

Empowering Balochistan's skilled women: Unleashing self-employment potential

Nagina Gul^{a,*}, Muhammad Zada^{b,c}, Nicolás Contreras-Barraza^d, Guido Salazar-Sepúlveda^{e,f}, Naimat Ullah^g, Qaiser Mohi Ud Din^h

^a Faculty of Management Sciences, Balochistan University of Information Technology, Engineering, and Management Sciences (BUIITEMS), Quetta, 87300, Pakistan

^b Facultad de Administración y Negocios, Universidad Autónoma de Chile, Santiago 8320000, Chile

^c Applied Science Research Center, Applied Science Private University, Amman 11931, Jordan

^d Pontificia Universidad Católica de Valparaíso, Valparaíso 2340025, Chile

^e Facultad de Ingeniería, Universidad Católica de la Santísima Concepción, Concepción 4090541, Chile

^f Facultad de Ingeniería y Negocios, Universidad de Las Américas, Concepción 4090940, Chile

^g Faculty of Education, Lasbela University, Pakistan

^h Business School, Harbin Institute of Technology, Harbin, Heilongjiang 150001, China

ARTICLE INFO

Keywords:

Women empowerment
Skilled women
Women's self-employability
TVET programs
Balochistan

ABSTRACT

Technical and Vocational Education and Training (TVET) programs are increasingly recognized as equipping women with essential skills to navigate the dynamic labor market. However, there is limited research on the specific impact of TVET on women's self-employability. This study explores the relationship between TVET participation and self-employability among women in Balochistan, addressing a critical gap in the literature. A mixed-methods approach was utilized, combining quantitative data from 368 current and former female TVET students in Quetta with qualitative insights from in-person interviews and focus groups involving 27 participants, including female graduates, skilled female entrepreneurs, and subject matter experts. Thematic analysis highlighted the opportunities and challenges women entrepreneurs face during and after TVET engagement. Key findings revealed that while TVET contributes positively to entrepreneurial development, many women continue to struggle with work-life balance issues. Traditional gender roles and societal expectations impose significant time and energy constraints on individuals. Moreover, limited access to credit, inadequate funding, and complex loan procedures hinder the success of female-led micro and small enterprises. Social constraints, family obligations, and interpersonal skills influence entrepreneurial outcomes. This study advocates that governments and local bodies provide family support services to help ease the burden on women who balance business and family commitments. Enhancing TVET's role in equipping women with critical skills while simultaneously addressing systemic challenges can help Balochistan foster a more inclusive and equitable economic future for female entrepreneurs.

1. Introduction

Technical and Vocational Education and Training (TVET) in Pakistan has evolved in response to shifting socioeconomic needs, educational priorities, and policy reforms. Following the 1947 partition, Pakistan pursued self-reliance and industrial growth, thereby developing a skilled workforce. Its primary goal has been to create a skilled workforce for Pakistan's industrial and service sectors (Pirzada & Gulzar, 2023). TVET can play a crucial role in addressing the high unemployment rates

among the growing global population, especially among individuals aged 15–30. As highlighted by Dadzie et al. (2024), TVET is designed to equip graduates with the practical knowledge and skills required by industry, a view also supported by Anderson, Covin, and Slevin (2009). However, it also has weaknesses, including an imbalanced focus on technical education and a lack of collaboration between institutions. An excessive focus on technical skills often sidelines critical thinking, creativity, and soft skills, which are necessary in a dynamic job market (Ahmed & Khan, 2018). Moreover, weak collaboration between

* Corresponding author.

E-mail addresses: nagina.gul@buitms.edu.pk (N. Gul), muhamed.zada@uautonoma.cl (M. Zada), nicolas.contreras@pucv.cl (N. Contreras-Barraza), gusalazar@ucsc.cl (G. Salazar-Sepúlveda), niamat.edu@luawms.edu.pk (N. Ullah), qaiser.mohi-ud-din@outlook.com (Q. Mohi Ud Din).

<https://doi.org/10.1016/j.actpsy.2025.105407>

Received 29 January 2025; Received in revised form 7 August 2025; Accepted 11 August 2025

Available online 29 August 2025

0001-6918/© 2025 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC license (<http://creativecommons.org/licenses/by-nc/4.0/>).

institutions leads to fragmented instructional policies that limit knowledge exchange and innovation (Hussain, Mu, Mohiuddin, Danish, & Sair, 2020). Although the reform support program underperformed, fostering strong stakeholder coalitions could still enhance sectoral development (Chamadia & Shahid, 2018).

Pakistan's TVET sector, overseen by NAVTTC, has shown significant improvements, consisting of a 42 % budget increase to PKR 8.7 billion in 2021–22 (Altaf & Shabir, 2024). The Government introduced the Skills for All strategies and Competency-Based Training & Assessment (CBT&A) to enhance certification and align with international standards (Amin, Rehman, & Ali, 2023). Public-private partnerships have strengthened industry linkages, whilst digital skills training in AI and e-commerce modernizes the sector (Khan, Ahmad, Javed, & Nasir, 2023). This study examines the development of Technical and Vocational Education and Training (TVET) in Pakistan, focusing on the "Skilling Pakistan" reforms introduced within the National Skill Strategy (NSS) (2009–2013) and the progress of the TVET Reform Support Programme (2011–2016). As noted by Abd and Mustapha (2022), effective TVET systems serve as critical drivers for workforce readiness, entrepreneurship development, and socio-economic transformation. The Skilling Pakistan reforms under the NSS have yielded positive effects, transforming the TVET sector into a demand-driven system that contributes to the country's socio-economic development (Ansari & Wu, 2013). However, further efforts are required to enhance quality, ensure equality and equity, and provide equal access to lifelong learning opportunities. TVET has been recognized globally as a means of equipping individuals, including women, with practical skills and knowledge to enter the labor market and engage in self-employment (Eppeler-Hattab, 2022).

In Balochistan, gender disparities in education and economic opportunities persist. Women constitute only 22 % of the labor force, primarily in low-paying informal sectors (International Labour Organization, 2021). Balochistan's economic growth highlights the pressing need for inclusive social development strategies particularly those focused on empowering women through education and skills development (Mohamed, 2023). Addressing these challenges requires policy intervention and structural reforms to promote gender-inclusive growth. TVET programs have garnered increasing recognition as a practical means of equipping women with valuable skills to navigate the rapidly fluctuating labor market (UNICEF, 2021). TVET aims to bridge the gap between education and the workforce by preparing learners, including women, for specific trades, occupations, and professions with practical and industry-specific competencies (Pouliakas & Branka, 2020; Silva, 2022). Regional funding constraints that hinder the stability of incubation centers limit entrepreneurial growth (Rehman & Ali, 2022; Mohamed, 2023). Amidst the modern-day Industrial Revolution, technical vocational education and training (TVET) has gained comprehensive attention in the realm of education due to its distinct qualities (Asad, Mahar, Datoo, Sherwani, & Hassan, 2023). Germany's dual-training TVET model demonstrates how skilled professionals can drive socio-economic progress—a lesson relevant to Pakistan's reform efforts (Okoli, 2016). Developing a trained and qualified workforce remains critical for achieving sustainable economic growth and aligning with global standards (Ustilaitė, Poteliūnienė, Šimkienė, Sabaliauskas, & Cesnavičienė, 2024). In this context, entrepreneurship serves as a pivotal mechanism for empowering women, enabling them to overcome societal constraints, discrimination, gender inequalities, and mobility challenges, and to actively contribute to Pakistan's economic and social development (Rizvi, Qureshi, & Ansari, 2025).

However, Pakistan faces significant challenges in terms of gender parity, ranking disappointingly low in the Global Gender Gap Index (World Economic Forum, 2021a). TVET enhances employability and financial independence (International Labour Organization, 2021), enabling women in Pakistan to establish businesses and fill gaps in the healthcare and IT sectors (Shah et al., 2021; World Bank, 2023; Rasool, Zafar, & Khalid, 2025). Although the overall effectiveness of TVET

programs is increasingly recognized, a significant research gap persists regarding their specific impact on women's self-employability, particularly in Balochistan, where gender disparities in education and employment opportunities remain pronounced (Ahmed et al., 2022). Addressing this gap contributes to advancing Sustainable Development Goals, notably SDG 4 on Quality Education, by promoting the role of education in fostering broader societal welfare (Kissi, Ahadzie, Debrah, & Adjei-Kumi, 2020; Okwelle & Wordu, 2014). The number of working women, especially female entrepreneurs, has increased worldwide (Staniewski & Awruk, 2019; Tambunan, 2011; Ustilaitė et al., 2024; Zainol & Al Mamun, 2018). Given the evolving role of TVET in promoting employability and economic inclusion, particularly among women, this study critically examines how TVET programs influence women's self-employment in Balochistan. Despite global and national efforts to integrate gender perspectives within vocational education, significant disparities persist, particularly in regions such as Balochistan, where structural and cultural barriers are deeply entrenched. By investigating the impact of TVET initiatives on women's entrepreneurial outcomes, this study addresses a critical gap in the literature. It contributes to ongoing efforts to achieve inclusive economic development and the broader Sustainable Development Goals (SDGs), notably SDGs 4 and 5.

The lack of economic opportunities for women in Balochistan remains a significant challenge due to deep-rooted socio-cultural barriers, restricted mobility, and limited access to financial resources (UN Women, 2022a, 2022b). This issue is further exacerbated by the absence of a structured support system for women entrepreneurs, which hinders their ability to establish and sustain a business (UNESCO, 2022a; International Labour Organization, 2023a, 2023b). Despite its long-standing presence, Balochistan's TVET system lacks a cohesive evaluation of how programs are implemented and perceived by students, educators, and industry stakeholders. When considering reforms in vocational systems, it is crucial to critically assess and align them with national objectives critically (Euler, 2013). This study aimed to investigate the perspectives and aspirations of female students pursuing TVET in Balochistan, examining their current educational experiences and future career prospects. It also explores sector-specific opportunities, including IT, healthcare, and fashion design, where TVET programs can enhance women's participation. Strengthening gender-inclusive training and industry linkages can enhance women's economic participation and regional development (Mohamed, 2023; UNESCO, 2022b; World Bank, 2023).

To enhance human capital, it is not enough to restructure TVET for women alone; continuous upskilling of the broader workforce is essential (World Economic Forum, 2021a). OECD countries have recognized a correlation between increasing female unemployment rates and the design and implementation of TVET programmes (Powell & McGrath, 2019). In Pakistan, the TVET sector faces multiple challenges, including limited industrial linkages, high unemployment rates, insufficient teacher preparation, low female participation, a poverty rate of 71.2 %, and a youth labor force participation rate of only 44 % (Kazmi & Abbas, 2020; UNDP, 2024; ILO). An employment crisis persists, as 25,000 graduates enter the labor market annually, but only 2000 secure employment opportunities (Hayat, 2020). The study highlights the positive outcomes associated with effective TVET implementation, such as increased profitability, salary growth, and enhanced employment prospects for skilled women (Mustafa, Rizov, & Kernohan, 2017). Effective empowerment of women with advanced skills requires strong linkages between TVET institutions and industries seeking talented female professionals (Oviawe, 2018). This research aims to examine the role of TVET institutes in promoting women's self-employment skills and evaluate existing TVET programs in Quetta, Balochistan, thereby addressing the lack of investigation into the empowerment of skilled women. According to Bano, Yang, and Alam (2022), despite the rapid expansion of TVET institutions, they will continue to face significant challenges related to inadequate human resources and limited physical

infrastructure. The rising demand for skilled workers necessitates an exploration of the potential relationship between enhancing women's self-employability through TVET and broader job creation. However, empirical evidence supporting this relationship is scarce. To address this gap, the study investigates four research questions focused on women's experiences, challenges, and outcomes related to TVET participation in Balochistan.

1.1. Research objectives

1. To analyze the role of TVET institutes in promoting women's hands-on skills in Quetta, Balochistan.
2. To identify the factors contributing to the success of TVET programs in enhancing the self-employability of skilled women in Balochistan.
3. To examine the perceptions of enrolled and pass-out women regarding TVET institutes' role in promoting their self-employment skills in Quetta, Balochistan.
4. To examine the challenges and barriers that skilled women face in accessing and participating in TVET programs in Balochistan.

1.2. Research questions

1. What are TVET institutes' roles in promoting women's hands-on skills in Quetta, Balochistan?
2. What factors contribute to the success of TVET programmes in enhancing the self-employability of skilled women in Balochistan?
3. How do enrolled and pass-out women perceive TVET institutes' roles in promoting their self-employment skills in Quetta, Balochistan?
4. What challenges and barriers do skilled women face in accessing and participating in TVET programmes in Balochistan??

While the importance of Technical and Vocational Education and Training (TVET) for workforce development is widely acknowledged, its role in enhancing women's self-employment remains underexplored particularly in marginalized regions such as Balochistan. Existing studies primarily emphasize general employment outcomes, overlooking gender-specific barriers and the unique pathways women take towards entrepreneurship. To address this gap, this study examines how hands-on, product-based training in Quetta's TVET institutes enhances the entrepreneurial competencies of skilled women and supports their transition into self-employment. By offering empirical evidence from an under-researched region, the study enriches the discourse on gender-inclusive skills development and provides actionable insights for policy measures that promote inclusive and sustainable economic growth in Balochistan.

