impact on entrepreneurial behaviour and intentions for innovation.

Challenges Identified

- Low confidence of entrepreneurial skills among vocational students.
- Few entrepreneurial role models and mentors

available.

- Barriers to entrepreneurial intentions due to gender.
- Lack of hands-on entrepreneurial experiences.

Practical Implications

TVET institutions should have mentorship programmes, entrepreneurial simulations and experiential training, to enhance entrepreneurial confidence and promote entrepreneurial career paths among students.

Theme 4: Employability, Self-Employment and Job Creation

There are two important outcomes related to entrepreneurship education in TVET: employability and self-employment. The existing literature reviewed indicated that entrepreneurship education can be helpful in improving the employability of graduates and at the same time it can help to stimulate self-employment and business creation. Entrepreneurship is increasingly seen as a possible alternative means of dealing with unemployment and of encouraging the participation of the economy, particularly in the competitive and uncertain landscape of today's labour markets. Wafi et al. (2023) highlighted that entrepreneurship oriented talent development programmes have the potential of creating job creators instead of job seekers among the TVET graduates. Their research revealed that entrepreneurial training is crucial in preparing graduates to start businesses and work for themselves. On the other hand, entrepreneurial training, government support, and capacity building programs foster entrepreneurial activities, self-employment, and economic empowerment (Salisu, 2020; Djelassi, 2024; Gul et al., 2025).

Key Findings

- Entrepreneurship education enhances employability and career readiness.
- Entrepreneurial training is designed to promote the creation of entrepreneurial ventures and self-employment.
- Government support has a positive impact on entrepreneurial involvement.
- Entrepreneurship is a way to enhance economic empowerment and income generation.

Challenges Identified

- Shortage of start-up funds and financing.
- Low entrepreneurial supports.
- Regulatory and institutional hurdles in the creation of business.
- Lack of training programme – entrepreneurial ecosystem linkages.

Practical Implications

Policy makers and educational institutions must increase efforts in supporting of entrepreneurs, access to start-up funding and setting up incubation programmes to promote successful entrepreneurial enterprises of TVET graduates.

Theme 5: Inclusive and Technology-Enabled Entrepreneurship Development

The final theme that emerged from literature was incorporated on inclusive entrepreneurship and using emerging technologies in entrepreneurial skill development. Studies in recent times are increasingly stressing the importance of access to entrepreneurship education to women, people with disability and other marginalized groups. Adarkwah and Islam (2025) examined how to leverage “immersive learning technologies” and

"metaverse based environments" to improve entrepreneurial competencies of persons with disabilities. They found that technology-based learning environments can enhance accessibility and at the same time build entrepreneurial capabilities. The study offers a possible explanation that digital innovations could be an important way to increase participation in entrepreneurship education. Likewise, Gul et al. (2025) emphasized the role of entrepreneurship in economic empowerment and self-employment of the skilled women. Together, these studies illustrate the benefits of entrepreneurship education do not stop at the bottom-line issue of economic goals and extend to the social development goals. Inclusive entrepreneurship efforts may be leveraged to decrease inequalities and increase opportunities to entrepreneurship among underrepresented groups.

Key Findings

- The use of technology in the learning environment facilitates the development of entrepreneurial skills.
- Entrepreneurship education is inclusive, accessible.
- Women's economic empowerment is enhanced through entrepreneurial activities.
- Digital platforms open up entrepreneurial learning possibilities.

Challenges Identified

- Poorly developed technological facilities and digital availability.
- Lack of digital skills among learners and teachers.
- Social/cultural barriers to marginalized groups.
- Wide-ranging implementation expenses of sophisticated learning technologies.

Practical Implications

TVET institutions need to invest in digital learning technologies, encourage inclusive entrepreneurship projects, and create specific support programmes for women, persons with disabilities and other groups and minority groups to address inequalities in access to entrepreneurship opportunities.

Conclusion and Recommendations

This systematic literature review analysed 17 studies from 2020 to 2025 on entrepreneurial skills in TVET. The results of the study prove that entrepreneurship education has an important role in building entrepreneurial skills, improving entrepreneurial mindsets, increasing employability and encouraging innovation for learners. The study findings overall show that TVET with an entrepreneurial focus can make a strong contribution to sustainable employment, economic development and entrepreneurial growth. Thus, there is a need to focus more on enhancing curriculum, training educators, engaging with industry and building entrepreneurial ecosystems to improve entrepreneurial skills development in TVET systems.

