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Strengthening Human Capital In Balochistan Through Technical-Vocational Education And Training–TVET And Industrial Alliance

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Abstract

Scarcity of trained labor has always been a serious issue in Balochistan. A network of TVET institutes in this region has been established to increase the supply of skilled labor needed for the socioeconomic development projects. The paucity of trained workforce, such as skilled workers, technicians and engineers is largely attributed to TVETs' failure to meet the requirement for knowledgeable and experienced labor within the framework of provincial socioeconomic development projects. The premise of this study reflects that TVET particularly lacks adequate planning structures and practices for connecting TVET to domestic industry. The descriptive research approach was adopted and 625 students and 137 instructors/engineers/technicians from 37 Balochistan's TVET institutes took part in the study. Quantitative approach has been employed to examine the issue. The main goal was to get feedback from students and teachers on the information and skills they are imparting in various TVET institutes of Balochistan. Significant research findings revealed a lack of arbitrary and adequate planning strategies and methodologies in the Balochistan higher education system. This condition has caused a symbiotic relationship between TVET graduates and the technological industry's need. Based on the research findings, recommendations about modification of curricula have been proposed significantly based on industry-institution participation and productive collaborations of TVET institutes with industry for training opportunities.

Keywords: Balochistan TVET, TVET-Industry Partnership, Socioeconomic Challenges, Human Resource Development, Higher Educational Institutions

A partnership is an agreement between two persons or organizations to work and collaborate in certain areas on the basis of a common purpose, shared responsibility, mutual understanding, joint obligations, accountability and so on (Aidlink, 2010; Bailey & Dolan, n.d; Helmy, 2014; Sandika, Yogyakarta, & Usman, 2017; UNESCO, 2018; World Bank, 1998). As World Bank (1998, p.5) stated, "Partnership is a collaborative connection formed by two or more organizations to work towards common goals through a mutually agreed-upon division of labor." Partnership entails affiliation, participation, collaboration, cooperation, participatory decision and long-term relationships (Bailey & Dolan, n.d.). Therefore, a partnership-based framework of TVET can be defined as an agreement between TVET institutes and industries to collaborate and work together in certain areas, particularly to link TVET with employment, on the basis of certain defined principles such as common goals, mutual understandings, collective responsibilities, and shared benefits. Gray (1993, p.252) underlines the need of connecting the labor market and TVET institutes by stating that:

"Vocational and technical education must have tight links with local firms and industry in order to fully use cost benefits while working with them. Regardless of how crucial it is, there are mechanisms for collecting and examining information about expected manpower requirements that may be used in good time to produce human resources with the necessary abilities at the time and place where those talents are required".

There are several reasons behind weak linkage between TVET institutes and industries (Rafik et al., 2008; Alabdri, 2007; El-Magouri, 2005; El-Hawat, 2003) which may include:

- Lack of strategy to link Higher Educational Institutes with industries;
- Differences of Culture between Higher Educational Institutes and industries;
- Lack of industrial experiences in academic activities;
- High demand for engineers (Degree Holders) rather than technicians (TVET Certified) by industry put very little pressure on TVET institutes to address industrial skills requirements;
- No or very little attention given to Life Long Learning and Continuous Professional Development (CPD);

In order to interrogate these reasons, a survey has been designed and conducted in 37 TVET institutes and local industry in Balochistan. According to Schaber and Turner (2009), the University Industry Partnership programs are developed for the Government's economic ambitions and are incorporated within the curriculum of various TVET and engineering courses of study. Furthermore, a successful relationship between industry and TVET institutes is critical to the national economy (Pagtakhan and Rock, 2002). The ultimate purpose of collaboration with industry is to build and improve TVET curricula (Callan and Ashworth, 2004). El-Raghy (1999) also stated that there is a strong relationship between the utility of industry and the university, with students being assigned case-studies and training sessions to boost the delivery of curriculum. The training facility will provide industry supervision while university officials will visit workplaces to assess students' understanding and skills.