2. Literature review

TVET institutions play a strategically vital role in developing skills and enhancing women's self-employability, especially in regions with pronounced gender disparities and limited access to formal education (Smith & Zook, 2018). Literature focusing on Quetta highlights the nuanced impact of TVET on women's skill acquisition and entrepreneurial engagement within a unique sociocultural context (Williams & Patterson, 2019). Globally, TVET is recognized for addressing gender disparities in employment, aligning with SDGs 5 and 8 (Plance, 2020). These global goals are particularly relevant in Quetta, where such gaps are pronounced. This section evaluates TVET's role in fostering women's practical skills in Quetta, drawing on recent findings related to program effectiveness, learner perspectives, and key challenges to inform policy refinement. By examining program effectiveness, women's perspectives, and challenges, this review offers insights crucial for refining policy. Despite the significance of TVET in skill enhancement, limited research exists on its impact on gender-disparate regions. Recent research aims to address this gap by examining the influence of TVET on women's entrepreneurship in Quetta (Ahmed, Shakeel, & Khan, 2021). TVET is

crucial for Balochistan's development, as the province cannot achieve sustained social and economic growth without a skilled and innovative workforce capable of adapting to evolving needs (Younis, Ramzan, & Gul, 2020). Recent studies (e.g., Jackson, Ekong, & George, 2022) have examined program design, learner perceptions, graduate outcomes, and access barriers—highlighting TVET's role in fostering economic growth, social equity, and sustainability. TVET is crucial in emerging economies, as it adapts to evolving economic needs (Azeem & Rasool, 2025). The inclusion of industries in skills training design enhances its effectiveness (Yamada & Otchia, 2020). Similarly, Gul, Khan, and Anwar (2019) emphasize the core aim of TVET in empowering women with skills for employment and entrepreneurship. While many governments aim to close gender gaps in entrepreneurship, Pakistan continues to face a significant imbalance, with males outnumbering females by 6.57 million. The 'Global Gender Gap Report 2021' ranks Pakistan 153rd out of 156 nations with a widening gender gap (World Economic Forum, 2021a). Nonetheless, education and mass media are gradually shifting societal perceptions, contributing to improved awareness and empowerment for women (Ali et al., 2011).

2.1. Technical and vocational education in Asia

The development trajectory of Asian countries provides insights into strategies that can be implemented to create decent and productive employment. Such lessons can inform more targeted and inclusive employment strategies in Pakistan. By examining regional experiences, Balochistan can adopt and adapt proven strategies to suit its unique socio-economic context, ultimately leading to the creation of more and better employment opportunities for skilled women. A key takeaway from East and Southeast Asia is the integration of TVET with industrial policies targeting high-growth employment sectors (Felipe-Lucia et al., 2015; Mehrotra, 2016). Countries such as Korea, Singapore, and Japan offer mature and integrated VET systems that significantly contribute to national productivity and employment outcomes (Yao, 2021). Similarly, China's experience illustrates how a strategically aligned TVET system can serve as a powerful engine for both economic growth and job creation (Tang & Shi, 2016).

2.2. TVET in Pakistan

Pakistan's TVET sector faces multifaceted challenges: outdated curricula, poor training quality, weak governance, limited funding, minimal industry linkage, job scarcity, and pervasive negative perceptions (Ahmed, Wadood, & Mohammad, 2020) about vocational education. Gender disparity remains pronounced, with cultural norms historically reinforcing male dominance in technical roles and limiting women's participation. The National Vocational Technical Education Commission (NAVTEC) was established in 2005 to enhance vocational and technical education. To remain competitive in a globalized economy, Pakistan must reform and strengthen its TVET sector to align with evolving labor market demands. While many countries are adapting smoothly to emerging socio-economic paradigms, Pakistan continues to struggle with structural and institutional challenges (Azeem et al., 2022). Effective TVET delivery requires collaboration among polytechnics, private training centers, and vocational institutions. In Balochistan, such coordination is crucial for economic growth, necessitating strategic investment in skill development and human capital (Ahmed et al., 2020).

2.3. Impact of TVET on economic empowerment

The role of Technical and Vocational Education and Training (TVET) in empowering women economically is gaining increasing attention, particularly in developing regions marked by limited employment and income opportunities. In Balochistan, TVET institutions serve a pivotal role in bridging the gender gap by equipping women with practical,

market-relevant skills (Ahmed et al., 2021). Vocational training enables women to participate more fully in both formal and informal labor markets. By acquiring skills traditionally dominated by men, women not only expand their employment prospects but also gain confidence, self-esteem, and greater access to income-generating opportunities (Minani & Sikubwabo, 2022). These advantages enhance their autonomy, reduce dependency, and increase their role in household and community-level economic decision-making. Empirical evidence in Balochistan suggests that vocational training has enhanced women's skills in sectors such as tailoring, food processing, digital skills, and technical trades. However, disparities in access, training quality, and institutional support continue to hinder consistent progress for women learners (Shah, Bano, Saraih, Abdelwahed, & Soomro, 2024). Despite higher enrollment in male-dominated fields such as engineering and IT, occupational segregation continues to restrict women's integration into high-growth sectors (Hojeij, Baroudi, & Meda, 2023; Matenda, 2020). Attitudinal and motivational factors influence the intentions of female TVET graduates to pursue entrepreneurship. Those who view TVET as a route to economic independence are more likely to pursue self-employment or small businesses (Rahman & Sattar, 2025). This is particularly relevant in Quetta, where cultural norms limit formal employment but are more accepting of women-led entrepreneurship.

However, structural weaknesses in NAVTTC and affiliated TVET bodies prevent the full realization of these benefits. Many programs lack integration of theory and practice, failing to align with labor market demands (Ahmed et al., 2020; UNESCO-UNEVOC, 2023). To improve effectiveness, TVET curricula should incorporate competency-based modules, entrepreneurship, and ICT skills, supported by flexible schedules, childcare, and transport services. TVET should go beyond addressing unemployment and catalyze the development of a skilled female workforce suited for both traditional and emerging sectors. This requires ongoing upskilling and reskilling to meet the evolving demands of labor markets driven by technological progress and global economic changes (Gul, Xiaolin, & Lanrong 2017; Syed et al., 2021). Programs in Balochistan have shown promise in promoting women's economic empowerment, but require stronger policy frameworks focusing on access, instructional quality, and industry partnerships to support women's transition into sustainable livelihoods.

2.4. Skilled women's self-employability/entrepreneur startup

Women are emerging as digital leaders, not only managing family and work responsibilities but also contributing to national economic development by equipping the younger generation with skills (Alvi & Tarar, 2021). Despite family and financial constraints, women continue to defy societal norms and establish independent identities (Manshani & Dubey, 2017). Women's entrepreneurship has emerged as a significant area of study (Terjesen, Bosma, & Stam, 2016). This study examines the impact of female entrepreneurship on self-employment. Prior studies suggest causal links between various factors related to women's entrepreneurship and employability (Altaf & Shabir, 2024; Mohamed, 2023; Anderson et al., 2009; Annan-Brew, Ezugwu, Surman, & Dadzie, 2024; Aravamudhan, Sivakumar, Vishnu, & Mohanasundaram, 2024; Din, Tahir, Xiaojuan, Alqahtani, & Gul, 2025; Gul, Khan, Haq, Zaman, & Baloch, 2022; Ghouse, Altaf, & Mudassar, 2025; Gul, Xiaolin, Lanrong, & Sadozai, 2017; S. M. Ghouse, Durrah, & McElwee, 2021; S. M. Ghouse, McElwee, & Durrah, 2019; Khan, Ameer, Bouncken, & Covin, 2023; Kitole & Genda, 2024; Mohi Ud Din & Zhang, 2025; Rehman et al., 2023). Identifying practical solutions is critical and should align with a country's stage of development (Welsh, Tullar, & Nemati, 2016). MacDonald et al. (2023) highlight that entrepreneurship education fosters women's personal and professional development. Empowerment through skill development represents a critical intersection of social and economic progress, especially from a gender perspective. Access to TVET is crucial for advancing gender equality and enhancing women's socioeconomic autonomy (Kabeer, 2005). Skill development enables

women to pursue broader economic opportunities and challenge traditional gender roles. In Quetta, women's participation in TVET offers a platform for challenging gender norms and promoting financial independence. However, social norms continue to restrict women's participation and mobility in various industries (Naseer, Taha, & Hasan, 2023). Tackling these barriers requires an integrated approach that considers gender, skill development, and social context. TVET-trained women in Balochistan have significantly contributed to household income by enhancing their education and skills. They support household expenses, care for families, and increasingly engage in Balochistan's economic and social life. To strengthen TVET's public image, public-private partnerships must be leveraged, and sustained investment should align with its core purpose (Oviawe, 2018). TVET aims to produce graduates who are well prepared for workforce demands (Jabarullah & Iqbal Hussain, 2019).

2.5. Gender-specific barriers to self-employment

TVET program evaluations in Balochistan reveal multiple gender-specific barriers limiting women's participation and empowerment through skill development. A growing body of literature emphasizes the need to address these challenges systematically (Khan, Arshad, Iqbal, Aslam, & Mushtaq, 2023). Specifically, sociocultural norms and entrenched gender roles restrict women's mobility, autonomy, and decision-making potential in the context of education and vocational training. Traditional perceptions often discourage women's participation in non-conventional trades, limiting their vocational aspirations and employment prospects (Gul et al., 2017; Yousuf, Bhatti, & Awan, 2023). These cultural constraints not only shape societal expectations but also influence household-level decisions, often leading to the underrepresentation of women in skill-based education sectors that are critical for entrepreneurship and self-employment. Addressing these complex gendered dynamics requires targeted intervention by policymakers, educators, and community stakeholders. A key strategy involves cultivating a gender-inclusive learning environment that challenges stereotypes and promotes diverse pathways for women in vocational fields (UNESCO-UNEVOC 2023). Including equity-oriented approaches in TVET program design and implementation can help mitigate these sociocultural constraints. Economic barriers further exacerbate the gender gap in access to vocational training. Direct and indirect education costs, along with limited access to credit, microfinance, and startup funding for entrepreneurship, restrict women's ability to pursue TVET courses and initiate self-employment ventures (Canton, 2021; Jahanzaib, Fatima, & Hanif, 2024). Such economic constraints are often magnified in low-income households where education is deprioritized.

Balancing household responsibilities and study remains a significant challenge, especially in patriarchal and limited-resource environments. The social perception that women are expected to prioritize domestic chores and caregiving over skills development perpetuates educational inequalities (Buvinic & Furst-Nichols, 2014; Abbas et al., 2023; Chunjia Hu & Qaiser Mohi Ud Din, 2025). Such an imbalance is frequently exacerbated by a lack of support structures within the family and community, making long-term training difficult for women to pursue. To address these barriers, it is necessary to integrate gender-responsive approaches into TVET curricula and institutional frameworks. Such measures include flexible schedules, childcare services, transportation stipends, and awareness campaigns aimed at shifting the public perception of women's contributions to the labor market (Khan & Kamal, 2022). Facilitating mentorship and leadership development in TVET can enhance self-efficacy and encourage greater female representation in entrepreneurial ecosystems. Furthermore, addressing gender-specific challenges to TVET participation requires a comprehensive, intersectional approach that integrates the economic, cultural, and institutional dimensions. Only through targeted policy reform and sustained community outreach can self-employment opportunities for women in regions like Balochistan be meaningfully expanded.

2.6. Entrepreneurship outcomes in marginalized regions

Pakistan is endowed with abundant human and natural resources, yet their optimal utilization remains a challenge, particularly in marginalized regions. As Pakistan advances economically, building a skilled human capital base is increasingly critical to sustained national development. Despite policy initiatives, the gender gap in labor force participation is widening, impeding inclusive growth and equity (UNDP, 2023). The establishment of TVET programs was intended to address skill mismatch and improve workforce readiness in major industries. Empirical evidence shows TVET in Pakistan has largely failed to equip women with market-relevant skills (Fatima & Qureshi, 2023; Ahmed, 2020). This deficiency is primarily due to outdated infrastructure, weak industry connections, and a lack of alignment with labor market needs.

Female labor force participation remains constrained by institutional barriers and entrenched societal norms (Talento, Tandang, Rogelio, & Araña-Roldan, 2022). Addressing these challenges through gender-responsive TVET programming is necessary for economic empowerment. This study examines the role of TVET in contributing to the development of women's entrepreneurship in Quetta, a socioeconomically marginalized region. By investigating the systemic inefficiencies of the TVET ecosystem, this study aims to identify key barriers, success factors, and sociocultural attitudes that shape women's entrepreneurial trajectories. TVET programs that incorporate experiential learning, mentorship, and industry collaboration are strongly linked to entrepreneurial success (International Labour Organization, 2022). When aligned with local market dynamics, such programs can catalyze female-led entrepreneurship. Capacity-building programs that enhance self-efficacy and entrepreneurial intent have significantly improved women's participation in self-employment and startups (Khan & Kamal, 2022).

