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Training of Construction Workers in Pakistan

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Abstract:
Pakistan's construction Industry, in spite of its sizable share in the Gross Domestic Product (GDP) and its fairly large contribution towards employment generation, remains neglected especially when it comes to skill development of its workers. Literature review confirms that stakeholders fail to contribute to the development of construction workers due to the ambiguities regarding their responsibilities. Literature review shows that construction enterprises in Pakistan remain distanced from modern HR practice and therefore do not consider about investment on development of their human resource. Reports and papers by various authors also verify that illiteracy and skill deficiencies in construction craftsmen lead to issues like low productivity, poor workmanship/quality, wastages/re-work, poor health and safety record, high turnover rate, inequitable compensation to the employees, lack of employment opportunities abroad, lack of skills to use of technology and many more, effecting all stake holders. Unfortunately, all problems remain undocumented. Study shows that developed countries have formulated elaborate systems of training their construction workers to support increasing demand of knowledge, skills and abilities. Following footsteps of modern world construction Industry in countries like Malaysia and Singapore is also doing well in developing their workforce. The construction industry of Pakistan, with a large and young labour force, has a lot potential to grow. It is recommended that Pakistan must develop its construction industry by following the global best practices regarding training of construction workers keeping in view local environment.
Keywords: Construction Industry, Workers, Training, Pakistan, Global best practices

1. Introduction

Pakistan is one of those developing countries where Construction Industry, in spite of its sizable share in the GDP and its fairly large contribution towards employment generation, remains neglected especially when it comes to skill development of workers. Laws and regulations are unable to contribute due to ambiguity regarding responsibilities of various stakeholders towards development of construction industry. Construction enterprises in Pakistan remain distanced from modern HR practice and therefore do not consider about investment on development of their human resource. Illiteracy and skill deficiencies of craftsmen in the construction workers lead to issues like low productivity, poor workmanship/quality, wastages/re-work, poor health and safety record, high turnover rate, inequitable compensation to the employees, lack of employment opportunities abroad, lack of skills to use of technology and many more, effecting all stake holders. Unfortunately, all problems remain undocumented. Common practice of sub-contracting of works to petty contractors has discharged large enterprises from their responsibility to upgrade skills of their workers. Skills and knowledge are believed to be the engines of economic growth and social development of any country (GOI, 2009) and workforce development cannot be considered separate from economic development (US Government, 2004). Training and education of human resource helps in achieving higher productivity, facilitates increase in employment, income growth and development etc. The performance of managers, supervisors and skilled workers are all equally important to an enterprise or to the national economy. However, skilled/semi-skilled workers, by dint of their numeric strength, remain focus of attention in labor force statistics. Labor intensive industries like construction are heavily dependent on the availability and quality of skilled/ semi-skilled labour in the country. Construction sector, dominated by small and medium-sized enterprises and self-employed, contributes 11 percent to the global GDP (PwC, 2011)and employs around 7 % of the total labor force worldwide. New approaches to operational efficiency and better management are being introduced in the fast changing construction industry, demanding new ways of attracting, retaining and deploying a mobile skilled workforce (Accenture, 2012). Challenges such as skill shortages, skill mismatches and skill up-gradation are faced by the construction industry around the world. In the developed economies construction sector is endeavoring to lure local labor attracted towards other industries and also trying to replace aging labor force with young and skilled foreign labour with increased dependence on modern methods of construction (MMC),

whereas in the developing world including Pakistan construction industry is still struggling with issues like lack of infrastructure, systems/processes within the enterprises and pubic departments, policies formulation, legislation and its implementation and most importantly converting abundant raw/unskilled labor into skilled and employable labour.

2. Scope and Objectives

The scope and the objective of this secondary research is to study current state of construction worker's training in Pakistan and its comparison with Global best practices so as to suggest broad way forward for Pakistan.

3. Methodology

This report is based on secondary research carried out through literature review of international/national reports, papers and studies to develop broad understanding of construction industry from the perspective of training and development of workers with focus on Pakistan. The information obtained from accessible reports and studies has been used to highlight importance of training of construction workers worldwide, establish where Pakistan stands on development of construction skills and where does the world and how can the global best practices be localized to develop training structure for Pakistan. Scarcity of literature on construction industry of Pakistan has been the main hurdle in the research process. Sufficient reports and studies related to generalized vocational training are available, however, a little information specific to training of construction workers is obtainable.

4. Previous Studies

Where Pakistan's Construction Industry is a neglected sector in Pakistan's overall economy, its workers (skilled/unskilled craftsmen) are indeed neglected within the construction industry. Construction Industry and its workers in Pakistan have been ignored by the researchers as well. The formal training and development of construction workforce comes in the realm of general vocation training in Pakistan, whereas the informal training, which is mostly prevalent, is conducted by the enterprises themselves. However, relevant institutions do not have capacity to compile record of skills and education attainments of construction workers acquired formally and informally.

This report discusses several studies/papers about vocational education in Pakistan which are mostly focused on the role of NAVTTC and TEVTAs. "Vocational Education and Skills Development: A Case of Pakistan" by Syeda Wadiat Kazmi (Kazmi, 2007) and "Situation Analysis to Support theProgramme Design Process for NationalSkills Strategy of Pakistan" by Yasin Janjua and Irfan Mohammad(Irfan & Janjua, 2008) are independent studies which provide deep insight to the vocation education system in the country. Whereas, Pakistan specific reports and studies by NAVTTC(GoP, 2009a), UNESCO(GoP & UNESCO, 2009) and World Bank also help in analyzing current vocation system of Pakistan.

Research papers titled "Role of Construction Sector in Economic Growth: Empirical Evidence from Pakistan Economy" and "Effect of basic motivational factors on construction workforce productivity in Pakistan "by Raza Ali Khan(Khan, 2008)have been quoted to highlight characteristics of Pakistan's construction sector and workers. These are very useful to learn about Pakistan's Construction Industry. A RECOUP Policy Brief "Skill Acquisition and the Significance of Informal Training System in Pakistan –Some Policy Implications" by Shehryar Janjua and ArifNaveed(Janjua & Naveed, 2009) gives a fairly good understanding about the informal training system which is widely practiced in the construction sector. MSc thesis titled "Masons' Perceptions of the Factors Affecting their Competency in Islamabad" byChaudhary Bilal Zafar(Zafar, 2012)has also been quoted to augment skill enhancement of craftsmen. Government of Pakistan Reports regarding labour force education, employment trends etc facilitated in presenting information.

World Bank Pakistan specific reports titled "Infrastructure ImplementationCapacity Assessment (PIICA)"(World Bank, 2007) are the most useful documents on the development of construction industry in Pakistan as they incorporate issues of all stake holders.

The scarcity of reports and studies about the construction industry of Pakistan has been encountered as one of the major difficulties in progression of this research. However, there were abundant international studies and reports especially about the construction industry of selected countries to establish best practices.

5. Construction Industry, its Workers and their Training

"Construction is a large, dynamic, and complex industry sector that plays an important role in economy" (Behm, 2008). Construction industry is considered vital for economic growth and development of the country and generates employment opportunities for millions of unskilled, semi-skilled and skilled workers in both formal and informal sectors (Khan, 2008). "Construction workers build, repair, maintain, renovate, modify and demolish houses, office buildings, temples, factories, hospitals, roads, bridges, tunnels, stadiums, docks, airports and more" (ILO, 2011). ILO report indicates that a large percentage of construction labour force is unskilled labourers; construction workers account for 5 to 10% of the total workforce; over 90% of construction workers

are male; in workers mostly enter into construction through unskilled construction work. Another report (Serpell & Ferrada, 2007) on construction labor force in developing countries characterizes construction workers as possessing low self-esteem; insensitive to hazards; more young workers and informally/casually trained; low education attainments; switching jobs because of high turnover rate; conservative attitudes/resistance to change.

A research paper by European Centre for the Development of Vocational Training (Cedefop) summarizes benefits of vocational training (Cedefop, 2011) which are equally applicable to construction (See Table 1).

Table 1- Benefits of Training

Economic Benefits			Social Benefits
Economic Growth	Macro		Crime Reduction
Labour Market Outcomes			Social Cohesion
Firm's Performance	Meso	Macro	Health
Employees Productivity			International Benefits
Employment Opportunities	Micro	Meso	Inclusion of disadvantageous groups
Earnings	Micro		Life Satisfaction
Career development			Individual Motivation

Source (Cedefop, 2011)

6. Training of Construction Workers in Pakistan

Pakistan is world's 6th most populated country with a population of more than 184 million. Country has 9th largest labor force in the world, figuring around 57 Million of which 94% are employed (GoP, 2013). 7% of the Pakistani Labour Force is directly employed in the Construction Industry (GoP, 2012). Significant percentage of Overseas Pakistani unskilled, semi-skilled and skilled workers is employed in the Construction Industry. About 73 % of labour force is employed in the informal sectors (GoP, 2012) of which considerable participation is from construction Industry. Pakistan's informal economy, which encompasses large part of construction sector, is overwhelmingly undocumented, unregulated and characterized by low income and low productivity (GoP, 2009a). Construction Industry contributes almost 3% to the GDP which is far less than the average in the developing countries i.e. 5 -9 % (Kirmani, 1988). A research paper titled "Role of Construction Sector in Economic Growth" concludes that Aggregate economy of Pakistan is highly influenced by the construction industry (Khan, 2008) , further enhancing significance of the industry. The construction industry of Pakistan must recognize its workers as its important asset and their development must be given priority, firstly, to meet growing demand of skilled construction labour within the country and secondly to export surplus skilled labour abroad for innumerable benefits. (See Table 2 for salients about Pakistan's Construction Industry).

Table 2 - Pakistan's Construction Industry

GDP Contribution	2.5%
Growth rate	0.8%
Employment Share	7%
Employment with no formal education	45.8%
Vulnerable Employment	8.1%
Sources: (GoP & USAID, 2010), (GoP, 2011),(SBP, 2011), (GoP, 2009)	

Research and data from numerous sources mutually characterize Pakistan's construction workers as illiterate, unskilled, de-motivated, incompetent etc, thus posing a great challenge to the stakeholders in government and private sector to revamp the existing training and development system available in the country.

6.1 Overview of Training & Development System for Construction Workers in Pakistan

Technical Vocational Education and Training (TVET) carries out "skill-development of labour force in the country'' and is defined as "marketable and economically relevant education for people" (GoP & UNESCO, 2009). In the absence of any construction industry specific training board or body in Pakistan (World Bank, 2007) the training of construction workers comes in the realm of general Technical and Vocational Education and Training like almost all other industries. The prospective construction workers are being trained formally by government and private sectors through structured programs of various durations being executed at various Vocational training Institutes(VTIs) and Vocational training Centers(VTCs) whereas informal training is being imparted only by the private sector through traditional OJT Ustad-Shagird Schemes (Kazmi, 2007). At the

Federal level the NEVTTC and NTB are the main bodies responsible for TVET whereas at the provincial level TEVTAs and SDC carry out planning, coordination and execution of TVET (Voogd & Qureshi, 2011). (see Table 3)

The vocational and technical education infrastructure in Pakistan is very small by all standards. There were about 315,000 students enrolled in 1,522 technical and vocational educations and training (TVET) institutes in 2009 (NEVTEC, 2009). However, as per a joint report by Government of Pakistan and USAID there are a total of 3,224 technical and vocational institutions of which 967 are in public sector and 2257 are in private sector (GoP & USAID, 2010).National Census of Education (NCE) 2005-06 reports 3,059, registered and non-registered, TVET institutions in Pakistan which includes 916 public sector and 2143 private sector institutes. As per Government figures the enrolment in TVET is approximately 4% of total enrolment in education (NAVTTC, 2013) whereas independent source quote much lesser enrolment percentage i.e. 1%(GoP & USAID, 2010) and 1.4 % (GoP & UNESCO, 2009). The variations in statistics of various sources clearly show that proper data is not being managed by any government department regarding the vocational institutes (Irfan & Janjua, 2008).

TVET providers in public sector working under different federal ministries and provincial departments are lacking coordination due to overlapping of responsibilities. Ministry of Labour, Manpower and Overseas Pakistanis, Ministry of Youth Affairs, National Institute of Science and Technical, National Training Bureau, Pakistan National Accreditation Council (PNAC), National Institute of Labour Administration and Research, Skill Development Councils (SDCs), National Staff Training institute etc directly deal with the execution of TVET in the country (Irfan & Janjua, 2008). The National Skill Strategy formulated by the government describes present system of qualifying vocational certification in Pakistan as time bound and curriculum based where the competency is not tested through demonstration of skills. It further says that very few Industries in Pakistan offer proper training opportunities to their employees as demand for training is very low, turnover rate of workers is high and financial resources are limited. Particularly Small and medium sized enterprises because they cannot afford to train their staff, consequently both the firm and their workers remain at a disadvantage. There are only 288 private sector registered institutes offering skills developmental in Pakistan (GoP, 2009a).

Table 12- Vocation Training in Pakistan

Federal level	• Ministry of Professional and Technical Training • National Vocational and Technical Training Commission (NAVTTC) • National Training Bureau (NTB) • Public sector training providers • Private sector training providers
Provincial or district level	• Technical and Vocational Training Authorities (TEVTAs) • Punjab Vocational and Technical Council (PVTC) • Skills Development Councils (SDCs) • Directorate of Technical Education (DTE) • Directorate of Manpower Training (DMT) • Board of Technical Education (BTE) • Public sector training providers • Private sector training providers

Source: (Voogd & Qureshi, 2011)

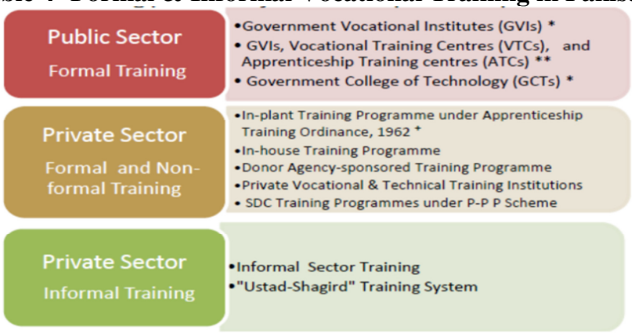
Establishment of NEVTTC in 2006 has improved the overall situation to some extent. Salient characteristics of current structure of TVET programmes in Pakistan (Kazmi, 2007) are as follows:-

- Complex
- Consisting of many agencies and levels
- Government Vocational Institutes controlled by the Provincial Education Department
- Technical Training Centers and Apprenticeship Training Centers are controlled by the Provincial Labour Departments
- The provincial Directorates of Manpower and Training control apprenticeship Training under the Apprenticeship Training Ordinance.

6.2 Formal & Informal Vocational Training

Formal and informal vocational training is offered through public and private sectors in Pakistan. Formal training in government sector is provided through government VTIs/VTCs whereas in private sector VTIs, donor sponsored training programs and SDCs. (See Table 4)

Table 4- Formal & Informal Vocational Training in Pakistan



Source: (Voogd & Qureshi, 2011)

6.2.1 Formal

Formal TVET is offered in three tiers in Pakistan namely Pre-vocational, vocational training and technical education (Zafar, 2012). The pre-vocational education is now limited to level of general education attained at the time of joining vocational education (Irfan & Janjua, 2008).

Vocational Training offers lower-level education and training for preparing skilled or semi-skilled workers in variety of trades, it does not enhance their level of general education. (GoP & UNESCO, 2009). Students join the training institutions at Secondary and Matric levels to attain basic or advance level diplomas. Where most of the institutes offer wide range of course relating to various industries, there are institutes (mono-technic) which provide industry specific training in industries like agriculture, poultry, sewing etc. CTTI is the only construction specific public sector institute (NEVTTC, 2009a). (See Table 5)

Table 5 - Qualification levels in Vocational Stream

Vocational Stream	
Courses	Duration
G-I Level	3 Years
G-II Level	2 Years
G-III Level	1 Year

Source: (NAVTTC, 2013)

Technical Education

Technical education combines practical training with education to produce Mid-level engineering technicians (GoP & UNESCO, 2009). (See Table 6)

Table 6- Qualification Levels in Technical Stream

Technical Stream	
Courses	Duration
DAE	3 Years
B.Tech	2 Years
B. Tech (Hons)	4 Years

Source: (NAVTTC, 2013)

Apprenticeship Training

In Pakistan Apprenticeship Schemes are supposed to be conducted as per the guidelines in Apprenticeship Training Ordinance 1962. Many government owned enterprises such as railways, national airlines, Pakistan Steel, Pakistan Air force, etc offer apprenticeships to meet their organizational demand(GoP & UNESCO, 2009). Likewise corporate sector (Nestle, Pakistan Telecommunications, Pak-Saudi fertilizers, etc.) also conducts on the job trainings to meet their skill demands (Irfan & Janjua, 2008). There is no worth mentioning established scheme for the training of construction workers.

6.2.2 Informal

Ustad- Shgird (master craftsman - apprentice) is a traditional On the Job Training and predominant mode of apprenticeship. It is unstructured and widely practiced way to train the craftsmen in the absence of access and

availability of sufficient vocational schools (Kazmi, 2007). There are no eligibility criteria for entering ustad-shagirdsystem such as minimum level of education or age or level of prior skills etc (Irfan & Janjua, 2008). The system is relevant to all industries specially construction where masons, plumbers, carpenters etc acquire skills under the supervision of master craftsmen. The National Skill Strategy of Pakistan describes this system as usually outdated, static, job-specific, non-portable, lacking in theoretical understanding, and uncertified(GoP, 2009a).

This system supplies bulk of the skilled workforce for the industry but still gets criticism for common practices of child abuse and exploitation, poor wages and overwork. Construction industry has been identified as one of the major absorbers of child labour (Khan, 2000).

6.3 Important Organizations/Institutions Responsible for Vocational Training in Pakistan

NTB

The NTB established under the National Training Ordinance 1980 (amended in 2002) regulates, promotes and assesses vocational training needs to fulfill demand of own Industry along with exporting surplus skills abroad. NTB also participates in evaluating training methodology and the delivery system, job analysis, developing curricula and setting skill standards etc (Voogd & Qureshi, 2011).

NAVTTC

NAVTTC established under the NAVTTC Act in June 2011 carries out regulation, monitoring and coordination of various activities related to TVET. Its main functions as describes in NAVTTC Act are planning at national level, curriculum development, standardization of technical education, training of trainers, national accreditation of private polytechnics institutes and develop strong linkages with the industrial end users. The commission will also maintain data bank of skilled workers and employers.(GoP, 2011)

TEVTA

TEVTAs have been established in all four provinces following the examples set by TEVTA Punjab to produce a quality and productive workforce by developing demand driven, standardized, dynamic and integrated technical education and vocational training service. TEVTAs implement certificate and diploma (Vocational, G-II and G-III) courses through Government Polytechnic and technical colleges, VTI and VTCs(Voogd & Qureshi, 2011).

Skill Development Councils

SDCs have been established to provide a productive link between employers and training providers; to identify training needs of the area in which the SDC is working; analyze and prioritize training needs through government, private training institutions establishments and in-plant training modes; validate, adapt and determine training standards and curricula contents; Implementprograms to promote vocational training, apprenticeship, and in-plant training in reaction to industrial needs.There are five Skill Development Councils (SDCs), one in federal capital and one in each provincial capital.(Voogd & Qureshi, 2011)

Vocational Training Centers / Institutes (VTC/VTI)

VTIs and VTCs work under administrative and operational control of TEVTAs. Vocational Courses offered by VTCs and VTIs are certificate course (3-6 months), G-III Diploma (12 months), G-II Diploma (24 months) and vocational diploma (1 -2 year). These institutions provide generic course related to all industries.

6.2.3 Recent Initiates

President's Funni Maharat Programme and Prime Minister's Hunermand Pakistan Programmelauncehed by government provided vocational and technical training to 134,118 students (GoP, 2012). However, data regarding distribution of trades is not available. A survey by TEVTA shows that only 6.5% candidates have shown interest in enrolment in construction related vocational courses.

7. Best Practices in Selected Countries

Four countries have been chosen for studying training system for the construction workers All four are at varied levels of progression with regard to development of workers. United Kingdom has been selected from the most advanced countries followed by Singapore and Malaysia and lastly India. Some good practices from countries other than mentioned have been discussed in the preceding paragraphs.

Entry in the Industry

The minimum criteria for joining apprenticeship in South Africa requires that an applicant to be 17 years old or above, has a valid driver's license, have a high school diploma or GED certificate, and to be physically capable of performing the work of the trade to be learned. (CIDB, 2009)

In the UK construction industry employees at the time or hiring are mostly 18 years and above. At 16 years of age potential construction workers have options to join the labour market mostly through Apprenticeship programs offered by employers or after achieving basic NVQ level. At the time of entry into industry most of the employees have under gone 11 years of compulsory education. (UKCES, 2012)

77% of the labor force in Malaysia possesses 11 years of education and remaining 28% of the jobs are in the higher skill bracket. (SSM/UNICEF, 2013)

Registration and Accreditation of construction Workers

Construction Skills Certification Scheme (CSCS) in UK covers 220 occupations, and variety of certification cards are awarded depending on job type, experience, qualifications and membership of professional bodies. To qualify, applicants must pass relevant CITB/ConstructionSkills health and safety test or go through training course. (UKCES, 2012)

Construction Registration of Tradesmen is a registration scheme for skilled and experienced construction personnel in Singapore. (BCA, 2011)

CIDB Malaysia is responsible for Accreditation and Certification of construction workers and site supervisors. (Arshad, 1997)

Career Progression

Although there is no standard carrier path for the construction workers in the world, UK construction industry provides a relatively clear career path to its workers where opportunities are available for up-skilling, multi-skilling and achieving supervisory / managerial roles by attaining higher levels of QCF(UKCES, 2012).

Construction Registration of Tradesmen Scheme in Singapore provides a progression path for construction workers to progress from a general worker to a registered Construction Tradesman, to a registered Construction Trade Foreman and finally become a registered Construction Supervisor (BCA, 2011a).

Qualification Framework

NQF has been termed as a course through which the country channelizes education and training together in a single unified system. It provides nationally recognized training standards; carries out recognition for all acquisition of knowledge and skills. There are many countries in the world which have implemented Qualifications Framework (NQF) and many other planning to follow them. NQF facilitates qualifications to fulfill country's economic and social needs, quality of qualification, flexibility and progression for learners along with global recognition. UK has been classified in 1st generation(1980-1985) of countries which implemented NQF whereas Malaysia and Singapore in the 2nd generation(1985-2000). The 3rd generation countries are still formulating NQF. (ILO, 2007)

UK has well-structured QCF which has three entry levels covering basic skills and the further eight levels range from the equivalent of Level 2 NVQs to PhD or Level 5 NVQ standard. (UKCES, 2012). See Table 7 for details.

Table 7- UK's NQF for Construction Workers

Qualification and level	Description / examples
QCF - Entry, Levels 1, 2 and 3	Basic, key skills
QCF – Levels 1 and 2	Young Apprenticeships, Intermediate Apprenticeships, Specialist Apprenticeships, GCSE in Construction and the Built Environment, NVQ/SVQ Level 1 and 2, Scottish Skills For Work: Construction SCQF Level 4 or 5, Diploma in Construction and the Built Environment
QCF – Levels 3 – 5	Advanced Apprenticeships, HNC (Level 4), HND (Level 5), Foundation degrees, NVQ Level 3 and 4
QCF – Level 6	Degree level qualifications
QCF – Level 7 and 8	Higher degrees
Vocational Related Qualifications (VRQ)	Including craft construction awards and craft certificates, which can be at any QCF level
Other	• Qualifications and training programmes aimed at progression into management and supervisory roles; • Qualifications from professional institutions, often linked to an existing course, for example in the accreditation of degree courses

Source: Adapted from ConstructionSkills and UKCES (2007)

BCA Singapore has introduced a new skills framework for the construction workers based on their skills and experience levels. Under this new framework, "Unskilled" workers are being phased out and "Skilled" workers are classified into basic (R2) and higher skilled (R1). (BCA, 2011a). The design of Singapore Workforce Skills Qualifications (WSQ) system is based on international best practices and tailored to meet local requirements. (WDA Singapore/APEC, 2011)

Malaysian Skills Qualifications Framework is a five-tiered skills certification system (from basic certification for operators to advanced diploma for supervisors/ managers(ILO; Skills-AP; Department of Skill Development Malaysia; Malaysian Employers' Federation, 2010).

National Framework of Qualifications in Ireland covers qualifications from initial schooling to higher doctorate level, and aims to improve access, transfer and progression in the education and vocational training systems. (FAS Ireland, 2010)

Construction Specific Bodies

Construction Industry Training Board (CITB) was responsible for the skill development in UK. Currently ConstructionSkills is the main training board for the construction sector, licensed as the Sector Skills Council (SSC) through the UK Commission for Employment and Skills (UKCES). ConstructionSkills is a partnership of

CITB-ConstructionSkills, the Construction Industry Council (CIC) and CITB-ConstructionSkills Northern Ireland which endeavors to ensure coverage of the whole of the construction industry in the country (UKCES, 2012).

Construction Industry Development Board (CIDB) in Malaysia monitors and coordinates training of skilled manpower at the National level. It also collects funds as is done by CITB UK (Arshad, 1997).

Building and Construction Authority (BCA) Singapore is a government agency responsible for the development of building and construction industry by enhancing skills and professionalism (BCA, 2011).

The Construction Workers Training Center (CWTC) established by the Contractors Association in Korea (CAK) has been instrumental in the development of the construction industry by designing training policies and methods(Kirmani, 1988).

Technology / R&D

Adoption of new technologies and use of MMC (modern methods in construction) is increasing requiring new and upgraded skills. The MMC include the offsite construction industry and Pre-fabrication etc. (UKCES, 2012)
Singapore Government is supporting the development of pre-fabrication facilities and elimination of waste and abortive works, standardization of design, new materials and innovative temporary support solutions all demanding better skill from workers.(Warburton, 2012)

The Hong Kong construction industry is using modern construction methods and techniques like prefabrication coupled with the use of standardized and modular components all requiring skill development. (CIRC, 2001)
To modernize transport infrastructure of Mumbai, the Maharashtra State Road Development Corporation (MSRDC) constructed many flyovers in the city. In its bid document, specific technical conditions that the bidding contractors were required to meet were laid out, which also included use of hi-tech construction equipment and techniques. (GOI, 2002)

Funding

CITB UK is a levy-grant operator. Levy funds are spent on actual training support, training advice, and market intelligence (UKCES, 2012a).ConstructionSkills in UK also collects an annual levy from employers which is used to fund grants to employers for the training their workforce.(UKCES, 2012)

Human Resources Development Fund (HRDF) in Malaysia has been set up through legislation (PSMB Act) to award demand driven training /re-training grants for the industry along with promoting manpower training, domestic or overseas. (ILO; Skills-AP; Department of Skill Development Malaysia; Malaysian Employers' Federation, 2010)

The Government of Gujarat's skill voucher scheme ensures that the funds are allocated for the training to the candidates with option to select the course and institute. Skill voucher is a pre-paid voucher distributed to mobilize candidates and incentivize them to get training. (Ernst & Young Pvt Ltd; FICCI, 2012)

International Relief & Development (IRD) successfully conducted training of construction tradesmen from 2005 to 2008 in Afghanistan. IRD developed an income stream to support financial self-sustenance by introducing a range of construction services that benefit contractors, agencies, and communities and avoided over reliance on one or few donors. (International Relief & Development[IRD], 2012)

Regulatory Legislation

In Malaysia CIDB set up as regulatory body in 1996. Human Resources Development Fund has been set up through legislation (PSMB Act) in 2001 to award demand driven training and re-training grants for the industry along with promoting manpower training, domestic or overseas.

In China Central ministry of construction develops regulations and legislation to support the development of the industry. In 1998 Construction Law was enacted covering procurement, delivery of works, supervision, safety and quality procedures etc.

Incentives to Encourage Enterprise Participation in Training

UK Levy-grant schemes of various types are practiced. In 'pay and claim' schemes training levies are collected from firms and eligible firms are paid. Levy-exemption schemes allow exemptions from paying, if employers can show that their training exceeds a set level. These are 'train or pay' schemes. (UKCES, 2012a)
Employers were able to recoup much of the cost of their investment within about two years or so if they were able to retain the services of the apprentice.(UKCES, 2012a)

Malaysian Government offers tax exemption to employers investing in training of workers through Industrial Building Allowance (IBA) and human resource Development Fund (HRDF). (SSM/UNICEF, 2013)

Singapore's Skills Development Fund (SDF) and Malaysia's human Resources Development Fund (HRDF) are financed by a 1 percent levy on wages and grants are given to eligible enterprises to encourage the training of employees. Both these Funds offer special incentives to encourage smaller firms to train the work force. Singapore offered a training voucher to companies with less than 50 workers.(World Bank, 2007a)

School – Enterprise Cooperation

In Germany, the "dual system" model combines schooling with work and apprenticeship. Employers and worker

organizations play a key role in making the model work. Germany has attempted to transfer its model to many developing countries in Asia, Africa, and Latin America.(World Bank, 2007a)

In Malaysia, Time sector participation is an innovative way for linking schools and industry. Whenever training facilities of schools are free or underutilized they are offered industry for conducting their training programs at an agreed price.(Ul Haq & Haq, 1998)

Shell Petroleum Company's LINK project for training of welders is also a noteworthy example of cooperation between vocational schools and Industry. Vocational schools trained skilled welders to meet increased demand of craftsmen in Shell.(Ul Haq & Haq, 1998)

Institutionalization of Informal Training

China has institutionalized informal training through the concept of 'cradles of building craftsmen' and 'construction labour bases'. Where former is an informal master apprentice system in which skilled building craftsmen pass on their skills to the next generation along with offering their services to construction companies (ILO, 2001a)

The Singapore Workforce Skills Qualifications (WSQ) system is developed keeping in view global best practices and is tailored to local context. It Recognition of Prior Learning of skilled labour is a formal process of certifying experience and skills acquired by workers(WDA Singapore/APEC, 2011).

Capacity Building

The CTTC (Construction Trades Training Center) successfully conducted trade training for construction workers from 2005 to 2008 in Afghanistan by providing career support to trainees, understanding of employment opportunities and ensuring self-sustenance. (International Relief & Development[IRD], 2012)

Governments' Role

Korea's construction industry has become highly developed due to proactive role of their government in its development. The Ministry of Construction is entrusted with the execution of public works programs and it has a special bureau which is responsible for developing the construction industry.(World Bank, 2007)

Malaysian Government has undertaken many steps for the development of highly skilled workers. Small and medium industries are being provided matching training grants, Employers rae being offered financial assistance in the form of loans for training, expansion of the National Dual Training System (NDTS) which covers SPM school dropouts and awarding Malaysian Skills Certificates etc.(SSM/UNICEF, 2013).

Role of Trade Associations

In Malaysia trade associations build the capacity of the industry through training, seminars, international symposiums, and advice. These associations facilitate Information and knowledge sharing within the industry (World Bank, 2007a).

Labor Market Information and Analysis

An elaborate labor market information Program was implemented by the Construction Sector Council (CSC) Canada for forecasting labor market conditions for construction crafts. The program helped construction industry to understand and resolve the issues through discussions between various stakeholders. