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Driving Economic Growth Through Vocational Education: Empirical Evidences from Pakistan

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Abstract

Vocational training plays a vital role in enhancing labor productivity and efficiency, thereby contributing significantly to economic development. This study examines the impact of vocational education on economic growth in Pakistan, with a particular focus on public investment in vocational education and the availability of qualified teachers in this sector. Utilizing time series data for empirical analysis, the study explores the relationship between vocational education and economic growth. The findings reveal a positive and significant relationship, indicating that improved vocational education enhances labor efficiency and productivity, ultimately fostering economic development. These results highlight the importance of prioritizing vocational education in national development strategies. The study underscores the need to upgrade Pakistan's existing vocational education system to maximize its economic benefits. Addressing the shortage of teachers in technical institutions is identified as a critical challenge requiring immediate attention. Furthermore, comprehensive training programs must be implemented to enhance the pedagogical skills of vocational educators, ensuring a more effective learning environment. By investing in vocational education reforms, Pakistan can harness its workforce potential, strengthen economic competitiveness, and drive long-term growth. The study recommends policy measures aimed at increasing public investment, improving institutional infrastructure, and integrating modern teaching methodologies in vocational training. Strengthening the vocational education sector will not only enhance labor market outcomes but also contribute to sustainable economic development. These findings provide valuable insights for policymakers and stakeholders in formulating strategies to optimize the role of vocational education in Pakistan's economic growth.

Keywords: Vocational training, Labor productivity, Economic development, Public investment, Teachers availability

1. INTRODUCTION

Human capital, often regarded as the bedrock of economic progress, constitutes a multifaceted concept comprising education, health, vocational training, and skill development. Within this framework, vocational education emerges as a cornerstone in equipping individuals with the practical skills and knowledge necessary for gainful employment. By providing targeted training tailored to industry needs, vocational education enhances workforce productivity and adaptability, thereby driving economic growth. The essence of vocational education lies in its ability to empower individuals, enabling them to realize their full potential and expand their employment opportunities. By imparting specialized skills and competencies, vocational training not only prepares individuals for specific roles but also cultivates a mindset conducive to innovation and entrepreneurship (Ali & Rehman, 2015). This, in turn, fosters a culture of self-reliance and enables individuals to contribute meaningfully to the economic fabric of society. Moreover, the socioeconomic benefits of vocational education extend beyond individual empowerment to encompass broader developmental outcomes. A skilled labor force not only fuels productivity gains but also facilitates technological advancement and industrial diversification. As such, investments in vocational education serve as a strategic imperative for nations seeking to enhance their global competitiveness and promote inclusive growth (Ali, 2015; Riaz & Safar, 2018). Mustafa (2005) underscores the pivotal role of vocational education in driving economic development, emphasizing the transformative impact of a well-trained workforce. Indeed, the empirical evidence overwhelmingly supports the assertion that investments in vocational education yield significant dividends in terms of both economic prosperity and social well-being (Azhar, 2018; Mahmood & Naz, 2018). In light of these considerations, fostering an enabling

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environment for vocational education emerges as a paramount policy priority for governments worldwide.

As societies progress towards industrialization and modernization, there is a notable surge in the demand for vocational education and training. Recognized as indispensable instruments for enhancing labor mobility, adaptability, and productivity, vocational education and training programs play a pivotal role in shaping the skillsets of the workforce. Khilji (2012) underscores the significance of technical and vocational competency as a linchpin for economic development and technological advancement, highlighting the pivotal role of vocational education in this regard. Central to the effectiveness of vocational education and training programs is the enrollment and engagement of qualified teachers in vocational institutions. Teachers serve as the catalysts for imparting knowledge, skills, and practical insights to students, thereby shaping their vocational competencies and professional acumen. Consequently, the recruitment, training, and retention of proficient educators remain critical priorities in ensuring the efficacy and sustainability of vocational education initiatives. Furthermore, investing in vocational education and training represents a judicious allocation of public resources, yielding long-term dividends in terms of workforce productivity and resource utilization. By equipping individuals with relevant occupational skills and competencies, vocational education not only enhances employability but also drives technological innovation and efficiency gains. This, in turn, fosters a conducive environment for economic growth and prosperity, underlining the symbiotic relationship between vocational education and overall socioeconomic development (Ali, 2018). In essence, the increasing demand for vocational education and training underscores its pivotal role in meeting the evolving needs of modern economies. By nurturing a skilled and adaptable workforce, vocational education serves as a catalyst for unlocking human potential, driving innovation, and fostering sustainable development in an era characterized by rapid technological change and globalization.