Yet, systemic gender bias, limited financial access, and a lack of supportive ecosystems continue to obstruct women's entrepreneurship. Such structural barriers not only hinder involvement but also influence the viability of entrepreneurial ventures (Buvinic & Furst-Nichols, 2014; Abbas et al., 2023). Striking a balance between preparing individuals for wage employment and entrepreneurship remains a key policy challenge, especially in a rapidly evolving economic context. These findings underscore the need for a comprehensive approach to skill development, prioritizing inclusiveness, labor relevance, and institutional flexibility among policymakers, educators, and development actors. By leveraging targeted TVET reforms and enhancing institutional support, Pakistan can unlock the entrepreneurial potential of women in marginalized areas, thus contributing to overall socioeconomic transformation.

3. Theoretical framework

3.1. Human capital theory

This study examines the impact of national investment in TVET on individual social inclusion. Human capital theory offers an economic rationale for policymakers to support individuals' participation in education (Gale & Molla, 2015). As per human capital theory, individuals with enhanced skills, knowledge, and attitudes are more likely to secure and retain relevant employment (Gebel & Heineck, 2019). TVET enhances learners' human capital, enabling them to contribute meaningfully to both the workforce and society (Bohne, Eicker, & Haseloff, 2017). In Balochistan, efforts to enhance the self-employability of skilled women through TVET are grounded in this theoretical framework. By facilitating women's acquisition of practical skills, TVET fosters an entrepreneurial spirit, promotes economic growth, and challenges entrenched gender biases.

3.2. Theory of entrepreneurial bricolage

This study extends entrepreneurial bricolage theory by examining

how women achieve success in self-employment despite resource constraints. Bricolage is especially relevant for women entrepreneurs who face systemic barriers to accessing capital and resources. Skilled women can use bricolage as a problem-solving strategy when operating under resource and time constraints. Effective bricolage requires entrepreneurs to understand their available resources deeply and remain open to creative recombination (Weick & Sutcliffe, 2001). Business bricolage fosters originality in opportunity creation. Innovative resource recombination enables entrepreneurs to deliver unique offerings to existing markets or create entirely new ones, addressing unmet or emerging demands.

3.3. Conceptual model for the study

Fig. 1 shows a word tree map from the text query analysis, visually representing how participants' responses clustered around the central theme of 'entrepreneurship skills'. It illustrates how self-employment, empowerment, marketing ability, managerial capacity, and financial independence are interconnected with women's TVET experiences. The left branch emphasizes the role of TVET and skilled women, linking participant views on career development, empowerment, and overcoming family and institutional barriers. The right branch, 'Skilled Women Empowerment,' illustrates how TVET develops technical and soft skills, enhances confidence, and facilitates economic participation.

These qualitative findings inform the conceptual model. It illustrates how both current and former students perceive the role of TVET institutes in promoting self-employment in Quetta. It highlights key success factors in enhancing the self-employability of women through TVET. The model demonstrates the relationship between TVET participation and women's self-employability. The model is based on data collected from TVET graduates.

4. Research methodology

Data for this study were collected from five TVET institutions in Quetta, Balochistan. A mixed-methods approach was used to examine women's self-employability and the impact of TVET programs in Balochistan. This design supported a comprehensive exploration of the research questions, drawing on principles from Cohen, Manion, and Morrison (2000) and Rahi (2017). Quantitative and qualitative data were collected concurrently. Public and private institutions were purposefully selected from the BTEVTA rankings, which classify them by diploma and certification offerings. Selected institutions included the Government Girls Polytechnic Institute (GGPI), Women's Technical Training Centre, Government Vocational Institute, Social Welfare Institute (Nawa Killi), and Women's Technical Center (Jinnah Town), all located in Quetta. Systematic random sampling (Hibberts, Burke Johnson, & Hudson, 2012) ensured the selection of a representative sample. This ensured equal selection probability for both current and former TVET students, regardless of program type. Programs included the TVET Regular Course, CBT, NAVTTC, and UNHCR sessions, as well as diplomas ranging from six-month certifications to three-year programs. Researchers conducted in-person visits and invited students to participate, yielding a sample of 368 diploma and certificate holders.

4.1. Research design

Semi-structured interviews were used to explore skill disparities between diploma and certification programs. This qualitative approach relied on semi-structured interviews and purposive sampling. As recommended by Creswell and Creswell (2017) and Elbardan and Kholeif (2017), purposive sampling was employed, well-suited to qualitative, case-based research. Fictitious names were used to maintain the anonymity of TVET participants and women entrepreneurs. Key TVET experts also participated, including the Directors of SMEDA, NIC (BUTEMS), and NAVTTC, as well as principals of TVET institutes. TVET

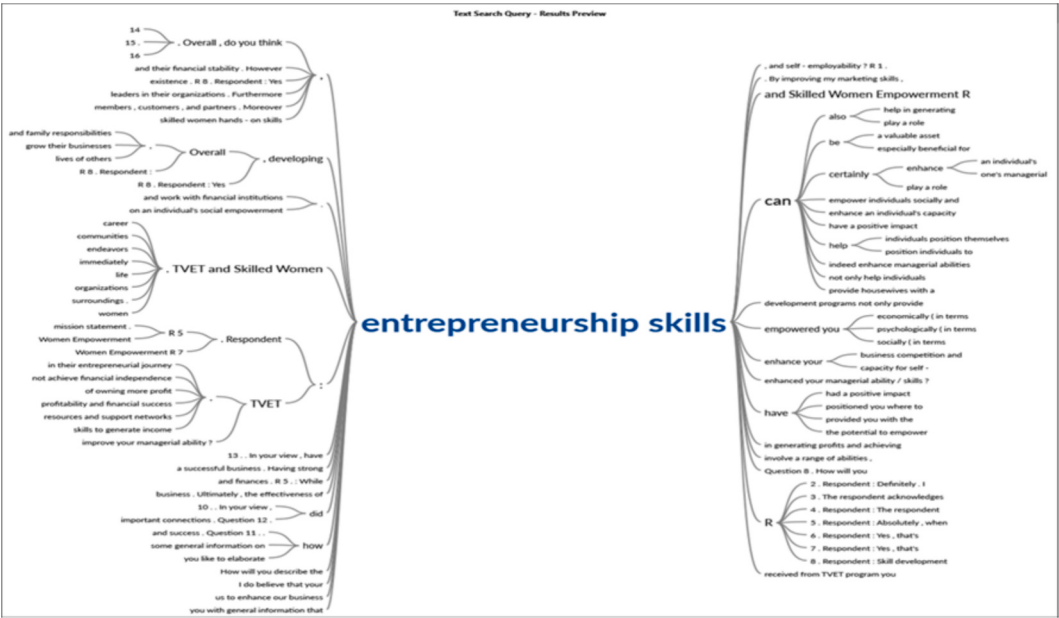


Fig. 1. The tree map illustrates the empirical model, depicting the linkages among TVET exposure, entrepreneurial intent, and self-employment outcomes. Source: NVivo's creation.

experts, including key individuals, such as the Director of SMEDA, the Director of NIC (BUIITEMS), the Director of NAVTTC, and Principals of TVET institutes. Table 4 profiles skilled women entrepreneurs, showing their TVET backgrounds, startup ventures, and experience in fashion design, consultancy, education, and culinary arts. Notably, most entrepreneurs have over five years of experience, with some exceeding ten years of leadership roles. Table 5 outlines the demographics of TVET experts, including directors, trainers, and principals with experience in business, technical, and vocational education. These experts play a critical role in enhancing TVET programs and bridging the skill gaps.

TVET participants were enrolled in disciplines such as dressmaking, computer applications, beautician services, cooking, fine arts, and office management, with training durations ranging from six-month certificates to three-year diplomas. This skill set reflects the enormous scope of TVET education in Balochistan, and its potential to enhance women's employability and entrepreneurship. Participants included female TVET students, women entrepreneurs, and TVET experts. Notable experts, including the Directors of SMEDA, NIC (BUIITEMS), NAVTTC, and various TVET principals, participated in the interviews: Tables 3, 4, and 5 present participant profiles, educational backgrounds, and institutional roles. The interviewees had experience ranging from 5 to 15 years. All interviewees were anonymized using fictitious names. Qualitative interviews complemented the quantitative data, offering more profound insights into the research questions. The interviews captured the complexities of women's self-employability and TVET's contribution to job creation. The interview process concluded when the researchers reached data saturation, indicating that further interviews would no longer yield significant contributions. Twenty-seven semi-structured interviews were conducted across three participant groups: TVET graduates, women entrepreneurs, and subject matter experts.

4.2. Quantitative data collection and procedures

Quantitative data were collected via self-administered questionnaires distributed to 420 enrolled and graduated TVET students under the RASTA project. Of the 420 questionnaires distributed, 381 were returned, and 368 were found complete and valid for analysis. Descriptive statistics, including frequencies and percentages, were calculated to summarize the quantitative variables. Descriptive analysis

was used to address the research questions. Table 1 summarizes respondent demographics, including marital status, age, education,

Table 1
Respondents' profile.

Category	No. of respondents	Percentage
Gender		
Female	368	100 %
Age (years)		
Less than 25	174	47.3 %
25–35	90	24.5 %
36–45	38	10.3 %
46–55	48	13 %
Above 55	18	4.9 %
Qualification		
Matric	62	16.8 %
Intermediate	121	32.9 %
Bachelor's	69	18.8 %
Master's	116	31.5 %
Experience in years		
Below 5	188	51.1 %
6–10	100	27.2 %
11–15	36	9.8 %
16–20	33	9 %
Over 20	11	3 %
Marital status		
Single	239	64.9 %
Married	102	27.7 %
Divorced	22	6 %
Widow	5	1.4 %
Sector		
Public sector	87	23.6 %
Private sector	196	53.3 %
Semi-government	85	23.1 %
Types of skills		
Computer application	81	22 %
Office management	60	16.3 %
Dressmaking	100	27.2 %
Beautician	82	22.3 %
Cooking	45	12.2 %
Types of programmes		
TVET regular course	71	19.3 %
CBT course	93	25.3 %
NAVTTC session	98	26.6 %
UNHCR session	45	12.2 %
Diploma	61	16.6 %

work experience, skill types, and program enrollment. The sample included only female participants, in line with the study's focus on women's development through TVET. The age distribution was as follows: 47.3 % were under 25, 24.5 % were between 25 and 35, 10.3 % were between 36 and 45, 13.0 % were between 46 and 55, and 4.9 % were above 55. Only 4.9 % of respondents were older than 55 years. Education levels: 16.8 % had matric degrees, 32.9 % completed intermediate, 18.8 % held bachelor's degrees, and 31.5 % held master's degrees. Work experience levels: 51.5 % had less than 5 years, 27.2 % had 6–10 years, and 9.8 % had 11–15 years. The majority of female participants were single (64.9 %). Employment distribution: 53.3 % worked in the private sector, 23.6 % in the public sector, and 23.1 % in semi-governmental roles. Among reported skills, dressmaking was most common (27.2 %).

Table 2 indicates that the mean values for the variables ranged from 0.000 to 3.82, and the standard deviations ranged from 0.000 to 1.33.

4.3. Qualitative data collection and procedures

In-depth interviews were conducted with TVET participants to explore the core phenomenon of the study. Face-to-face interviews were scheduled at participants' convenience to ensure rich, relevant data collection (Mitchell & Rich, 2020). A semi-structured interview guide was used, allowing flexibility as not all questions were asked in every interview (Shane, 2023). Each interview lasted an average of 40 min, with a range of 30 to 45 min. Sample interview questions included:

- 1) From your perspective, how have practical skills improved access to employment opportunities?
- 2) How have they enhanced their capacity for self-employment? If so, please provide a detailed explanation.
- 3) How would you describe the entrepreneurship skills acquired from the TVET program you attended?
- 4) Did these skills enable you to identify business ideas and perceive them as potential opportunities?

All participants gave informed consent via a standard consent form before data collection. A pilot study was conducted, and Cronbach's alpha was used to test the reliability of the measurement instrument. Twenty TVET graduates participated in the pilot, completing the questionnaire and offering feedback on its clarity and structure.

4.4. Qualitative data analysis

An inductive thematic analysis framework was employed to analyze the data by the research objectives. Thematic analysis identified key patterns from the semi-structured interviews, complementing the survey data. APA ethical guidelines were followed throughout the research. Focus groups were conducted with enrolled students from selected TVET institutes in Quetta. This method is suitable for business studies as it supports focused exploration of key topics. The moderator introduced

each discussion and explained the purpose of the questions. Before each session, participants were informed about the audio recording and reassured about the confidentiality of their responses. Participants could withdraw at any time if they were uncomfortable with the recording.