Engineering programs demand industry-specific engagement and dedication, therefore the growth of a degree-holder engineer is not reliant on classroom instructions. One strategy is to achieve success through collaborations between business and educational institutions. In reality, training opportunities, particularly during academic trips to the industrial business can

assist the industry. TVET's connection with industry may encompass a variety of processes and activities, such as a commitment to national policy and skill standards, expertise measurements, and technical help in teaching and learning facilities (Comyn, 2007). To establish and deliver the TVET policy, a new sort of collaboration between the state Government, TVET provider industry, employees and employers is necessary (UNESCO and ILO, 2002).

The TVET Institutes' collaboration with industry is critical since it can meet qualified persons' labor market demands. Cunningham (1997) asserted that involvement in training has several advantages not just for academic institutions and business but also for the general public. One such benefit of collaboration is that it provides related training that meets industry needs and can be acknowledged externally. The collaboration of Balochistan TVET and associated industries would benefit both parties and will assist competent graduates in recognizing the needs of the Balochistan marketplace.

In general, the industry has prioritized its relationship with the educational system, particularly with the TVET system. According to Karam (2006), Lynch (2000), and Ryan (2001), optimal resource utilization and the provision of high-quality TVET to learners necessitates that the TVET mechanism can function in conjunction with the marketplace. This partnership will entail directing resources to areas of professional and career development where there is a huge potential and need. The industry's partner feels that the power of their partnership with training schools is to fund talents and knowledge to solve problems (Callan and Ashworth, 2004).

Balochistan has been plagued by a severe scarcity of competent labor. Balochistan is establishing a network of TVET institutes to ensure an adequate supply of skilled manpower required for the province's socioeconomic development projects. The paucity of educated personnel, such as skilled labor, engineers and technicians is largely attributed with TVET's failure to meet the province's requirement for professional and competent labor within the framework of provincial socioeconomic development projects. The premise of this study is the Higher Educational Institutions (HEIs) and Technical Vocational Education and Training (TVET); both suffer from a lack of relevant planning structures and processes to connect TVET with provincial socioeconomic development goals.

The international conference paper on "Academia and Optimization of Human Capital for Emerging Socioeconomic Challenges in Balochistan," held on May 2, 2018, at the University of Balochistan, revealed that despite being the largest, least developed, and richest in reservoirs and minerals, Balochistan remains Pakistan's poorest province. Despite economic possibilities provided by international borders with Iran and Afghanistan, as well as provincial borders with Punjab, Sindh, and Khyber Pakhtunkhwa, the province's human capital has remained underdeveloped and impoverished. The province's socioeconomic situation is predicted to improve soon and if human capital development is not prioritized now, the region would suffer greatly.

It is widely assumed that Technical Vocational Education and Training would play a critical role in developing skilled and technical human capital required for the China Pakistan Economic Corridor (CPEC) and Balochistan's overall economic growth. The purpose of this research is to examine the connections between vocational training institutes as well as the processes and challenges of human capital optimization in Balochistan. This research would

also look into the importance of technical education and vocational training in producing skilled labor in Balochistan for future CPEC demands.

Objectives of the Study

The following research objectives have been selected to guide the current study:

1. To explore if TVET programs/practices are linked with industry in order to optimize human capital.
2. To investigate the skills required by Balochistan local industry as well as the amount and efficacy with which present TVET systems providing these skills.
3. To make recommendations for the establishment of a framework that increases TVET providers' understanding of emerging demands in Balochistan local industry.

Research Questions

1. Do the TVET institutes in Balochistan collaborate with industry to provide the necessary professional skills to deal with socioeconomic constraints in the region?
2. Do TVET institutes assist to develop human resources in anticipation to future socioeconomic issues in Balochistan?
3. How can the relationship between Balochistan TVET skills and the demands of the industry sector be maximized?