Vocational education stands apart from general education by focusing on honing specific skills relevant to various industries and professions. Its impact on economic growth is profound, as it addresses the dual challenge of enhancing workforce skills while mitigating unemployment (Ali & Bibi, 2017; Ashraf & Ali, 2018). By equipping individuals with specialized competencies, vocational education contributes to the quality and efficiency of production, thereby bolstering economic output. The benefits of vocational education extend beyond economic considerations to encompass improvements in living standards and self-sufficiency. Through comprehensive training and education, workers can refine their skills, leading to higher incomes and greater job satisfaction. Moreover, vocational education serves as a bulwark against unemployment, providing individuals with the means to secure employment opportunities and achieve financial independence. Notably, vocational graduates are well-positioned to navigate the competitive job market, thereby reducing gender disparities, migration pressures, and dependency ratios. Their specialized skills and expertise make them valuable assets in various sectors, facilitating career advancement and socioeconomic mobility. Investment in education, particularly vocational education, emerges as a strategic imperative for narrowing the gap between skilled and unskilled workers. Government expenditure in this priority area not only enhances workforce productivity but also fosters inclusive growth and social cohesion. In the era of rapid technological advancement, the importance of vocational education becomes even more pronounced. Technological progress necessitates continuous skill development to adapt to evolving production methods and labor market demands. Therefore, aligning the educational system with the technological capacity of society is imperative to ensure competitiveness and innovation. Empowering the youth with diverse vocational skills not only facilitates their entry into the workforce but also cultivates an entrepreneurial spirit. By providing opportunities for self-employment and business ownership, vocational education enables individuals to pursue their passions and contribute to economic development. Vocational education and training play a pivotal role in shaping the economic trajectory of nations by fostering skill development, reducing unemployment, promoting gender equality, and driving innovation. As societies strive to

navigate the complexities of a rapidly changing global landscape, investing in vocational education emerges as a linchpin for sustainable growth and prosperity.

In Pakistan, vocational education institutes offer courses ranging from three months to two years after the 8th grade, providing training through polytechnic institutions, vocational centers, and apprenticeships. While the Government of Pakistan has made efforts to improve the vocational education system in recent years, the country still faces challenges in this regard. The quality of teaching staff is often subpar, and the learning materials utilized are frequently outdated. As a result, Pakistan's workforce is characterized by low skills and inadequate preparation to compete effectively in the globalized economy (Kazmi, 2007; Asif & Simsek, 2018). Pakistan is a developing nation grappling with high population growth rates, with the youth demographic constituting a significant portion of the population (Economic Survey of Pakistan, 2014). However, despite the burgeoning youth population, the capacity of the vocational education sector to impart relevant training and skills remains insufficient to address the evolving demands of the modern labor market. Many leading countries in the global workforce landscape have recognized the critical importance of investing in skills development to drive economic growth and competitiveness. Investment in both physical and human capital is essential for fostering the development of the services sector, particularly in the context of industrialization and modernization. By enhancing the skills and capabilities of the workforce through targeted vocational education and training initiatives, Pakistan can unlock its full potential for economic advancement. Moreover, aligning vocational education programs with the needs of emerging industries and technological advancements is crucial for ensuring that the country's workforce remains relevant and competitive in the global arena. Pakistan has taken steps to improve its vocational education system, there is a pressing need for further investment and reforms to address existing deficiencies and equip the workforce with the skills required for success in the modern economy. By prioritizing skills development and aligning vocational education with industry demands, Pakistan can position itself for sustained growth and prosperity in the years to come.