Thematic analysis was used for systematic data processing (Thompson, Deatrick, Knafl, Swallow, & Wu, 2022). After the interviews were conducted, the text was transcribed from Urdu to English. The transcripts were reviewed multiple times to identify patterns and inconsistencies. Table 3 presents the demographic characteristics and educational profiles of the enrolled and graduated students who participated in semi-structured interviews. It includes coded names, gender, trades pursued, program durations, and institutions attended. The participants pursued diverse skills, including dressmaking, computer applications, fine arts, beauty therapy, cooking, and office management. The analysis reveals the distribution of participants across TVET programs and institutions. This enhances understanding of the TVET landscape and its impact on women's skill development. The findings inform discussions and interventions aimed at promoting gender equality and women's empowerment through skill development.

Table 4 presents the demographic characteristics of the skilled female entrepreneurs who participated in the semi-structured interviews. It includes coded names, gender, qualifications, years of experience, and professional designations. The table reflects a diverse cohort of women with varying educational backgrounds and extensive professional experience across multiple sectors. These participants hold leadership roles within the entrepreneurial ecosystem, offering valuable insights into how TVET has shaped their career trajectories and self-employment outcomes.

Table 5 presents the demographic characteristics of the experts interviewed in the study, including coded names, gender, qualifications, years of experience, and professional designations. The table outlines the profiles of a diverse group of experts—comprising ten males and ten females—with varied educational backgrounds and extensive professional experience. These individuals hold key leadership roles across technical education, vocational training, and entrepreneurial development. The demographic data offer valuable insights into their expertise and contributions, underscoring the breadth and depth of knowledge that informed the qualitative findings.

Table 6 presents the demographic profile of the enrolled and graduated female participants who took part in the focus group discussions. The table includes coded names, qualifications, years of experience, and designations, along with information on the specific skill programs pursued, program durations, and institutions attended. Participants represented a diverse range of trades, including beautician training, dressmaking, computer applications, and cooking, with training durations ranging from six months to one year. A total of eight female participants contributed to the focus group discussions, offering valuable insights into their experiences within various TVET programs.

5. Results

The results section incorporates visual elements—including a hierarchy chart, word tree map, and word tag cloud to illustrate key findings. Fig. 2 presents the hierarchy chart, which provides a structured visual representation of the main themes and subthemes derived from the qualitative data. It specifically emphasizes the determinants of skilled women's self-employability and the role of TVET programs in Balochistan. Composed of nested rectangles, the hierarchy chart visually encodes the volume of coded data within each node: larger rectangles signify themes with greater frequency or richer content, while smaller ones indicate less prominent areas. To improve interpretive clarity, the figure is directly referenced in the narrative, with its relevance to the research objectives clearly articulated. The chart illustrates how practical skill acquisition, entrepreneurial support, institutional barriers, and sociocultural dynamics collectively shape the employability landscape for skilled women. This visual synthesis not only reinforces the thematic

Table 2
Demographic profile of participants.

	Minimum	Maximum	Mean	Standard deviation
Age	1.00	5.00	2.0380	1.24128
Gender	0.00	0.00	0.0000	0.00000
Experience in years	1.00	5.00	1.8560	1.10408
Qualification	1.00	4.00	2.6495	1.09467
Marital Status	1.00	4.00	1.4375	0.66963
Sector	1.00	3.00	1.9946	0.68457
Types of Skills	1.00	5.00	2.8641	1.31974
Types of Programmes	1.00	5.00	2.8152	1.33434
HS	1.86	5.00	3.7077	0.60619
ES	2.43	5.00	3.7451	0.50339
EG	2.00	5.00	3.8216	0.57619

Table 3

Demographic profile of enrolled and graduated women.

S/N	Coded name	Gender	Technical/vocational	Trades	Duration	Institution
1	Student 1	F	Technical	Dressmaking	3 Years	GGPI (Saryab Road)
2	Student 2	F	Technical	Computer Application	3 Years	GGPI (Saryab Road)
3	Student 3	F	Vocational	Dressmaking	6 Months	BWBA(NGO)
4	Student 4	F	Vocational	Beautician	6 Months	GVI (Sirki Road)
5	Student 5	F	Vocational	Cooking	6 Months	AWTTC(Samungli)
6	Student 6	F	Technical	Fine Arts	3 Years	GGPI (Saryab Road)
7	Student 7	F	Vocational	Beautician	6 Months	SWTC (Nawa Killi)
8	Student 8	F	Vocational	Dressmaking	6 Months	GVI (Sirki Road)
9	Student 9	F	Technical	Office Management	3 Years	GGPI (Saryab Road)

Table 4

Demographic profile of skilled entrepreneurs.

S/N	Coded name	Start-up name	Qualification	Experience	Designation
1	Women Entrepreneur 1	The Riders Pvt. Ltd	TVET Graduate	More than 6 years	Founder & CEO
2	Women Entrepreneur 2	AL-Buraaq Enterprises	BS Entrepreneur	More than 5 years	Founder & CEO
3	Women Entrepreneur 3	Plates of Flavor	TVET Graduate	More than 8 years	Founder & CEO
4	Women Entrepreneur 4	Uraan Consultancy Services	M.BA	More than 5 years	Founder & CEO
5	Women Entrepreneur 5	Iffat Training Center	TVET Graduate	More than 8 years	Founder & CEO
6	Women Entrepreneur 6	She Bakes	TVET Graduate	More than 10 years	Founder & CEO
7	Women Entrepreneur 7	Raqs-e-Rang Studio	BS Fashion Design	More 5 years	Founder & CEO
8	Women Entrepreneur 8	Diamanté By Sœurs	Business Graduate	More than 9 years	Founder & CEO

Table 5

Demographic information of experts.

S/N	Coded name	Gender	Qualification	Experience	Designation
1	Shakoor Ahmed	Male	MBA (UK)	More than 15 years	Director SMEDA
2	Moh Shah	Male	MS Business	More than 8 years	Director NIC (BUIITEMS)
3	Gulam Raza	Male	TVET Graduate	More than 17 years	Director NAVTEC
4	Shohaib Sherazi	Male	MBA	More than 15 years	Principal GVI & Expert (GIZ)
5	Ghazal Nagi	Female	MBA	More than 5 years	Master Trainer (GIZ)
6	Arifa Ali	Female	Graduate	More than 15 years	Principal GGPI (Saryab)
7	Zareena	Female	Graduate	More 12 years	Principal GVI (Sirki Road)
8	Faisal	Male	M.BA	More than 10 years	Expert (GIZ)
9.	Zaheer	Male	Business Graduate	More than 10 years	Trainer GVI (Sirki Road)
10	Deedar Aman	Female	Graduate	More than 15 years	DOCH (Pvt) Ltd. Founder & CEO

analysis but also strengthens the coherence between the study's findings, conceptual framework, and overall research objectives.

The hierarchy chart offers a comprehensive visual summary that complements the narrative findings, enhancing the reader's understanding of how key factors interact to shape women's self-employment

outcomes within the context of Balochistan's TVET ecosystem.

5.1. Theme 1: TVET skilled women hands-on skills

Interview and field note data revealed that TVET programs significantly contributed to improving women's livelihoods, enhancing their quality of life, and empowering them to participate in household decision-making. The findings highlight the pivotal role of TVET in developing women's hands-on technical skills, which not only increased their employability but also supported their entrepreneurial endeavors. Participants commonly perceived that women in Balochistan had acquired practical skills through TVET, enabling them to produce high-quality goods (see Fig. 3). These include traditional crafts such as carpet weaving, painting, embroidery, and other handmade products. Many of these goods are sold both locally and internationally, serving as vital sources of income and reflecting the entrepreneurial capabilities of skilled women in the region.

5.2. Theme 2: TVET skilled women entrepreneurship skills

The findings indicate that TVET programs play a crucial role in equipping women with the foundational knowledge and guidance needed to initiate their own businesses. Participants reported receiving advice on how to develop viable business ideas and make optimal use of available resources. TVET enhanced key entrepreneurial competencies such as effective communication, decision-making, financial management, marketing, and networking (see Fig. 4). While these skills are vital for fostering self-employment, their impact often depends on individual circumstances and the challenges faced throughout the entrepreneurial

Table 6

Demographic profile of enrolled and graduated students from focus group discussions.

S/N	Coded name	Gender	Skill programme	Trades	Duration	Institution
1	Student 1	Female	Regular course	Beautician	6 Months	GVI (Sirki Road)
2	Student 2	Female	Navtic session	Dressmaking	6 Months	GVI (Sirki Road)
3	Student 3	Female	Regular course	Computer Application	6 Years	GVI (Sirki Road)
4	Student 4	Female	CBT Course	Dressmaking	6 Months	GVI (Sirki Road)
5	Student 5	Female	Navtic session	Computer Application	6 Months	GVI (Sirki Road)
6	Student 6	Female	UNHCR Session	Dressmaking	6 Months	GVI (Sirki Road)
7	Student 7	Female	CBT Course	Cooking	6 Months	GVI (Sirki Road)
8	Student 8	Female	Regular course	Beautician	6 Months	GVI (Sirki Road)

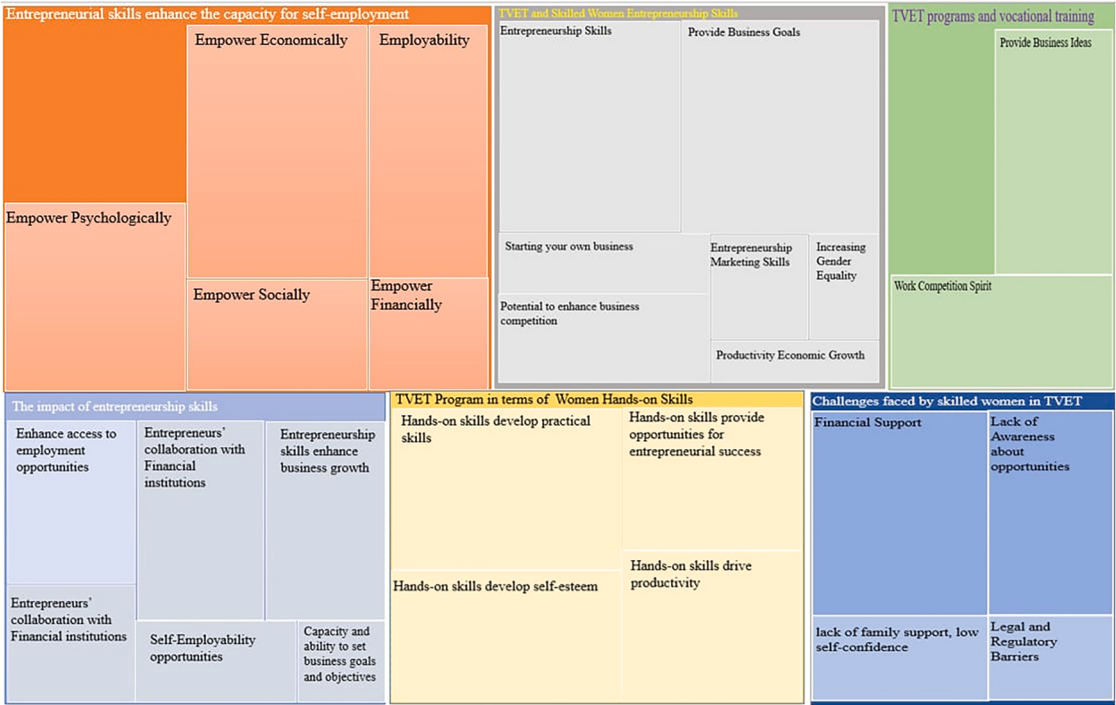


Fig. 2. Hierarchy chart for findings of the study. Source: Author's creation using NVivo software.