Research Methodology

In this study, a quantitative research design with descriptive statistics analysis was used to collect primary data via questionnaires from students about the knowledge and skills they gained while studying in different Technical Vocational Education and Training (TVET) institutes including engineers / instructors / technicians performing their duties in various sectors of Balochistan about the education and training they received. Both students and instructors/engineers/technicians were invited to share their thoughts and feelings about the issue and remedies they would propose to strengthen the interaction between TVET and industry.

As the questionnaire predominately used a six-point Likert scale style format. This format allows the students and Instructors/Engineers/Technicians to indicate the 'degree of importance' of each factor in a list as 'Strongly Disagree', 'Disagree', 'Slightly Disagree', 'Slightly Agree', 'Agree', 'Strongly Agree' (Oppenheim, 1992).

Based on the purposive sampling approach, the sample size of respondents was first set in order to pick the targeted / operational institutes from all throughout Balochistan. Proportional sampling was used in the second phase to collect data from academic staff and students of male and female technical / vocational institutes. As previously stated, the overall student population at the 37 selected TVET institutes was 4425. According to Fraenkel and Wallen (1990), the larger the sample size, the more likely it is to reflect the population; hence, Gay (1987) and Gall, et al. (1996) suggested employing the biggest sample size in exploratory research. After determining the reasons for selecting these TVET institutes, 515 engineers, instructors, and technicians were chosen, with these TVET institutes totaling about 1150 engineers, instructors, and technicians in Balochistan. A total of 926 questionnaires were distributed to both groups

(students and engineers / instructors / technicians), with 762 being deemed complete and useable, indicating an 82 percent response rate. The researchers collected these surveys and analyzed the data using SPSS (statistical package of social science).

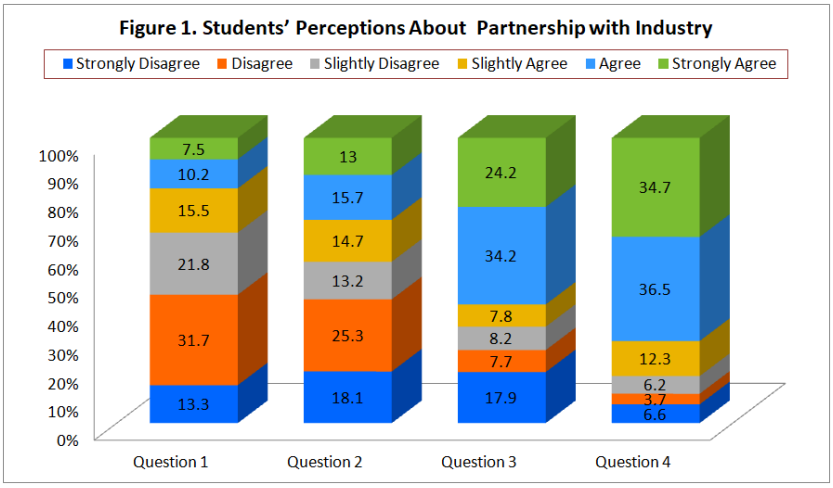
Descriptive Analysis

Data collection process led to the application of SPSS (Statistical Package for Social Science) software to manipulate database. Frequency ratios and percentages were calculated to narrate the results. Descriptive statistics assisted to summarize the data as frequency distribution (Troohim, 2008). Descriptive statistics provides reader an overall understanding of the data being analyzed (Troohim, 2008: 1). Descriptive analysis provides an awareness about how frequently a certain event and response occurred during data collection. The purpose of using such technique to study the data was that it attempted to make predictions about the future by drawing insights solely form the existing and past data in more meaningful way leading towards consistent findings.

Data Analysis of TVET Students

Only 17.7% of participants (students) agreed to the fact when asked if the course of study was well-connected with the relevant industry (Q.1, Figure 1). These responses revealed a clear image of poorly planned and administered curriculum as well as a weak relationship between the Higher Education Institutions and the industry in question.

When respondents (students) were asked if the lectures they attended were based on industry-related case-studies (Q.2, Figure 1), about 43.4% agreed with the assertion that case-studies are provided to them during their lectures. These comments imply that more courses did not include case-studies from relevant sectors. This pattern also clearly shows the theory's inadequate or insufficient experimental applicability and the curriculum's poor design. Furthermore, it emphasizes the strained relationship between higher education and the industry under debate.



The question about if they like to visit industries relevant to their studies (Q.3, Figure 1), more than half of the students (59.4%) agreed with the concept. Such comments show that the majority of students like these sorts of trips; presumably, they believed that such visits would

help them grasp the nature of the work being done and provide them ideas on how to apply their theoretical knowledge to the workplace after graduation. Such trips will help students prepare for their future careers while also improving their talents.

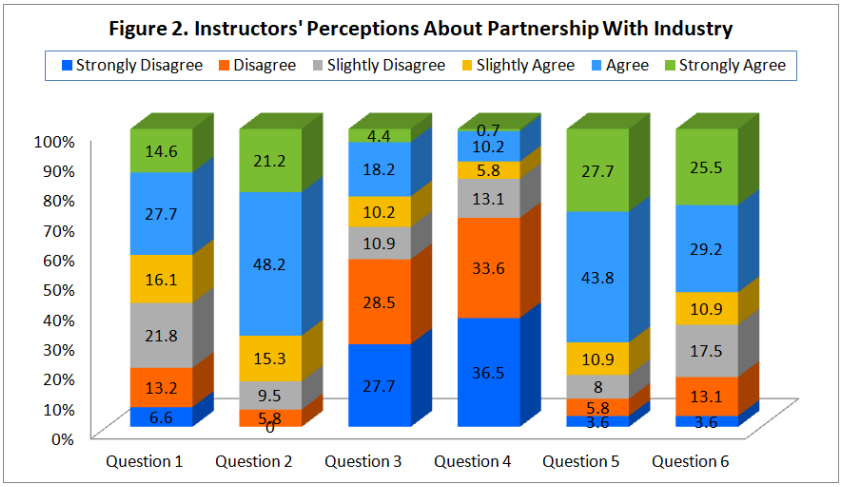
Finally, when respondents (students) were asked if they would like to have an internship program in the relevant industry for their study (Q.4, Figure 1), the majority of respondents around 71.2 % agreed with it. It is critical for engineering students to undertake internships in the relevant industry to see how they will be expected to execute their job after degree completion or recruiting process.

Data Analysis of TVET Instructors/Engineers/Technicians

Question about TVET institutes play a vital role in developing and upgrading their abilities (Q.1, Figure 2), the majority of respondents (engineers, instructors, and technicians) agreed with the statement (42.3%). On the other hand, 37.9% were undecided (slightly disagreed/slightly agreed) and 20.0 % were fully disagreed. Given that the respondents comprise both technicians (perhaps with a Higher Diploma or Secondary School Qualification, 79.6% of the sample) and professional engineers (potentially with Bachelor's Degrees, 20.4% of the sample).

When engineers, instructors and technicians were asked if hosting technician and engineering students in their organizations would better prepare them for their future professional careers, the majority of them, 69.4% of the sample, agreed with the declaration, and only 5.8% expressed disagreement while the remaining 24.8% were indecisive (slightly disagreed / slightly agreed). These responses might be generated due to respondents' opinions and experiences seeing industrial placement as a necessary component of gaining employable skills.

Query about if they have frequent communication with other TVET institutes to overcome technical problems, initiate new services and products, or improve the performance (Q.3, Figure 2), more than half of the respondents, 56.2 % of engineers, instructors and technicians, disagreed with the statement while 22.6 % agreed. The remaining 21.1 % were undecided (slightly agreed/slightly disagreed) in their views. The lack of a relationship between TVET institutes and linked industries was indicated by these types of responses.



Respondents (engineers, teachers and technicians) were also asked if they remained connected to their university/college after completing their course/degree (Q.4, Figure 2), more than two-thirds, or 70.1 %, expressed dissatisfaction with the assertion. Merely 10.9% of the participants agreed while 18.9% were uncertain (slightly disagreed/slightly agreed). These replies are similar to those received in the prior statement, indicating a lack of connection between TVET institutes and linked industries.

When respondents (engineers, instructors and technicians) were asked if allocating lecturers in different organizations would improve their perceptions about the requirements of the organizations (Q.5, Figure 2), the majority, 71.5 %, expressed agreement with the declaration; only 9.4 % disagreed with the statement, and the remaining 18.9 % were undecided (slightly disagreed / slightly agreed). Allocating lecturers in related industries will allow them to observe what these organizations produce or what type of engineers / instructors / technicians they require, allowing them to suggest required programs to their institutions which would lead to improve curriculum design and delivery to further understand the needs of these organizations and provide them with the required qualified staff in the workplace. It appears to be significant that strong ties and relationships between Higher Education Institutions and Balochistan industries is indispensable need of time.

When respondents (engineers, instructors, and technicians) were asked if they would return to their colleges/universities for further studies if the opportunity arose (Q.6, Figure 2), more than half of the sample, 54.7 %, agreed; only 16.7 % disagreed, and 28.4 % remained undecided (slightly agreed/slightly disagreed). These types of responses indicate that the majority of engineers, professors and technicians wish to obtain further education if the chance arises. Respondents that agree are individuals who want to improve their professions via higher education and assist them thrive in their organizations.

Findings

It appears from the above discussion that there was little collaboration between TVET institutes in Balochistan and the industry sector. Due to the lack of collaboration, engineers and technicians are being prepared for jobs that do not exist or for specializations that are not required by the industrial sector. The existing literature on Balochistan higher education system and TVET reveals that the system lacks suitable planning structures and procedures. The absence of planning concerns has resulted in a variety of deficiencies and constraints within the higher education system.

Majority of students' responses reflected that the course they are studying is not properly related to the respective industry, indicating that the curriculum taught is not effectively designed to meet the socioeconomic needs of the region. The present requirement of human resource in Balochistan reflects areas of manufacturing, transport repair and maintenance, heavy machinery operations and shipping. Moreover, it shows that a weak linkage exists between higher education courses and applicability of TVET education.

The responses of students reveal that modern practical approaches of lecture delivery and case-study teaching were not employed during the course. This also reflects a weak relationship with the industry for course design and delivery process. It is pertinent to include hands-on approaches like case-studies and apprenticeship programs from industries in the teaching and

learning process of vocational institutes in order to add more practical knowledge to improve the problem-solving ad decision-making skills of students.

The findings depict that students appreciated visiting industrial areas relevant to their studies in general. Furthermore, the excursions and frequent industrial trips also enrich the courses and may enhance practical exposure of students that would eventually assist students to design their careers. Most of the students reported to spend time on training in industries related to their field of study. Students will benefit from work placement because they will actively be engaged in day-to-day work activities and processes. Work placement will also boost students' knowledge and abilities and enable them to develop a professional attitude during their course of studies. On the other hand, engineers/instructors/technicians stated that TVET institutes were helpful in keeping their skills updated and improved. Engineers and technicians will benefit from off-the-job training in TVET institutes because it will enable them to gain more knowledge, both theoretical and applied, and familiarize themselves with all latest developments in their field which will be valuable after they join their organizations.

The majority of engineers/instructors/technicians reported that hosting technician and engineering students at organizations will better prepare them for their upcoming professional careers. In this scenario, students will witness the real-time working environment and issues on-the-job. Engineers/instructors/technicians in the sample responded that they did not seek advice from TVET institutes to address technical problems, develop new products or improve performance. This is another evidence of non-existent relationship between higher educational institutes and industry.

The participants also stated that after graduating, they had no interaction with their institution or university because higher educational institutions do not offer 'alumni' programs, therefore, students' interactions with their institutions and universities end soon after they are graduated. Most of the engineers/instructors/technicians also acknowledged that special lecturers in industrial organizations would enhance their understanding about the need of employer. Such placement aims to build relationship and linkages between higher educational institutes and industrial organizations identify the requirements of graduates in the industry. The respondents were of the view that if any chance is provided, they would return to college or university to get a higher degree. This reflects an increasing interest among engineers and technicians for career advancement in order to progress in their organizations.

Conclusions and Recommendations

It is concluded that there is still a very little interaction between higher educational (Technological) institutes and the technical industry in Balochistan, with very little coordination to provide the industry with the needed competent labour. Significant research findings revealed a lack of arbitrary and adequate planning strategies and procedures in the Balochistan higher education system and TVET. The prevailing situation has caused a symbiotic relationship between TVET graduates and the technological industry's needs. As a result, planning and mitigation of relationship strengthening is required between TVET providers and industrial management. Similarly, the link between TVET providers and

consumers (the technical industry) is relatively poor with the majority of instructors lacking industrial experience.

Following are the recommendations proposed based on the research findings and conclusions.

- Engineering and TVET institutes should revise their curricula and provide these curricula to satisfy the demands of companies in order to deliver effective courses and programs to students related to the sector.
- Students should be provided with high-quality services so that they may join the appropriate industry with the necessary knowledge and skills.
- TVET and engineering institutes should be linked to the local industrial sector and discover ways to match the programs they offer with the demands of employers. Such collaboration would surely boost the number of career opportunities for students enrolled in such institutes.
- TVET institutes should build alliances with local industry in the region in order to provide opportunities to the industrialists and policy makers in curriculum design process so that human resource can be trained as per socioeconomic needs of the province.
- To address the uncertainty about employment issues among graduates, TVET universities should provide career counseling, alumni centers for employment assistance. Such units are developed by HEC Pakistan in many universities to upgrade the level of education.
- Engineers/Instructors/Technicians should build strong interaction with their college/universities after graduation to link their workplaces with respective institutes. The Institutes should have proper alumni centers within their institutes.
- To avoid the current demand-supply crisis, Balochistan TVET providers should establish curriculum in collaboration with representatives from TVET providers, the industry sector, the Ministry of Higher Education and other Government organizations.
- Students might gain a deeper understanding as well as some empirical insights for their future jobs through frequent visits of the industries.
- TVET institutes in Balochistan may conduct seminars, workshops and conferences on industry related topics for awareness of students and society.
- To connect industry and learning, TVET providers should use a range of approaches and procedures, such as summer courses, internships and collaborative ventures with industry.

Implication and Future Research Directions

There has been no such empirical study in the field of TVET in Balochistan; hence no changes or trends can be noted. As a result, it is recommended that comparable studies be done in the future. However, this research is exploratory in nature, it presents a number of intriguing research questions. As a result of the research findings, various areas for further research are proposed. Although study evidence in these areas is scarce, the effects might be considerable. It is recommended that research should incorporate both quantitative and qualitative techniques and triangulation approaches, in order to provide more dependable and detailed data and

information. Moreover, technical and vocational education and its impact on economic growth in scenario of various economic constraints is also recommended. This study has some limitation of time and resources, therefore, it is recommended that further studies should be conducted with a distinction of female and male TVET responses in order to closely analyze the opportunities provided and issues confronted to the respondents. Moreover, some research problems regarding the nature of TVET programs should also be explored to find out the gap between the "what is" and "what ought to be". There is a dire need to add updated research and marketable training programs for human capital development which appeared to be missing. Keeping in view of the need of human capital optimization, the industries of shipping, fishing, farming, mines and minerals, forest and transportation should collaborate with TVET authorities in order to include such education and research in their institutes so that updated and required education be aligned with the socioeconomic needs of the region.

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