Recommendations of the Study

The systematic literature review results have implications for the policy makers, teachers, researchers, and TVET institutions. For any TVET policies to be effective, there will be a need for considerable funding, business incubation support and a well-structured development program. The seamless collaboration between the TVET institutes, industry and government is also crucial. Entrepreneurs need access to capital, specific

training, commercial markets and technology tools immediately upon their inception. Entrepreneurship education is and must be experiential education and not theory. Students' innovative ability, leadership and analytical problem-solving ability is directly promoted in the vocational tracks through project work, business simulation exercises, visits and mentorship. TVET centers should leverage industry networks to establish functional areas which enable students to turn their business ideas into actual startups. It is also crucial to focus on the role of the digital economy and create equal opportunities for women, disabled people and disadvantaged communities. The present knowledge gaps provide good opportunities for conducting research on sustainable business models and regional differences. In general, an entrepreneurship-based TVET model is an integral part of the engine to support increased self-employment and inclusive economic growth.

Future Research Directions

The thematic analysis showed that entrepreneurial skills have been integrated as an integral part of the current TVET systems. Existing research tends to focus mainly on the competencies, mindset and intentions of the entrepreneurs while less research has been conducted on the creation of an actual business and its sustainability among the graduates of TVET. Therefore, based on the identified research gaps, the following research questions are proposed for future research:

Future Research Questions

RQ1: What is the impact of entrepreneurship education on TVET graduates' ability to create ventures and sustain businesses?

RQ2: What is the relationship between entrepreneurial competencies and entrepreneurial behaviour in the long term in TVET setting?

RQ3: What is the impact of digital technologies and technology-enabled learning environments on entrepreneurial skill development in TVET institutions?

RQ4: What is the influence of entrepreneurial ecosystems, government support and industry partnerships on improving entrepreneurial outcomes of TVET graduates?

Limitations of the Study

There are a few limitations in this study. It excluded research that was not in English and was not indexed in the Scopus and Web of Science databases, which could have resulted in the omission of some relevant studies. The results of this review might have been affected by publication bias, and it was based on secondary data from published studies only. Further research is needed to apply other databases and empirical studies to give a better understanding of entrepreneurial skills development in TVET.

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References:

Adarkwah, M. A., & Islam, A. Y. M. A. (2025). Enhancing entrepreneurial skills of persons with disabilities (PWDs) through immersive learning in the metaverse: A design thinking approach. *Disability and Rehabilitation: Assistive Technology, 20*(7), 2103–2117. https://doi.org/10.1080/17483107.2025.2524609

Adeniyi, A. O., Derera, E., & Gamede, V. (2022). Entrepreneurial self-efficacy for entrepreneurial readiness in a developing context: A survey of exit level students at TVET

institutions in Nigeria. *SAGE Open, 12*(2). https://doi.org/10.1177/21582440221095059

Afreen, A., & Chaubey, D. (2020). Impact of antecedents of online learning on learner's satisfaction in higher education: An empirical investigation on Commerce and Management students in the COVID era. *SMS Journal of Entrepreneurship & Innovation*, *7*(Issue-1), 77-88.

Ahamad, T., Sinha, A., & Shastri, R. K. (2016). Women empowerment through skills development & vocational education. *SMS Journal of Entrepreneurship & Innovation*, *2*(2), 76-81.

Bakar, K. A., Mohamad, M. A., Ahmad, N. N., Sahlan, M. K., & Harahap, A. Z. M. K. (2024). Entrepreneurial intention challenge in TVET education. *Journal of Technical Education and Training, 16*(1), 148–160.

Djelassi, M. (2024). Training services and repayment performance of micro-borrowers in Tunisia. *Applied Economics, 56*(17), 2008–2024. https://doi.org/10.1080/00036846.2023.2178629

Gul, N., Zada, M., Contreras-Barraza, N., Salazar-Sepúlveda, G., Ullah, N., & Din, Q. M. U. (2025). Empowering Balochistan's skilled women: Unleashing self-employment potential. *Acta Psychologica, 260*, Article 105407. https://doi.org/10.1016/j.actpsy.2025.105407

Harun, G., Rahim, N. A., & Mohamed, Z. (2023). A systematic review of technical and vocational education and training (TVET) entrepreneurship education in Malaysia: Insights and directions. In *2023 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM 2023)* (pp. 577–582). IEEE. https://doi.org/10.1109/IEEM58616.2023.10406319

Keelson, S. A., Addo, J. O., Kwarteng, K., & Amoah, J. (2025). The role of innovation in fostering entrepreneurial mindset among TVET students. *African Journal of Applied Research, 11*(1), 285–305. https://doi.org/10.26437/ajar.v11i1.849

Kissi, E., Ahadzie, D. K., Debrah, C., & Adjei-Kumi, T. (2020). Underlying strategies for improving entrepreneurial skills development of technical and vocational students in developing countries: Using Ghana as a case study. *Education + Training, 62*(5), 599–614. https://doi.org/10.1108/ET-11-2019-0264

Lawan, L. A., & Gujrati, R. (2019). Teaching Pedagogies of Entrepreneurship Education and Entrepreneurial Intention of Students of Higher Education in Nigeria: An Evaluation. *SMS Journal of Entrepreneurship & Innovation*, *5*(Issue-2), 1-12.