The current structure of vocational education in Pakistan is characterized by complexity, with multiple agencies and levels involved in its administration. Government vocational education institutes fall under the purview of the provincial education departments. Skills training in Pakistan is delivered through a variety of channels, including polytechnic institutions, vocational training centers, apprenticeship departments, and commercial training institutions. Prior to the establishment of technical and vocational education in Pakistan, the training system faced significant shortcomings, including a lack of responsiveness and flexibility in meeting industry demands. The link between training institutions and the industry was weak, leading to a disconnect between skill development and market needs. Limited funding further compounded the issue, resulting in outdated machinery and supply-driven training approaches (Kazmi, 2007). A key challenge lies in establishing institutions that recognize the value of investing in human capital, thereby providing dignity and equitable opportunities for the workforce. Effective human resource development systems should prioritize creating decent employment opportunities and enhancing workers' abilities to secure and retain jobs in a competitive global economy. Vocational education must transcend low-level skills to meet the evolving demands of the market (Khilji, 2012). Globalization and technological advancements underscore the need for vocational education and the modernization of existing technical institutions. As economies transition toward large-scale industries, vocational education and training programs play a crucial role in equipping individuals with marketable skills. The outdated structure of Pakistan's domestic economy has hindered the development of a skilled workforce capable of enhancing industry quality and productivity. Therefore, investment in vocational education is imperative to bolster worker productivity and drive economic growth. This study sheds light on the significant impact of vocational education on economic growth in Pakistan. By addressing key challenges and emphasizing the importance of investing in human capital, vocational education can play a pivotal role in shaping the country's economic trajectory. This study contributes valuable insights to the existing literature on the subject.

2. LITERATURE REVIEW

Kazmi (2007) highlights the myriad challenges that developing countries face in their labor markets, particularly in competing for the requisite skills and technological innovation essential for sustainable growth. Not only are the skill requirements growing, but they are also subject to constant change, underscoring the need for adaptive and responsive vocational education systems. The study underscores the pivotal role of vocational education at both the school and secondary levels in meeting the demands of existing job opportunities. However, several factors, including the quality of teachers and the limited supply of skilled workers, pose significant obstacles to the effective delivery of vocational education. Pakistan, in particular, faces critical shortcomings in its vocational education system, as highlighted by Kazmi (2007). The country's workforce is characterized as low-skilled and ill-equipped to navigate the complexities of the globalized economy. As such, there is an urgent imperative to invest in vocational education to address these deficiencies and enhance the competitiveness of Pakistan's labor force.

Inamullah et al. (2009) conducted a study to examine the current state of technical vocational education in the North-West Frontier Province (NWFP) of Pakistan. The primary objective was to assess the perceptions of teachers and students regarding the adequacy of physical and academic facilities in technical education institutions within NWFP. The study revealed significant shortcomings in terms of technological infrastructure and physical facilities. Despite certain areas such as laboratory and computer facilities being deemed sufficient, deficiencies were identified in various other aspects. These included inadequate provisions for buildings, transportation, first aid, hostel accommodations, fire-fighting equipment, access to the latest reading materials, online research facilities, and budget allocations. To gather data for their analysis, the researchers employed a questionnaire designed specifically for this purpose, utilizing the Total Design Method (TDM). Through empirical analysis, the study highlighted the disparity between the perceived sufficiency of certain facilities and the actual state of provision in technical education institutions. The findings underscored that the physical facilities in NWFP's technical education institutions were generally unsatisfactory, indicating a pressing need for improvement and investment in infrastructure to better support technical vocational education in the region.

Shah et al. (2011) conducted a comprehensive study examining the status of vocational training and technical education in Punjab. They highlighted the potential of technical education and vocational training in enabling individuals to generate income and contribute to the economic and social development of a country by equipping them with essential knowledge and skills. The study aimed to explore teachers' perceptions regarding the effectiveness of vocational education and technical training, as well as the impact of teacher training courses. Utilizing a questionnaire comprising 15 items, the researchers collected primary data to assess various aspects of technical education and vocational training. Employing the Ordinary Least Squares (OLS) technique for empirical analysis, the study revealed several key findings. While the curriculum of Technical Education and Vocational Training (TEVT) was deemed satisfactory, significant weaknesses were identified in its linkage with industry and the management of internships. Additionally, outgoing students were found to be inadequately prepared for the job market. Teachers also faced challenges related to housing and a lack of incentives for performance improvement.

Khilji et al. (2012) conducted a study to examine the impact of vocational education on economic growth, emphasizing its role as a crucial determinant of economic prosperity. Their research, based on time series data analysis, demonstrated that government expenditure on education positively influences labor force productivity. The study underscored the need to refocus vocational education to ensure that the labor force contributes effectively to economic growth. Improving the quality of vocational education emerged as a key priority to achieve this objective.