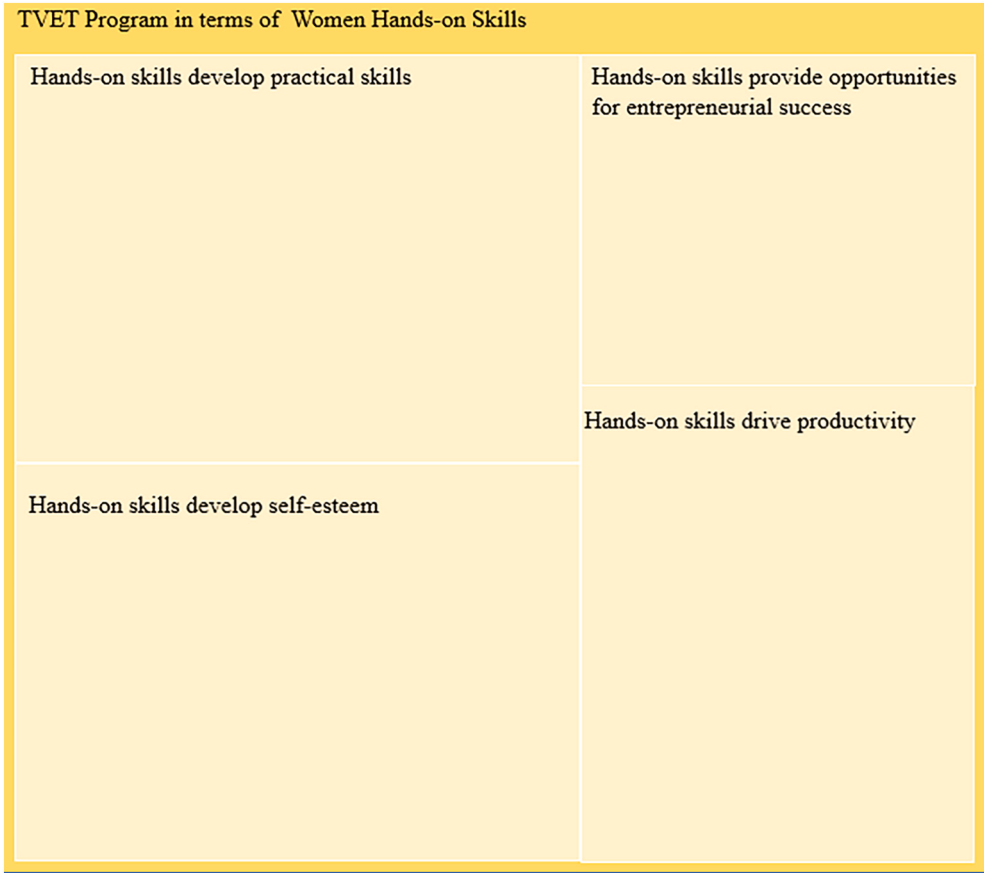


Fig. 3. TVET's role in women's hands-on skills. Source: Author's creation using NVivo software.



Fig. 4. Entrepreneurship skills enhancement for self-employment. Source: Author’s creation using NVivo software.

journey. Most participants emphasized that a combination of general education, targeted skill development, and socio-cultural support was essential in enabling women to pursue entrepreneurship in diverse sectors. This underscores the broader value of TVET as a mechanism for economic empowerment, particularly in contexts where skill acquisition has a direct influence on women’s socio-economic mobility. Additionally, the income growth in rural communities was frequently attributed to the training and skills gained through TVET programs, further validating their transformative impact.

5.3. Theme 3: TVET: entrepreneurship skills and skilled women empowerment

The findings underscore that entrepreneurial skills developed through TVET are particularly valuable for housewives seeking to increase their income and contribute to the economy. These skills have led to multi-dimensional empowerment—economic, psychological, and social for skilled women (see Fig. 5). Increased engagement in entrepreneurial activities has not only improved household income but also elevated women’s roles within their families and communities. Participants frequently emphasized that skilled women have become key agents in poverty alleviation, contributing to economic growth at the

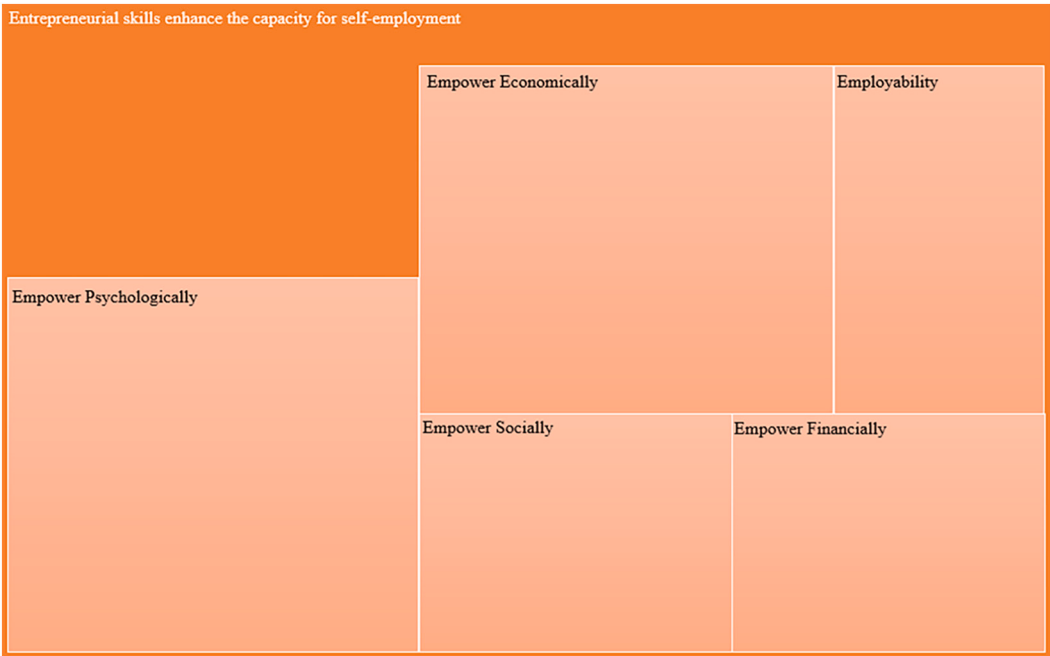


Fig. 5. Role of TVET in women empowerment. Source: Author’s creation

grassroots level. Furthermore, their financial independence has had a ripple effect, positively influencing their children’s health, education, and overall family well-being. The data also reveal a strong correlation between TVET and women’s empowerment, with TVET acting as a catalyst for dismantling entrenched gender roles. By providing women with agency and access to economic participation, TVET supports broader societal transformation and promotes gender equality. Participants consistently viewed entrepreneurial skill development particularly through TVET as central to building human capital and developing the workforce across sectors. One interviewee aptly summarized this perspective: “TVET programmes are essential for developing skills that lead to employment, self-employment, and entrepreneurship” (Interviewee 00). The participant elaborated that TVET represents a holistic framework for education and training, encompassing multiple forms of learning formal, non-formal, and informal and preparing individuals for diverse careers across economic and social sectors.

5.4. Theme 4: challenges in the pursuit of success: barriers faced by skilled women in Balochistan

Despite the transformative potential of TVET in fostering women’s entrepreneurship, skilled women in Balochistan continue to face a range of challenges that hinder their path to success (see Fig. 6). A primary barrier is limited financial support, which significantly restricts the ability of aspiring female entrepreneurs to initiate or expand their ventures. Many participants cited financial constraints as the most pressing obstacle, with limited access to grants, loans, and credit facilities. The absence of a supportive financial ecosystem remains a critical impediment to entrepreneurial progress. In addition to economic challenges, several interviewees reported a lack of family support, low self-confidence, and inadequate communication skills factors that collectively diminish their ability to engage in or sustain business activities. The scarcity of women-owned small and medium-sized enterprises (SMEs) in the region further reflects persistent structural and societal disparities. Moreover, the inadequate integration of entrepreneurship education into the formal education system restricts the early development of entrepreneurial mindsets and skill sets among young women. Balancing entrepreneurial ambitions with family responsibilities

emerged as a recurring concern. Interviewees emphasized the need for supportive family structures to ensure that women can meaningfully pursue economic independence without compromising their domestic obligations. Addressing this challenge is critical not only for enhancing women’s participation in the labor market but also for shifting entrenched gender norms. Participants stressed that women who acquire entrepreneurial skills and achieve financial independence often serve as role models for younger generations, helping to challenge and transform deep-rooted gender biases. Successful women entrepreneurs were also described as socially confident and effective communicators qualities essential for navigating the complexities of business and leadership. Empowered women, through their economic contributions and personal agency, play a pivotal role in reshaping societal perceptions and advancing inclusive development across Balochistan.

The word tag cloud presented in Fig. 7 visually depicts the most frequently cited terms across participants’ responses, offering a quick and intuitive overview of dominant themes emerging from the qualitative data. In this visualization, terms appearing more frequently are displayed in larger fonts, while less common words are shown in smaller sizes. Prominent keywords—such as entrepreneurship, business, TVET, skills, women, and respondents—underscore the study’s central emphasis on women’s entrepreneurial capacity and the role of vocational education in promoting self-employment. Additional terms like training, marketing, knowledge, financial, and opportunities highlight the interconnections between technical skill acquisition, resource mobilization, and economic empowerment. These visual complements the hierarchy chart by illustrating not only the structural but also lexical patterns within the dataset, thereby enhancing our understanding of how participants perceive TVET’s impact on women’s entrepreneurship in Balochistan.

6. Results and discussion

This section presents and analyzes the qualitative and quantitative findings from the study, integrating participant views with theoretical frameworks such as Human Capital Theory and Entrepreneurial Bricolage. Qualitative data were collected through semi-structured interviews with female TVET-skilled women, entrepreneurs, and TVET experts. The interviews explored multiple themes, including: (a) the role of TVET institutes in promoting hands-on skills, (b) success factors enhancing self-employability, (c) women’s perceptions of institutional support, (d) barriers to TVET access and participation, and (e) strategies for managing work-family conflict. Table 7 presents the participants’ perceptions of how hands-on skills contribute to their self-employment capacity. The analysis highlights a notable consensus among participants, with a significant majority (76.8 %) acknowledging that hands-on skills positively enhance their potential for self-employment. This affirmative sentiment was distributed between “agree” (49.0 %) and “strongly agree” (23.2 %) responses. Conversely, 5.8 % of participants expressed disagreement, comprising 3.9 % who disagreed and 1.9 % who strongly disagreed. 21.9 % of participants were neutral, indicating uncertainty about the impact of hands-on skills on self-employment prospects. In summary, participants widely acknowledged the importance of hands-on skills as a foundation for entrepreneurial success. TVET institutes in Quetta have successfully developed entrepreneurial skills among female students and graduates. Most female participants agreed that the entrepreneurial skills equipped them with the skills to set business goals and pursue them effectively. Furthermore, these entrepreneurial skills equip them with the capacity and capability to establish business goals and objectives and actively work towards their achievement. Participants also reported improvements in marketing and managerial competencies, which supported profit generation and financial independence. Additionally, entrepreneurial skills complement managerial skills to generate profits and achieve financial independence. The findings of this study resonate strongly with the principles of Human Capital Theory, which posits that investment in



Fig. 6. Challenges faced by TVET skilled women. Source: Author’s creation using NVivo software.



Fig. 7. Word tag cloud visualization. Source: Author's creation.

Table 7
Participants' perception of hands-on skills.

	Frequency	Per cent	Valid per cent
Strongly disagree	23	6.25 %	6.25 %
Disagree	36	9.78 %	9.78 %
Neutral	64	17.39 %	17.39 %
Agree	176	47.82 %	47.82 %
Strongly agree	69	18.75 %	18.75 %
Total	368	100.00 %	100.00 %

education and skill development enhances individuals' productivity and economic potential. The technical and entrepreneurial competencies acquired through TVET programs have empowered women in Balochistan to pursue self-employment and small-scale business ventures. This alignment is evident in the participants' widespread agreement on the value of hands-on skills in boosting their employment prospects. Additionally, the concept of Entrepreneurial Bricolage provides a valuable lens for understanding how women, operating in resource-constrained environments, creatively utilize available skills and informal support systems to overcome barriers and initiate entrepreneurial activities. These theoretical insights not only contextualize the empirical results but also reinforce the broader socio-economic value of TVET in fostering agency, innovation, and resilience among women entrepreneurs in underdeveloped regions.

The ongoing advancement of TVET in Balochistan aligns with the evolving demands of industry and the national vision. This study examined the role of TVET-trained women in enhancing self-employment prospects among the Balochistan youth demographic. Specifically, the investigation aimed to scrutinize the impact of hands-on skills acquired through Quetta's TVET schools on enhancing employment avenues among the region's youth. The findings underscore that acquiring hands-on skills from TVET institutions in Quetta significantly and positively contributes to employment opportunities for women in Balochistan. The results indicate that TVET institutes in Quetta have made a significant contribution to improving women's hands-on skills, with most women expressing positive views about the role of TVET institutes. These findings are consistent with prior research

outcomes that elucidate the pivotal role of hands-on skills acquired through TVET programs in facilitating employment. The acquisition of hands-on skills from TVET institutions is essential for initiating employment, optimizing work performance, catalyzing job advancement, and enhancing job stability (Pirzada & Gulzar, 2023). The empirical results related to the role of TVET institutes in promoting women's hands-on skills in Quetta, Balochistan, are presented in the appendices. Our findings suggest that the TVET program is pivotal in equipping women with technical expertise and entrepreneurial acumen, thus facilitating their transition into the business sector. The integration of quantitative and qualitative findings in this study highlights the importance of TVET in developing hands-on skills (Theme 1) while simultaneously cultivating entrepreneurial skills (Theme 2). The results revealed that TVET-skilled women actively applied these skills to establish and sustain businesses, contributing to economic growth and self-sufficiency (Theme 3). However, regardless of these benefits, women entrepreneurs in Balochistan encounter substantial challenges, including limited access to markets, financial constraints, and socio-cultural barriers (Theme 4), which hinder their access to financial support. These findings underscore the pressing need for policy interventions, enhanced economic support, and industry collaboration to enhance the role of TVET in women's financial empowerment. TVET programs also provided invaluable advice on launching a business.

One participant noted, "General education, skill development, and social and cultural support all play important roles in women becoming entrepreneurs in many areas of their lives." It also strengthens and highlights the value of TVET skills in various situations where skill acquisition impacts individuals' socioeconomic development. These initiatives help women enhance their entrepreneurial talent and establish new startups. The findings reveal that in Balochistan, TVET programs are undergoing a dynamic evolution to ensure their alignment with the changing needs of industries and broader national aspirations, which is crucial for bridging the existing skills gap and effectively meeting the dynamic demands of the labor market. TVET institutions are committed to equipping their participants with the relevant skills and knowledge required by industries by continuously updating and adapting their programs. This optimistic approach boosts individuals' employability and contributes to a region's overall economic

development and growth. These findings align with prior research accentuating the empowerment of women and the promotion of gender equality through practical skill development across diverse TVET domains. To facilitate the compelling motivation and empowerment of women and foster financial independence, self-reliance, and productivity, it is essential to start specialized TVET programs that cater to their academic and practical skill requirements. These findings are consistent with prior research, exemplified by the study conducted by [Minani and Sikubwabo \(2022\)](#), who examined the impact of TVET programs on women's empowerment in Rwanda. TVET, a hands-on and product-based form of training, plays a vital role in empowering individuals and equipping them with skills specific to the workforce ([Mohiuddin, 2017](#)).

The analysis conducted in this study highlights the significant role of two key variables in understanding the motivations and challenges faced by female business owners. These factors have a profound impact on the experiences and outcomes of women entrepreneurs. The findings underscore that limited educational opportunities hinder women from acquiring the necessary knowledge and expertise to manage their businesses effectively. Additionally, the absence of managerial skills presents further obstacles that impede their ability to navigate complex business environments and make informed decisions. Recognizing the importance of addressing these gaps, designing interventions that focus on enhancing educational opportunities and providing targeted training programs to empower women entrepreneurs with the essential managerial skills required for business success is crucial. The findings indicate that acquiring entrepreneurship skills is crucial for enabling women to recognize and evaluate business ideas as potential opportunities. Acquiring entrepreneurial skills is applicable across various industries, allowing women to become competent candidates in their chosen field. This claim is supported by [Buang, Mohamad, Ahmad, and Yuniarti \(2020\)](#), who assert that women with technical and vocational training (TVET) qualifications have made noteworthy contributions to their income earnings while improving their overall educational attainment. These findings underscore the significance of skill development in Balochistan, contributing to socio-economic and demographic progress in the region. According to one study, women entrepreneurs embark on business ventures with or without their family members' assistance in organization and financing. This study acknowledges the substantial contributions of women entrepreneurs to a nation's economic prosperity. The role of women in advancing children's health and education is a pivotal subject of investigation. Notably, recent studies have highlighted the significant role of women entrepreneurs in economic development, especially in shaping strategic plans and decision-making, based on age and education ([Ghouse, Durrah, Shekhar, & Arslan, 2023](#)).

As women attain higher incomes, they gain enhanced agency over productive resources, allowing them to channel investments into their own health and education, as well as that of their offspring. Additionally, the attainment of economic independence equips women with the means to extricate themselves from abusive relationships, as attested by scholarly work ([Espen & Brody, 2007](#)). The study findings further revealed that participants experienced personal growth and enhanced psychological well-being after enrolling in the TVET program. Before participating in the program, respondents reported a lack of confidence and reduced communicative ability. However, by acquiring vocational skills facilitated by the TVET programs, their self-esteem and communication skills improved significantly, empowering them to engage more effectively in various aspects of their lives. Previous studies have demonstrated that women with higher self-esteem are more likely to have better interpersonal relationships and make more favorable impressions of others. They also exhibit stronger ingroup favoritism, display better initiative, and experience more positive emotions than do women with lower self-esteem ([Baumeister, Campbell, Krueger, & Vohs, 2003](#)). The findings of the current study have important implications, suggesting that policies and programs should be designed to promote women's social and psychological well-being. Hence, stakeholders

should cultivate a nurturing environment that bolsters their confidence and enhances their communication skills.

The research findings emphasize the importance of shaping policies to promote women-owned SMEs. Understanding and addressing the unique challenges that women entrepreneurs face, customized to a country's development level, is essential for supporting women's entrepreneurial endeavors ([Welsh & Kaciak, 2019](#)). The study specifically concentrates on the establishment of SMEs by women entrepreneurs within the context of a family-oriented framework. Some respondents argue that obtaining financial assistance is a significant societal issue. Those who are financially secure can easily launch their SMEs, while many families struggle to earn enough money to live comfortably. Due to stringent restrictions, obtaining finance from banks and other financial institutions may be challenging for an average person. Skilled women may be forced to work for others rather than utilizing their skills to launch their own enterprises due to a lack of financial support (respondents 1, 4, and 8). Based on the research findings, it is imperative to implement policies and initiatives that actively bolster women-owned SMEs and facilitate their establishment and growth. Psychologically, economically, and socially, financial independence empowers women profoundly. A substantial majority of the individuals interviewed underlined the transformative impact of these capabilities on women, catalyzing psychological well-being and economic empowerment. This empowerment, in turn, equips women with the capacity to render astute decisions and robustly engage in the multifaceted dimensions of society and corporate domains. A few respondents claimed that, "Since enrolling in a TVET program, they have developed their psychological well-being. Before the program, they lacked confidence and were less talkative" (entrepreneurs, 2, 4, and 9). Apart from the economic and sociological aspects, women's empowerment also encompasses psychological factors. In the context of successful women entrepreneurs in Quetta, several vital factors were identified, including the desire for independence and competitiveness, the aspiration for increased income, the drive to enhance the family's social status, the motivation to develop personal skills, and the influence of success stories from other women entrepreneurs ([Darmanto & Yuliari, 2018](#)).

Previous research has also highlighted the significance of policy, personality traits, human resources, and entrepreneurial climate in shaping the performance of women entrepreneurs. One key contribution of our findings is providing evidence for a distinct perspective on entrepreneurship for poverty alleviation, which diverges from the prevailing discourse in the mainstream entrepreneurship literature. In contrast to short-term approaches, we found that the women in our study adopted a long-term perspective when addressing poverty, aligning with the perspectives highlighted by [Murnieks, Klotz, and Shepherd \(2020\)](#). Existing research consistently indicates that women's income has far-reaching implications. Increased income enhances women's autonomy, allowing them to choose their lifestyles and fostering a sense of empowerment. The findings of this study and the developed framework make a significant contribution to the literature on women and ethnic entrepreneurship. However, the remaining respondents (4 and 7) said, "Businesses founded by women can lead to job possibilities for others, thereby lowering poverty levels in the area. We feel more comfortable and bolder than other women in the surrounding households. We can financially support our families, and we can help other females earn money and help them to get jobs or do their own business." TVET can have a transformative impact on women and lifelong learners, providing them with the skills they need to secure employment and enhance their sustainable prosperity, benefiting both employers and communities. Striking a balance between professional commitments and family responsibilities constitutes a notable challenge; yet, it is an attainable goal with adequate support systems and strategic planning. Moreover, women entrepreneurs play a pivotal role as inspirational figures for fellow women in their communities, especially those who lack formal education and skills. This research

underscores the paramount importance of recognizing and proactively addressing the unique challenges women entrepreneurs face, particularly in balancing their concurrent roles in work and family. Likewise, in congruence with Zafar, Zia, and Amir-ud-Din (2022), the concept of work-life balance is conceived as the harmonious congruence of an individual's efficacy and contentment in both occupational and non-occupational spheres, aligning with their values and priorities. Their entrepreneurial skills enable them to provide financial support to their families and assist other women in earning an income by helping them find employment or start their own businesses. At a practical level, this study's findings indicate that multiple factors impede women's entrepreneurship in the region. These include insufficient support from government programs, a prevailing patriarchal social structure, inadequate collateral security for accessing funding, limited entrepreneurial knowledge for effective business management, a lack of sufficient market information, the occurrence of local disasters, and time limitations or role conflicts that create challenges in balancing family responsibilities. According to respondents, the lack of collateral security to acquire funds has emerged as a significant obstacle.

7. Conclusion

This study highlights the transformative role of Technical and Vocational Education and Training (TVET) in empowering women entrepreneurs by equipping them with both technical and entrepreneurial skills essential for sustaining their enterprises. The empirical findings demonstrate the intricate relationship between TVET participation, women's skill development, entrepreneurship, and empowerment, while also revealing the systemic challenges they face. By addressing diverse themes—such as hands-on skill acquisition, entrepreneurial competencies, empowerment, and the promotion of gender parity—this study offers a comprehensive view of the complex dynamics shaping women's self-employability in Balochistan. This dual-skills framework not only broadens economic opportunities but also fosters psychological and social empowerment. Skilled women play a critical role in promoting empowerment within their families and communities, often serving as mentors for future generations. Empowerment cultivated through TVET programs acts as a catalyst for broader societal transformation. The study aligns with Sustainable Development Goal (SDG) 5 (Gender Equality) by demonstrating how TVET strengthens women's participation in the labor force and addresses gender-based disparities in access to skills and income. It also contributes to SDG 8 (Decent Work and Economic Growth) by linking vocational education to self-employment, sustainable livelihoods, and inclusive economic development. To further enhance the policy impact of the study, recommendations are framed within the SDG targets—specifically:

- SDG 4.4: Promote equal access to quality vocational training.
- SDG 5.a: Foster gender-inclusive entrepreneurial ecosystems.
- SDG 8.5: Expand decent work opportunities for women in underserved areas.

Ultimately, this study reinforces the role of TVET as a vehicle for inclusive, equitable, and sustainable growth, enabling women not only to thrive as entrepreneurs but also to become agents of empowerment and development within their communities.

8. Recommendations and limitations

To address the challenges faced by skilled women in Balochistan's TVET sector and promote equitable entrepreneurship, several targeted recommendations emerge from this study. Policymakers should design TVET programs tailored to women's needs, integrating technical training with entrepreneurship, financial literacy, and marketing skills. Programs must be accessible, especially in rural areas, with safe and supportive learning environments. Awareness campaigns are essential to

promote the benefits of vocational training and counter cultural misconceptions. Incorporating industry-relevant entrepreneurship education—through collaboration with local experts is vital. Successful female entrepreneurs can serve as role models to inspire others, while mentorship programs and community-led support networks can enhance participation. TVET curricula should align with Balochistan's economic strengths in sectors like agriculture, fisheries, and traditional crafts. Market-driven skill assessments, financial support through microloans, and public-private partnerships are crucial to empower women entrepreneurs and align training with job market demands. Policies must also address work-family balance, promote gender equality, and challenge stereotypes. Capacity-building workshops should enhance managerial, communication, and leadership skills. A culturally sensitive curriculum, paired with community engagement and local success stories, can help build confidence and economic independence. Future TVET policies should align with SDGs 5 and 8, focusing on inclusive, gender-responsive training, microfinance access, mentorship, and market linkages to improve women's self-employment outcomes and support sustainable livelihoods. This study's non-probability sampling limits the generalizability of its findings. Its cross-sectional design captures only a snapshot, limiting causal inferences. Self-reported data may carry response bias, and the Balochistan-focused context may not be transferable to other regions. Although 368 participants were included, the diversity of women's experiences may not be fully represented. Future research should include longitudinal studies and broader geographic coverage to better assess the long-term impact of TVET on women's entrepreneurship in Pakistan.

Credit authorship contribution statement

Nagina Gul: Writing – original draft. **Muhammad Zada:** Writing – review & editing. **Nicolás Contreras-Barraza:** Software. **Guido Salazar-Sepúlveda:** Data curation. **Naimat Ullah:** Writing – review & editing. **Qaiser Mohi Ud Din:** Methodology.

Informed consent statement

Informed consent was obtained from all the participants involved in this study. Data were collected online, and participants were allowed to voluntarily contribute their information anonymously. We assured participants that the data collected would not be shared with anyone and would be kept strictly confidential throughout this study and subsequent analysis.

Ethics statement

All experimental procedures performed in this study involving human participants were by the Declaration of Helsinki and approved by the Institutional Review Board (IRB) of the Department of Management Sciences, Balochistan University of Information Technology, Engineering, and Management Sciences (BUIITEMS), Quetta, Postal Code 87300 Approval Number [24-2023/04-151-MS] Dated 2023-10-24.

Declaration of Generative AI and AI-assisted technologies in the writing process

During the preparation of this study, ChatGPT was used to improve the language and readability of the article. After using this tool, the author reviewed and edited the content as necessary and took full responsibility for the publication's content.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgments

This study was funded by the Pakistan Institute of Development Economics (PIDE), ‘Research for Social Transformation and Advancement’ (RASTA), and Competitive Grants for Policy-Oriented Research (Ref. No RASTA CGP ID # 04-151).

Data availability

Data sharing does not apply to this article. The dataset associated with this research is not publicly available due to the privacy and confidentiality commitments made by the study participants. Ensuring the protection of respondents’ privacy is of utmost importance in this research. As such, the raw data cannot be made openly accessible, although they can be requested from the first author upon a reasonable request.

References

- Abd Karim, R., & Mustapha, R. (2022). TVET student’s perception on digital mind map to stimulate learning of technical skills in Malaysia. *Journal of Technical Education and Training*, 14(1), 1–13.
- Ahmed, A., & Khan, A. (2018). SWOT analysis of institutional framework for engineering diplomas in technical and vocational education and training system in Pakistan. In *Paper presented at the IOP conference series. Materials Science and Engineering*.
- Ahmed, A., Shakeel, M., & Khan, A. H. (2021). Tracing institutional role of technical and vocational education and training skills for socio economic development of women in Baluchistan. *PJE*, 38(2).
- Ahmed, A., Wadood, A., & Mohammad, N. (2020). Tracer study of socio-economic and demographic impacts of technical and vocational education and training (tvvet) for women in Baluchistan. 58. <https://doi.org/10.35484/pssr>
- Ahmed, N., Li, C., Qalati, S. A., Rehman, H. U., Khan, A., & Rana, F. (2022). Impact of business incubators on sustainable entrepreneurship growth with mediation effect. *Entrepreneurship Research Journal*, 12(2), 137–160.
- Ali, T. S., Krantz, G., Gul, R., Asad, N., Johansson, E., & Mogren, I. (2011). Gender roles and their influence on life prospects for women in urban Karachi, Pakistan: A qualitative study. *Global Health Action*, 4(1), 7448.
- Altah, H., & Shabir, Q. A. A. (2024). Systematic evaluation of existing policies and practices in Technical and Vocational Education and Training (TVET) and their implications for employment and industrial growth in Pakistan. *International Research Journal of Management and Social Sciences*, 5(2), 140–165.
- Alvi, M. N. A. S., & Tarar, M. G. (2021). Role of technical education and vocational training in promoting youth employment: A case study of TEVT Institutes in District Gujranwala.
- Amin, A., Rehman, R. U., & Ali, R. (2023). Lone founders, family owners and borrowing cost: Are female directors influential? *International Journal of Manpower*, 44(5), 900–917.
- Anderson, B. S., Covin, J. G., & Slevin, D. P. (2009). Understanding the relationship between entrepreneurial orientation and strategic learning capability: An empirical investigation. *Strategic Entrepreneurship Journal*, 3(3), 218–240.
- Annan-Brew, R. K., Ezugwu, I. J., Surman, S. H., & Dadzie, J. (2024). Enhancing pre-service teacher effectiveness: Integration of 21st-century skills during off-campus teaching experiences. *European Journal of Education*, 59(4), Article e12737.
- Ansari, B., & Wu, X. (2013). Development of Pakistan’s technical and vocational education and training (TVET): An analysis of skilling Pakistan reforms. *Journal of Technical Education and Training*, 5(2).
- Aravamudhan, V., Sivakumar, K., Vishnu, C., & Mohanasundaram, K. (2024). Challenges faced by women entrepreneurs in rural India: A mixed-method study on perception. *The International Journal of Entrepreneurship and Innovation*, Article 14657503241254954.
- Asad, M. M., Mahar, P., Datto, A. K., Sherwani, F., & Hassan, R. (2023). Impact of quality assurance on TVET programs for the digital employment market of IR 4.0 in Pakistan: A quantitative investigation. *Education and Training*, 65(6/7), 891–908.
- Azeem, M., & Rasool, S. (2025). The effectiveness of Stem-based education in promoting positive attitudes towards science among elementary school students. *Social Sciences Spectrum*, 4(1), 289–301.
- Azeem, N., Omar, M. K., Rashid, A. M., & Abdullah, A. (2022). The secondary school students’ interest toward the TVET programs: Demographic differences. *International Journal of Learning, Teaching and Educational Research*, 21(4), 80–96.
- Bano, N., Yang, S., & Alam, E. (2022). Emerging challenges in technical vocational education and training of Pakistan in the context of CPEC. *Economics*, 10(7), Article 153.
- Baumeister, R. F., Campbell, J. D., Krueger, J. I., & Vohs, K. D. (2003). Does high self-esteem cause better performance, interpersonal success, happiness, or healthier lifestyles? *Psychological Science in the Public Interest*, 4(1), 1–44.
- Bohne, C., Eicker, F., & Haseloff, G. (2017). Competence-based vocational education and training (VET) an approach of shaping and networking. *European Journal of Training and Development*, 41(1), 28–38.
- Buang, Z., Mohamad, M. M., Ahmad, A., & Yuniarti, N. (2020). The earnings and employment of community colleges’ graduates: Occupational field and gender analysis. *Jurnal Pendidikan Teknologi dan Kejuruan*, 26(1), 11–17.
- Buvinic, M., & Furst-Nichols, R. (2014). *Measuring women’s economic empowerment*. Irving, TX: ExxonMobil Foundation.
- Chamadia, S., & Shahid, M. (2018). Skilling for the future: Evaluating post-reform status of āteskilling Pakistanā and identifying success factors for Tvet improvement in the region. *Journal of Technical Education and Training*, 10(1).
- Cohen, L., Manion, L., & Morrison, K. (2000). *Research methods in education* (5th ed.). RoutledgeFalmer.
- Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.
- Dadzie, J., Surman, S. H., Annan-Brew, R. K., Ezugwu, I. J., Amponsah, N., & Addison, E. (2024). Does assessment quality and assessment literacy influence students’ academic performance? *European Journal of Education Studies*, 11(4).
- Darmanto, S., & Yuliari, G. (2018). Developing organizational citizenship behavior in women entrepreneurs business community. *Journal of Entrepreneurship Education*, 21(4), 1–9.
- Din, Q. M. U., Tahir, A., Xiaojuan, Y., Alqahtani, S., & Gul, N. (2025). Ethical climate in higher education: The interplay of leadership, moral efficacy, and team cohesion in diverse cultural contexts. *Acta Psychologica*, 255, Article 104986.
- Elbardan, H., & Kholeif, A. O. R. (2017). An interpretive approach for data collection and analysis. In *Enterprise resource planning, corporate governance and internal auditing: An institutional perspective* (pp. 111–165). Cham: Springer International Publishing.
- Eppler-Hattab, R. (2022). From lifelong learning to later life self-employment: A conceptual framework and an Israeli enterprise perspective. *Journal of Enterprising Communities: People and Places in the Global Economy*, 16(6), 948–966.
- Esplen, E., & Brody, A. (2007). Putting gender back in the picture: rethinking women’s economic empowerment. Institute of Development Studies: Bridge (development-gender).
- Euler, D. (2013). *Germany’s dual vocational training system: A model for other countries?*. Gütersloh, Germany: Bertelsmann Foundation.
- Felipe-Lucia, M. R., Martín-López, B., Lavorel, S., Berraquero-Díaz, L., Escalera-Reyes, J., & Comin, F. A. (2015). Ecosystem services flows: why stakeholders’ power relationships matter. *PLoS One*, 10(7), Article e0132232.
- Gale, T., & Molla, T. (2015). Social justice intents in policy: An analysis of capability for and through education. *Journal of Education Policy*, 30(6), 810–830.
- Gebel, M., & Heineck, G. (2019). Returns to education in the life course. In , 24. *Research handbook on the sociology of education* (p. 454).
- Ghouse, G., Altaf, A., & Mudassar, M. (2025). Business strategies and carbon emissions: The role of direct and indirect carbon as mediators. *Journal of Entrepreneurship and Business Venturing*, 5(1).
- Ghouse, S. M., Durrah, O., & McElwee, G. (2021). Rural women entrepreneurs in Oman: Problems and opportunities. *International Journal of Entrepreneurial Behavior & Research*, 27(7), 1674–1695.
- Ghouse, S. M., Durrah, O., Shekhar, R., & Arslan, A. (2023). Personal characteristics and strategic entrepreneurial behaviour of rural female entrepreneurs: Insights from Oman. *Journal of Small Business Strategy*, 33(2), 89–106.
- Ghouse, S. M., McElwee, G., & Durrah, O. (2019). Entrepreneurial success of cottage-based women entrepreneurs in Oman. *International Journal of Entrepreneurial Behavior & Research*, 25(3), 480–498.
- Gul, N., Khan, K., & Anwar, S. (2019). Development of small and medium enterprises through technical vocational and educational training in Afghanistan. *Management*, 2(4), 83–96.
- Gul, N., Khan, H. H., Haq, S. N. U., Zaman, N. U., & Baloch, M. F. (2022). Impact of e-service delivery on client satisfaction: A case of NADRA Pakistan. *Journal of Applied and Emerging Sciences*, 12(1).
- Gul, N., Xiaolin, X., & Lanrong, Y. (2017). How perceived distributive justice of the performance appraisal affects public service motivation of public universities in Pakistan. *Management and Business Research Quarterly*, 2017(3), 121–138 (*).
- Gul, N., Xiaolin, X., Lanrong, Y., & Sadozai, A. M. (2017). An empirical investigation of organizational justice and public service motivation through employee commitment. *Public Policy and Administration Research*, 7(11), 33–40.
- Hayat, S. (2020). *Baloch unemployment*. Dawn. January 27 <https://www.dawn.com/news/1530822>.
- Hibberts, M., Burke Johnson, R., & Hudson, K. (2012). Common survey sampling techniques. In *Handbook of survey methodology for the social sciences* (pp. 53–74).
- Hojeij, Z., Baroudi, S., & Meda, L. (2023). Preservice teachers’ experiences with classroom management in the virtual class: a case study approach. In *Paper presented at the Frontiers in Education*.
- Hussain, I., Mu, S., Mohiuddin, M., Danish, R. Q., & Sair, S. A. (2020). Effects of sustainable brand equity and marketing innovation on market performance in hospitality industry: Mediating effects of sustainable competitive advantage. *Sustainability*, 12(7), 2939.
- International Labour Organization. (2021). *Pakistan country skills profile*. ILO.
- International Labour Organization. (2022). *Global employment trends for youth 2022: Investing in transforming futures for young people*. International Labour Organization. https://www.ilo.org/global/publications/books/WCMS_853321/lang-en/index.htm.
- International Labour Organization. (2023a). *World employment and social outlook 2023: The value of essential work*. International Labour Office. <https://www.ilo.org/publications/flagship-reports/world-employment-and-social-outlook-2023-value-essential-work>.
- International Labour Organization. (2023b). *Pakistan reaffirms its commitment to Decent Work through the launch of Decent Work Country Programme for next five years*. International Labour Organization. May 4 https://www.ilo.org/islamabad/info/public/pr/WCMS_881616/lang-en/index.htm.

- Jabarullah, N. H., & Iqbal Hussain, H. (2019). The effectiveness of problem-based learning in technical and vocational education in Malaysia. *Education + Training*, 61(5), 552–567.
- Jackson, E. O., Ekong, M. O., & George, W. K. (2022). Advancing digital literacy in Nigerian TVET: Leveraging generative AI as enabling technology.
- Jahanzai, M., Fatima, G., & Hanif, S. (2024). Career education and vocational training as part of expanded core curriculum for primary level learners with vision impairment: A qualitative review. *Annals of Human and Social Sciences*, 5(3), 34–42.
- Kabeer, N. (2005). Gender equality and women's empowerment: A critical analysis of the third millennium development goal 1. *Gender and Development*, 13(1), 13–24.
- Kazmi, S. J. A., & Abbas, J. (2020). Examining the impact of industry 4.0 on labor market in Pakistan. In *Handbook of smart materials, technologies, and devices: Applications of Industry 4.0* (pp. 1–11).
- Khan, A. I., Arshad, M., Iqbal, M. W., Aslam, N., & Mushtaq, R. (2023). ICT Adoption in TVET Sector of Pakistan. *Bulletin of Business and Economics (BBE)*, 12(3), 233–240.
- Khan, H. M. R., Ahmad, S., Javed, R., & Nasir, N. (2023). The significance of artificial intelligence in business and accounting: A bibliometric analysis. *Pakistan Journal of Humanities and Social Sciences*, 11(2), 1061–1082.
- Khan, N. R., Ameer, F., Bouncken, R. B., & Covin, J. G. (2023). Corporate sustainability entrepreneurship: The role of green entrepreneurial orientation and organizational resilience capacity for green innovation. *Journal of Business Research*, 169, Article 114296.
- Khan, S., & Kamal, Y. (2022). Family business groups and earnings manipulation: An emerging economy perspective. *Cogent Economics & Finance*, 10(1), Article 2017100.
- 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.
- Manshani, S., & Dubey, A. (2017). Start-up women in start-up India: A study of women entrepreneurs in India. *International Journal of Business Management (IJBM)*, 6(4), 91–100.
- Mehrotra, S. (2016). Technical and vocational education in Asia: What can South Asia learn from East/South East Asia? *The Indian Journal of Labour Economics*, 59, 529–552.
- Minani, J. P., & Sikubwabo, C. (2022). Role of technical and vocational education and training (TVET) in empowering women in Rwanda: A case of Rubavu District. Retrieved from.
- Mitchell, A., & Rich, M. (2020). Business school teaching of research methods—A review of literature and initial data collection for undergraduate business school students. *Electronic Journal of Business Research Methods*, 18(2), 100–114.
- Mohamed, M. I. (2023). *Women empowerment and community development in Baidoa*. Somalia: Kampala International University.
- Mohi Ud Din, Q., & Zhang, L. (2025). Leadership impact on innovation: A sequential mediation of trust and safety. *Work*, 80(4), 1990–2004.
- Mohiuddin, M. F. (2017). Islamic social enterprises in Bangladesh: Conceptual and institutional challenges. *Cogent Business & Management*, 4(1), Article 1305674.
- Murnieks, C. Y., Klotz, A. C., & Shepherd, D. A. (2020). Entrepreneurial motivation: A review of the literature and an agenda for future research. *Journal of Organizational Behavior*, 41(2), 115–143.
- Mustafa, G., Rizov, M., & Kernohan, D. (2017). Growth, human development, and trade: The Asian experience. *Economic Modelling*, 61, 93–101.
- Naseer, Q., Taha, A. Z., & Hasan, H. A. (2023). Academic entrepreneurship: A systematic review of literature. *Journal of Entrepreneurship & Business*, 11(2).
- Okoli, C. I. (2016). Functionality of cooperative business education in development of Nigeria. *Journal of Education and Practice*, 7(18), 15–19.
- Okwelle, P. C., & Wordu, C. C. (2014). Public-private partnership in education: A strategy for improving quality of vocational-technical education programme in Nigeria: A case study of rivers state. *Journal of Education and Practice*, 5(35), 180–183.
- Oviawe, J. I. (2018). Revamping technical vocational education and training through public-private partnerships for skill development. *Makerere Journal of Higher Education*, 10(1), 73–91.
- Pirzada, G., & Gulzar, I. (2023). Best institutional practices in technical and vocational institutes for sustainable development. *TVET@ Asia*, 20, 1–13.
- Plance, R. (2020). *Access, participation and sustainable development goal 4: A systematic literature review of technical and vocational education and training*.
- Pouliakas, K., & Branka, J. (2020). *EU jobs at highest risk of COVID-19 social distancing* (Retrieved from).
- Powell, L., & McGrath, S. (2019). *Skills for human development: Transforming vocational education and training*. Routledge.
- Rahi, S. (2017). Research design and methods: A systematic review of research paradigms, sampling issues and instruments development. *International Journal of Economics & Management Sciences*, 6(2), 1–5.
- Rasool, M. S., Zafar, M., & Khalid, A. (2025). Developing entrepreneurial mindsets in Pakistani schools at matric level. *Policy Research Journal*, 3(2), 327–338. Retrieved from <https://policyresearchjournal.com/index.php/1/article/view/426>.
- Rizvi, S. A. A., Qureshi, M. A., & Ansari, J. (2025). Promoting women entrepreneurship for gender equality, social inclusion and sustainability in Pakistan. *Journal of Entrepreneurship and Business Venturing*, 5(1).
- Shah, F. U. H., Fatima, U., Ahmad, M., Ahad, A., Saeed, R., Riaz, M. U., & Ghafoor, F. (2021). Factors affecting women entrepreneurship and its impact on SMEs development. *International Journal of Innovation, Creativity and Change*, 15(7), 228–252.
- 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.
- Shane, G. A. (2023). *A qualitative descriptive design: How authentic leadership supports the coaches leadership development*. Grand Canyon University.
- Silva, V. (2022). The ILO and the future of work: The politics of global labour policy. *Global Social Policy*, 22(2), 341–358.
- Smith, H. L., & Zook, M. S. (2018). *Generations of women historians: Within and beyond the academy*. Springer.
- Staniewski, M. W., & Awruk, K. (2019). Entrepreneurial success and achievement motivation—A preliminary report on a validation study of the questionnaire of entrepreneurial success. *Journal of Business Research*, 101, 433–440.
- Syed, A., Gul, N., Khan, H. H., Danish, M., Ul Haq, S., Sarwar, B., ... Ahmed, W. (2021). The impact of knowledge management processes on knowledge sharing attitude: the role of subjective norms. *The Journal of Asian Finance, Economics and Business*, 8(1), 1017–1030.
- Talento, M. S. D., Tandang, N. A., Rogelio, R. A. O., & Araña-Roldan, R. A. S. (2022). Factors influencing employment of female graduates of technical and vocational education and training program in the Philippines. *Philippine Journal of Science*, 151(3).
- Tambunan, T. T. (2011). Development of micro, small and medium enterprises and their constraints: A story from Indonesia. *Gadjah Mada International Journal of Business*, 13(1), 21–43.
- Tang, N., & Shi, W. (2016). Youth employment and technical and vocational education and training (TVET) in China. In *Vocational education and training in times of economic crisis: Lessons from around the world* (pp. 269–283). Cham: Springer International Publishing.
- Terjesen, S., Bosma, N., & Stam, E. (2016). Advancing public policy for high-growth, female, and social entrepreneurs. *Public Administration Review*, 76(2), 230–239.
- Thompson, D., Deatrack, J. A., Knafl, K. A., Swallow, V. M., & Wu, Y. P. (2022). A pragmatic guide to qualitative analysis for pediatric researchers. *Journal of Pediatric Psychology*, 47(9), 1019–1030.
- UN Women. (2022a). *Regular resources report 2022: Accelerating gender equality*. United Nations Entity for Gender Equality and the Empowerment of Women. <https://www.unwomen.org/en/digital-library/publications/2023/09/regular-resources-report-2022>, 2022.
- UN Women. (2022b). *Women's economic empowerment*. UN Women Pakistan. Retrieved from <https://pakistan.unwomen.org/en/our-work-pk/womens-economic-empowerment>.
- UNESCO. (2022a). *Gender report 2022: Deepening the debate on those still left behind*.
- UNESCO. (2022b). *ReShaping policies for creativity: Addressing culture as a global public good*. United Nations Educational, Scientific and Cultural Organization. <https://unesdoc.unesco.org/ark:/48223/pf0000380475>.
- UNICEF annual report 2021: *Protecting child rights in a time of crises*. (2021). United Nations Children's Fund. <https://www.unicef.org/reports/unicef-annual-report-2021>.
- Ustilaite, S., Poteliūnienė, S., Šimkienė, A., Sabaliauskas, S., & Česnavičienė, J. (2024). Teachers' perceptions of professional development: a study of schools teachers in Lithuania. In *Paper presented at the ATEE Spring Conference 2024: Teacher education research in Europe: Trends, challenges, practices and perspectives: Book of abstracts, May 29th–June 1st, 2024, Bergamo, Italy*.
- Weick, K. E., & Sutcliffe, K. M. (2001). *Managing the unexpected* (Vol. 9). San Francisco: Jossey-Bass.
- Welsh, D. H., & Kaciak, E. (2019). Family enrichment and women entrepreneurial success: The mediating effect of family interference. *International Entrepreneurship and Management Journal*, 15(4), 1045–1075.
- Welsh, D. H., Tullar, W. L., & Nemati, H. (2016). Entrepreneurship education: Process, method, or both? *Journal of Innovation & Knowledge*, 1(3), 125–132.
- Williams, J., & Patterson, N. (2019). New directions for entrepreneurship through a gender and disability lens. *International Journal of Entrepreneurial Behavior & Research*, 25(8), 1706–1726.
- Women, business and the law 2023*. (2023). Washington, DC: World Bank. <https://openknowledge.worldbank.org/entities/publication/3b223e5a-342f-4636-9df0-1c1f56ea1c80>.
- World Economic Forum. (2021a). *Global gender gap report 2021*. <https://www.weforum.org/reports/global-gender-gap-report-2021>.
- Yamada, S., & Otchia, C. S. (2020). Perception gaps on employable skills between technical and vocational education and training (TVET) teachers and students: the case of the garment sector in Ethiopia. *Higher Education, Skills and Work-Based Learning*, 11(1), 199–213.
- Yao, Y. (2021). Research on vocational education and training under the national vocational qualification framework in Pakistan. *International Journal of Frontiers in Sociology*, 3(7).
- Younis, S., Ramzan, S., & Gul, N. (2020). Assessing the impact of vocational and technical education.
- Yousuf, H., Bhatti, M. A., & Awan, M. A. (2023). Evidence on the role of institutions in economic growth: A panel data study of developing countries. *The Business & Management Review*, 14(3), 1–9.
- Zafar, S., Zia, S., & Amir-ud-Din, R. (2022). Troubling trade-offs between women's work and intimate partner violence: evidence from 19 developing countries. *Journal of interpersonal violence*, 37(17–18), NP16180–NP16205.
- Zainol, N. R., & Al Mamun, A. (2018). Entrepreneurial competency, competitive advantage and performance of informal women micro-entrepreneurs in Kelantan, Malaysia. *Journal of Enterprising Communities: People and Places in the Global Economy*, 12(3), 299–321. <https://doi.org/10.1108/JEC-11-2017-0090>

Further Reading

- Ahmad, N., Shaheen, N., & Hussain, S. (2021). Women entrepreneurship and empowerment in Pakistan: Gender, culture, education and policy in broader perspective. *Journal of Managerial Sciences*, 15(4), 16–33.
- Ajor, O. J., Akintola, A., & Okpa, J. T. (2023). United nations development programme (undp) and poverty alleviation in cross river state north senatorial district, nigeria. *Global Journal of Social Sciences*, 22(1), 49–61.
- Altaf, H., & Shabir, Q. A. A. *Bulletin of Business and Economics*, 13 (1), 920-929. *Bulletin of Business and Economics*, 13(1), 920-929.
- Arshad, M., & Rehman, A. U. (2022). Corporate entrepreneurship: A systematic literature review. *Bulletin of Business and Economics (BBE)*, 11(2), 44–63.
- Citaristi, I. (2022). International Labour Organization—ILO. In *The Europa directory of international organizations 2022* (pp. 343–349). Routledge.
- Gul, N., Snober, A., Anwer, M., & Ahmed, M. (2021). The impact of fairness perception and motivation on employee's commitment of higher education institutes in Pakistan. *International Journal of Management (IJM)*, 12(1).
- Iqbal, N. (2021). In *How to Address the Gender Gap in Pakistan?* (p. 3). Pakistan Institute of Development Economics.
- Khan, A. N. (2021). *Gender norms of employability; a case study of females' technical and vocational education in Multan and Bahawalpur, South Punjab*. Pakistan: OsloMet-Storbyuniversitetet.
- Khan, S., & Rehman, S. (2023). Entrepreneurial agility: A key to notch 'Sustainable Business Performance' in IT-enterprises of Pakistan. *International Journal of Management Research and Emerging Sciences*, 13(3).
- Lavena, C. (2024). *UN women-ILO joint programme synthesis report*.
- Mehmood, R., Ahmad, I., Rahman, S. U., & Sattar, S. (2025). The role of corporate governance in bank risk-taking. In *Corporate risk mitigation through socially responsible governance* (pp. 215–226). IGI Global.
- Mohi Ud Din, Q., & Zhang, L. (2023). Unveiling the mechanisms through which leader integrity shapes ethical leadership behavior: Theory of planned behavior perspective. *Behavioral Science*, 13(11), 928.
- Pakistan humanitarian situation report: End of year 2021. (2021). United Nations Children's Fund. <https://www.unicef.org/documents/pakistan-humanitarian-situation-report-end-year-2021>.
- Qureshi, F. N., Bashir, S., Mahmood, A., Ahmad, S., Attiq, S., & Zeeshan, M. (2022). Impact of internal brand management on sustainable competitive advantage: An explanatory study based on the mediating roles of brand commitment and brand citizenship behavior. *Plos one*, 17(3), Article e0264379.
- Stahl, G., Burnard, P., & McDonald, S. (2023). Exploring the experiences of women social entrepreneurs: Advancing understandings of 'emotional capital' in women-only networks. *Feminist Review*, 134(1), 86–103.
- Strategy, M. T. UNESCO-UNEVOC.
- The State of the World's Children 2021: On my mind—Promoting, protecting and caring for children's mental health. (2021). UNICEF. <https://www.unicef.org/reports/state-worlds-children-2021>.
- United Nations Development Programme. (2025). *UNDP annual report 2024: Accelerating progress towards the Sustainable Development Goals*. United Nations Development Programme. <https://annualreport.undp.org/>.
- UNICEF annual report 2021: Protecting child rights in a time of crises. (2022). United Nations Children's Fund. <https://www.unicef.org/reports/unicef-annual-report-2021>.
- World Bank Annual Report 2023: A new era in development. *International Bank for Reconstruction and Development / The World Bank*, (2023). <https://openknowledge.worldbank.org/handle/10986/40219>.
- World Economic Forum. (2021b). *The Davos agenda 2021*. World Economic Forum. <https://www.weforum.org/focus/the-davos-agenda-2021>.
- World Economic Forum. (2022). *Annual report 2021–2022*. <https://www.weforum.org/publications/annual-report-2021-2022>.