Letshaba, R. K., Mahosi, B. N., & Sibiya, A. (2025). Does entrepreneurship education invigorate opportunity recognition and exploitation? *Southern African Journal of Entrepreneurship and Small Business Management, 17*(1), 1–9. https://doi.org/10.4102/sajesbm.v17i1.1068

Mack, A. J., White, D., & Senghor, O. (2021). The benefits of exposing post-secondary students to entrepreneurship training in Trinidad and Tobago. *Humanities and Social Sciences Communications, 8*(1). https://doi.org/10.1057/s41599-021-00905-8

Mustaffa, M., Selvaratnam, D. P., Tawil, N. M., & Affandi, H. M. (2025). Digital skills as success factors in TVET entrepreneurship education: A systematic review. *Journal of Ecohumanism, 4*(2), 2709–2723. https://doi.org/10.62754/joe.v4i2.6819

Ng, H. S., & Arshed, N. (2025). The integration of entrepreneurship education into TVET: Challenges, solutions, and opportunities. In *Navigating Entrepreneurial Opportunities in the Metaverse* (pp. 217–248). IGI Global. https://doi.org/10.4018/979-8-3373-2943-7.ch009

Novojen, O., & Birnaz, N. (2022). Ecosystem of learning in initial vocational education and training: An innovative model for development of entrepreneurial competence. In *Research Anthology on Vocational Education and Preparing Future Workers* (Vol. 1, pp. 148–157). IGI Global. https://doi.org/10.4018/978-1-6684-5696-5.ch009

Ohagwu, O., Nwanesi, P. K., & Hassan, Z. B. (2023). Skill acquisition (TVET) and entrepreneurship. *International Journal of Academic Research in Business and Social Sciences, 13*(8), 1857–1878. https://doi.org/10.6007/IJARBSS/v13-i8/17776

Ohene Afriyie, E., Snowden, M., Winful, E. C., Opoku-Asante, K., Ocloo, E. C., Quaye, J. N. A., Opuni, F. F., Hyams-Ssekasi, D., & Halsall, J. P. (2025). Does the entrepreneurship learning approach influence self-efficacy? The role of students' entrepreneurial competence and satisfaction. *Journal of Innovation and Entrepreneurship, 14*(1). https://doi.org/10.1186/s13731-025-00507-7

Omar, M. K., Ismail, K., Abdullah, A., Kadir, S. A., & Jusoh, R. (2021). Embedding entrepreneurial knowledge in vocational college curriculum: A case study of the competency of TVET instructors. *Pertanika Journal of Social Sciences and Humanities, 29*(Special Issue), 101–117.

https://doi.org/10.47836/pjssh.29.s1.06

Prasanthi, G., & Arjun, P. (2023). Perspectives and a plethora of New Educational and Entrepreneurial Approaches between 2020–2023 in Andhra Pradesh, India. *SMS Journal of Entrepreneurship & Innovation*, *10*(Issue-1), 93-107.

Rathore, G. S., Singh, B., Kumar, S., Rai, R., & Kumar, K. (2019). Business prospects for entrepreneurs in skill based online education. *SMS Journal of Entrepreneurship & Innovation*, *6*(Issue-1), 80-95.

Salisu, J. B. (2020). Entrepreneurial training effectiveness, government entrepreneurial supports and venturing of TVET students into IT related entrepreneurship: An indirect-path effects analysis. *Heliyon, 6*(11), e05504. https://doi.org/10.1016/j.heliyon.2020.e05504

Shah, N., Bano, S., Saraih, U. N., Abdelwahed, N. A. A., & Soomro, B. A. (2024). Boosting entrepreneurial intentions among potential TVET entrepreneurs of higher education institutes. *Education + Training, 66*(7), 981–1006. https://doi.org/10.1108/ET-07-2023-0300

Sooknannan, R., Coetzee, M., & Potgieter, I. L. (2024). Business innovation intent among college students: Contributions of psychological capital and entrepreneurial self-efficacy. *Journal of Psychology in Africa, 34*(5), 471–476. https://doi.org/10.1080/14330237.2024.2370052

Wafi, A. A., Subri, U. S., Asshaari, I., Zulkifli, R. M., Mohamed, S., Hanapi, Z., Che' Rus, R., & Kamal, M. F. M. (2023). Turning job seekers to job creators: Talent management module development for TVET graduates. *Journal of Technical Education and Training, 15*(1), 102–115. https://doi.org/10.30880/jtet.2023.15.01.010

Yen, W. T. M., Omar, S. S., Choy, C. S., Hong, T. L., & Wei, C. C. (2025). Nurturing future women TVETpreneurs: A study on female TVET students' entrepreneurial intentions. *Paper Asia, 41*(6), 624–642. https://doi.org/10.59953/paperasia.v41i6b.833