Mustafa et al. (2005) investigated the demand for vocational education in the context of industrialization and modernization. Their study delved into the role of vocational education in enhancing worker productivity and reducing the unemployment rate. Utilizing data from various issues of "The Labor Force Survey" published by the Federal Bureau of Statistics Division of the

Government of Pakistan, the researchers found that acquiring skills enhances adaptability and contributes to both individual welfare and economic growth. They underscored the imperative for Pakistan to upgrade its technical education and formulate strategies to enhance the productivity of its labor force.

Agrawal (2013) delves into the role of vocational education systems in Asian countries, particularly in South Asia, including Afghanistan, Bangladesh, India, and Pakistan. While governments in these countries have increasingly prioritized vocational education and training (VET) systems, outcomes remain subpar. Challenges such as institutional quality and limited linkages between VET providers and industries hinder the effectiveness of the VET system in the region. Despite expansion efforts, the VET system has yet to deliver optimal results, posing a barrier to economic development in South Asia.

Ajmal et al. (2011) compare Pakistan's vocational training structure with models from Britain and Germany, proposing a vocational and technical education and training (VTET) model tailored to Pakistan's context. Through interviews and surveys, they assess the feasibility and effectiveness of dual training systems introduced in these countries. While the dual systems function well in Britain and Germany, Pakistan faces numerous challenges, including a misalignment between training programs and industry requirements. The study highlights the shortcomings of the dual training approach in Pakistan compared to its counterparts in the UK and Germany.

Ansari et al. (2013) explore the pivotal role of technical and vocational education in the socio-economic development of Pakistan. Their work aims to elucidate the developmental phases of Pakistan's technical vocational education system, with a focus on proposed Skilling Pakistan reforms outlined in the National Skills Strategy (NSS). Drawing on quantitative information from published literature and reports, the study underscores the significant efforts made to promote technical education in Pakistan since independence in 1947. However, tangible progress has been limited compared to other developing countries, resulting in a substantial skills gap that undermines labor productivity in both domestic and foreign labor markets.

Mohammad (2006) delves into the challenges facing the vocational education system, particularly in developing countries, emphasizing the importance of fostering positive social attitudes towards training for its success. The study highlights the need for policies and practices in Technical Vocational Education (TVE) to align with new development patterns, thereby reducing resource wastage and improving the relevance and retention of training personnel. Despite its potential, the technical and vocational education system in developing countries grapples with several limitations, hindering its effectiveness.

Javied (2009) explores the role of training in determining labor wages, with a focus on the significance of training quality. The study underscores the importance of providing workers with vocational technical education to enhance productivity. Utilizing the least square technique for empirical analysis, the study examines the impact of training on wages alongside other demographic variables. While training quality is deemed critical, the study finds that training itself is insignificant in wage determination. Nonetheless, the promotion of technical education is advocated to bolster the capacity of skilled manpower to adapt to changes in labor demand.

3. THEORETICAL FRAMEWORK

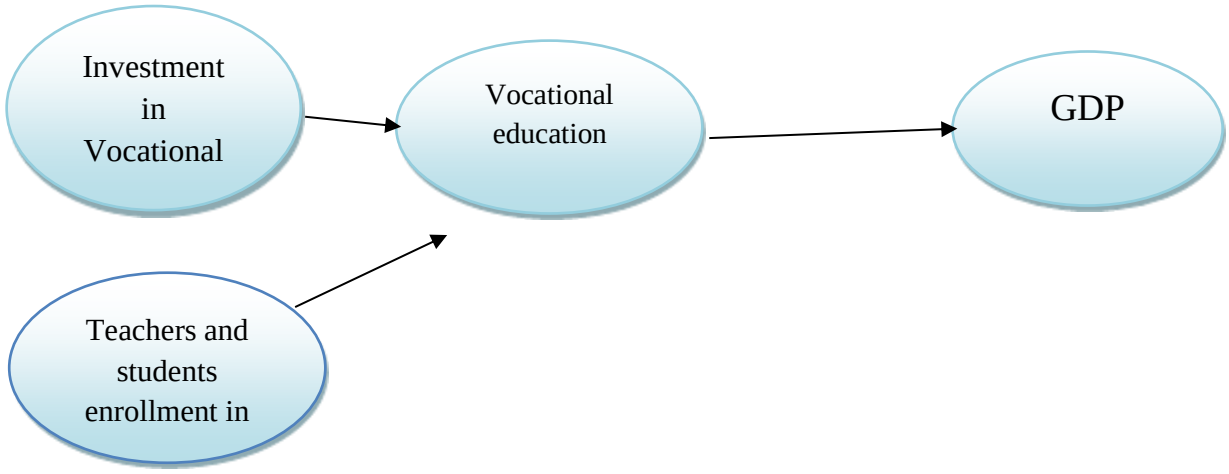
The role of vocational education and training is deeply rooted in the principles of human capital theory (HTC), as outlined by Becker (1981, 1993). According to HTC, investing in education and training enhances an individual's knowledge and technical skills, thereby increasing productivity and lifetime income. However, the impact of training may vary depending on factors such as gender, age, duration, and cost. Despite the positive relationship between education, training, and productivity posited by HTC, it's important to recognize that investing in human capital doesn't always guarantee positive results. Vocational education, an essential component of human capital development, aims to construct knowledge through experiential, contextual, and social methods in real-world environments. Building on Smith's conceptualization, expanded by Becker (1962), vocational

education views human beings as assets whose future income and lifetime earnings can be enhanced through education and training. This perspective aligns with Smith's notion that education increases the productive capacity of workers, akin to how new machinery enhances the productivity of factories. Skinner's ideology emphasizes positive reinforcement and learner-centered approaches in education, recognizing learners as key stakeholders in the learning process. Similarly, Stromsforfer's Theory of Learning encompasses various aspects of vocational training, including organization, pedagogy, instructional strategies, and management procedures. Research by Lillis, Hogan, Grubb, and Chung underscores the importance and higher returns of vocational education compared to general secondary education.

In the context of development efforts, Pakistan's focus on education, particularly in achieving Millennium Development Goals (MDGs), highlights the importance of expanding and improving early childhood care, equitable access to learning opportunities, and enhancing the quality of education. However, practical education emerges as a critical tool for success, emphasizing the hiring of trained teachers, provision of basic facilities, good attendance rates, timely progression, and mastery of cognitive skills. Enhancing the quality of schooling is essential to ensuring that individuals can achieve their full potential and contribute effectively to national development.

Variable description

Independent variable Dependent variable



This study relies on secondary time series data sourced from various editions of the Economic Survey of Pakistan (Education). The overarching goal of any economy is to achieve higher economic growth (Ali and Ahmad, 2014). Therefore, the primary aim of this research is to investigate the impact of vocational education on the economic growth of Pakistan. Specifically, the study seeks to analyze how investments in vocational education and the enrollment of teachers in vocational institutions influence economic growth.

Mustafa (2005) employs the Ordinary Least Squares (OLS) method to examine the effects of changes in institutional rates, enrollment levels, and teacher numbers on output growth. Khilji (2012) utilizes time series data to explore the relationship between labor stock, capital stock, and economic growth. This involves employing the Augmented Dickey-Fuller (ADF) unit root test to ascertain the order of integration, conducting co-integration tests, and utilizing error correction models to determine both long-run and short-run relationships between variables. Additionally, Shah (2011) administers a questionnaire comprising 15 items to teachers within Technical Education and Vocational Training Authority (TEVTA) institutions. This survey seeks information on the effectiveness of training programs, teacher training courses, and the availability of physical facilities. By leveraging a combination of statistical techniques and survey data, this study aims to provide insights into the dynamics between vocational education, teacher enrollment, and economic growth in Pakistan. Such

research endeavors are vital for informing policy decisions and strategies aimed at enhancing the effectiveness and impact of vocational education systems on national economic development.

4. RESULTS AND DISCUSSION

Investment in vocational education serves as a crucial determinant of the scope and effectiveness of vocational training programs. By allocating resources towards vocational education and skill development initiatives, economies can enhance the quality of their labor force, thereby positively impacting economic growth. This investment is particularly instrumental in bridging the gap between skilled and unskilled labor forces, as individuals equipped with vocational skills are better positioned to contribute meaningfully to the workforce. Moreover, investing in vocational education fosters technological advancement, leading to the optimal utilization of resources and heightened productivity levels. This, in turn, drives economic growth by maximizing output efficiency. Additionally, enrollment of both teachers and students plays a pivotal role in shaping output growth within vocational education systems. Teachers are central to maintaining and enhancing the quality of education and training programs. Their expertise and guidance significantly influence the learning outcomes of students. Therefore, the enrollment of trained teachers is a critical factor in ensuring the effectiveness of vocational education initiatives. A well-trained teaching workforce can impart relevant skills and knowledge to students, preparing them for the demands of the labor market and contributing to overall economic productivity. Furthermore, student enrollment in vocational education programs directly impacts output growth by expanding the pool of skilled workers. As more individuals enroll in vocational training courses, the labor force becomes increasingly equipped with the necessary skills and competencies demanded by industries, thereby bolstering economic growth. Investment in vocational education, coupled with the enrollment of trained teachers and students, serves as a catalyst for economic development. By prioritizing vocational education and skill development, countries can foster a highly skilled workforce, drive technological innovation, and ultimately propel sustained economic growth and prosperity.

Table 1 presents data on education expenditure in Pakistan across four fiscal years (2010–11 to 2013–14), disaggregated by region and categorized into current expenditure, development expenditure, and total expenditure. It also includes the national-level expenditure as a percentage of GDP. The figures provide insights into both federal and provincial spending priorities and the evolving commitment to education over time.

A noticeable trend is the steady increase in total national expenditure on education, rising from Rs. 321,494 million in 2010–11 to Rs. 538,874 million in 2013–14. This growth reflects a broader national recognition of the need to invest in human capital, aligning with the global education financing commitments under frameworks such as the Education for All (EFA) goals and the Sustainable Development Goals (SDGs). The education expenditure as a percentage of GDP also shows a gradual increase, moving from 1.7% in 2010–11 to 2.2% in 2013–14, indicating improved prioritization of education in public budgeting, although still below the UNESCO-recommended threshold of 4–6% of GDP (UNESCO, 2015).

Provincial breakdowns highlight significant disparities. Punjab consistently leads in total education spending, allocating Rs. 148,729 million in 2010–11, which increases to Rs. 213,741 million by 2013–14. This reflects Punjab's larger population and fiscal capacity, but also a relatively strong policy focus on education reform. Sindh, while showing growth in spending, demonstrates more volatility, especially in development expenditure, which drops from Rs. 11,221 million in 2011–12 to Rs. 6,798 million in 2013–14. Khyber Pakhtunkhwa and Balochistan show lower overall figures, but the consistent allocation of development funds—especially in Khyber Pakhtunkhwa—points to efforts to improve infrastructure and access, particularly in rural and conflict-affected areas (Alam & Ullah, 2015).

At the federal level, both current and development expenditures increase over the observed years, rising from a combined Rs. 57,711 million in 2010–11 to Rs. 89,447 million in 2013–14. This trend

suggests a continued federal role in higher education and national-level educational projects, despite the post-18th Amendment devolution of education to the provinces.

The data in Table 1 demonstrate an upward trajectory in education spending across Pakistan, with meaningful increases in both recurrent and development allocations. However, the overall investment remains below international benchmarks, and regional disparities persist, which may impact the uniformity of educational quality and access across the country. To meet national and international education goals, sustained and equitable financing is critical, with particular attention to underfunded provinces and rural areas.

Table 1: Expenditure on Education (Rs. million)

Years	Region	Current Expenditure	Development Expenditure	Total Expenditure	As % of GDP
2010–11	Federal	41,230	16,481	57,711	1.7
	Punjab	137,508	11,221	148,729	
	Sindh	60,744	8,140	68,884	
	Khyber Pakhtunkhwa	15,092	11,342	26,434	
	Balochistan	17,945	1,791	19,736	
	Pakistan	272,519	48,975	321,494	
2011–12	Federal	46,011	13,075	59,086	1.9
	Punjab	157,830	21,320	179,150	
	Sindh	59,370	11,221	70,591	
	Khyber Pakhtunkhwa	50,898	15,029	65,927	
	Balochistan	21,306	3,509	24,815	
	Pakistan	335,415	64,154	399,569	
2012–13	Federal	58,990	13,934	72,924	2.0
	Punjab	193,276	8,749	202,025	
	Sindh	95,630	6,244	101,874	
	Khyber Pakhtunkhwa	62,910	19,351	82,261	
	Balochistan	25,283	2,312	27,595	
	Pakistan	435,015	50,590	485,605	
2013–14	Federal	67,332	22,115	89,447	2.2
	Punjab	182,490	31,251	213,741	
	Sindh	97,201	6,798	104,000	
	Khyber Pakhtunkhwa	74,221	19,383	93,604	
	Balochistan	31,294	6,445	37,739	
	Pakistan	452,538	86,336	538,874	

The National Vocational and Technical Training Commission (NAVTTC) serves as the apex body and national regulatory authority tasked with addressing the challenges within the Technical and Vocational Education and Training (TVET) stream in Pakistan. Central to its mandate are activities related to policy-making, strategy formulation, and the regulation and revamping of the TVET system nationwide. One of NAVTTC's key functions is to establish and promote linkages among various stakeholders, both domestically and internationally, within the TVET sector.

Table 2 outlines the design and progression of the Prime Minister's Youth Skill Development Program across its three phases, offering a comparative profile in terms of financial allocation, target beneficiaries, gender ratios, training scope, and institutional collaboration. The funding for the program increased substantially over time, starting at Rs. 785 million in Phase I and reaching Rs. 2,575 million in Phase III, indicating growing political and institutional commitment to technical and vocational training as a tool for human capital development and youth empowerment. This increased allocation reflects a policy shift toward addressing youth unemployment and under-skilling, which are persistent challenges in Pakistan's labor market.

In terms of scale, each phase aimed to train 25,000 individuals initially, with Phase III doubling the target to 50,000 youth, implemented in two batches. This expansion in trainee numbers signals a widening of outreach and training capacity. However, it is also worth noting that while Phase II reports training completion for its targeted cohort, Phase I notes pass-outs, which implies program continuity and participant engagement were maintained, though post-training employment metrics are not provided.

Gender inclusion is emphasized across all phases, though the male-to-female ratio fluctuates. Phase I had a 66/34 ratio, which slightly improved to 60.5/39.5 in Phase II, but Phase III shows a reversal with a minimum ratio of 75/25. While this shift may relate to expanded program scale or trade type adjustments, it highlights ongoing challenges in achieving gender parity in vocational training, particularly in traditionally male-dominated technical trades. Gender disparities in skill development remain a concern and require targeted measures to encourage female participation, especially in non-traditional sectors.

The number of trades included in training programs also evolved, expanding from 100 in Phase I to 200 in Phase II, before narrowing to a focused 55–70 trades in Phase III. This reflects a strategic shift from broader inclusion to specialized, potentially more market-relevant or demand-driven skill areas. The narrowing could also be linked to lessons learned from earlier phases regarding trade preferences, job linkages, or resource optimization.

Consistently, seat allocation across all three phases is based on provincial population, supporting geographic equity in access to the program. Moreover, the selection of trades was informed by multiple stakeholders. Phase I and II involved consultation with the Prime Minister's Office and provincial TVET stakeholders. By Phase III, the program integrated broader inputs from China-Pakistan Economic Corridor (CPEC) projects, commercial welfare attachés, and the Ministry of Overseas Pakistanis and Human Resource Development. This reflects the increasing integration of the program with national economic priorities and international labor market linkages, especially in view of overseas employment potential and the anticipated human resource needs under CPEC.

The target demographic was youth aged 18 to 35 in the first two phases, extended to 18 to 40 in Phase III, suggesting a broader inclusivity approach over time. Special priority was consistently given to socially and economically disadvantaged groups, including the less educated, disabled individuals, transgender persons, and sportspeople. Later phases expanded the focus to include Hafiz-e-Quran, madaris students, and widows, highlighting efforts to incorporate marginalized or overlooked segments of society in the skilling agenda. This inclusive targeting is aligned with equity-driven development models, which aim to not only reduce unemployment but also enhance social cohesion and integration.

Overall, Table 2 reflects a progressively scaled-up, inclusive, and more strategically aligned skill development initiative aimed at addressing youth unemployment and enhancing employability in Pakistan. The increasing resource commitment, expanded partnerships, and targeted inclusion

demonstrate the state's effort to transition from ad hoc training schemes to more sustainable and impactful vocational education frameworks.

Table 2: Profile of Prime Minister's Youth Skill Development Program (Phase-I, II & III) (Rs. million)

S#	Features	(Phase-I) 2011–12 & 2013–14	(Phase-II) 2013–14	(Phase-III) 2011–12 & 2013–14
1	Block Allocation outside PSDP	785.00	1235.00	2575.00
2	Target trainees	25,000 24,834 (pass-outs)	25,000 (training completed)	50,000 (in two batches)
3	Male/Female ratio	66/34	60.5 / 39.5	75/25 (at least)
4	No. of target trades	100	200	55 – 70
5	Seat allocation	As per population	As per population	As per population
6	Trades highlighted by	· Prime Minister's Office · TVET provincial stakeholders	· Prime Minister's Office · TVET provincial stakeholders · Commercial welfare attachés	· Prime Minister's Office · TVET provincial stakeholders · CPEC · Commercial welfare attachés · M/o Overseas Pakistanis & HRD
7	Target group	18 to 35 years (Youth) Priority given to: · Less Educated · Upper-age personnel · Lower class (Economically) · Disabled · Eunuchs · Sportsmen	18 to 35 years (Youth) Priority given to: · Less Educated · Upper-age personnel · Lower class (Economically) · Disabled · Eunuchs · Sportsmen · Hafiz e Quran & madaris students · Widows	18 to 40 years (Youth) Priority given to: · Less Educated · Upper-age personnel · Lower class (Economically) · Disabled · Eunuchs · Sportsmen · Hafiz e Quran & madaris students · Widows

The Prime Minister's Youth Skill Development Program (PMYSDP) was initiated under the directives of the Prime Minister to address unemployment among less-educated youth by providing them with skill development opportunities. In collaboration with Provincial Technical Education and Vocational Training Authorities (TEVTAs), as well as government and private sector skill training institutes, the National Vocational Technical Training Commission (NAVTTC) executed Phase-I of the program. During Phase-I, a total of 24,834 individuals were equipped with hands-on skills across various trades. Building on the success of Phase-I, NAVTTC launched Phase-II of PMYSDP, aiming to train more than 25,000 individuals across 195 demand-driven trades. The program extended its reach to include regions such as Azad Jammu & Kashmir, Gilgit-Baltistan, Federally Administered Tribal Areas (FATA), and other government and private sector skill training institutes. The overarching objective of PMYSDP is to create a competent, motivated, entrepreneurial, adaptable, creative, and well-trained workforce capable of meeting the needs of both local and international

markets. By equipping participants with valuable skills, the program aims to enhance their earning potential and livelihoods, thereby fostering a mindset conducive to positive and creative activities. PMYSDP serves as a critical initiative to address youth unemployment and empower individuals with the skills necessary to thrive in today's competitive job market. Through targeted skill development efforts, the program aims to not only improve the economic prospects of participants but also contribute to overall socioeconomic development in Pakistan.

5. CONCLUSIONS

Vocational education stands as a cornerstone in driving economic growth by enhancing the efficiency and productivity of the labor force. By equipping individuals with the necessary knowledge and skills, vocational education enables them to generate income and contribute meaningfully to the economic and social development of a country. The integration of education with training emerges as a vital component in not only job creation but also in bolstering overall economic growth. Research underscores the positive relationship between vocational education and economic growth, highlighting the role of higher standards in vocational education in enhancing labor force efficiency and productivity. However, in the context of Pakistan, there exists a concerning lack of investment in vocational education, which hampers labor productivity and, subsequently, economic progress. To address this challenge, it is imperative for the government to increase public expenditure on vocational education, thereby bridging the gap between skilled and unskilled workers and enabling the country to remain competitive on the global stage. This necessitates the implementation of strategic interventions aimed at enhancing the vocational education system. Measures such as filling sanctioned teaching positions with individuals possessing the latest skills, upgrading syllabi and facilities, and aligning vocational education programs with modern challenges are essential steps toward achieving this goal. Moreover, investing in vocational education not only contributes to economic growth but also serves as a catalyst for poverty reduction and social and economic development. By providing demand-driven, high-quality technical and vocational training, countries can empower individuals to access better employment opportunities, thereby improving their livelihoods and fostering inclusive growth. In short, prioritizing investment in vocational education is vital for unleashing the full potential of the labor force, driving economic prosperity, and promoting social and economic development. By implementing targeted strategies and policies, governments can lay the foundation for a skilled workforce equipped to meet the demands of the evolving global economy.

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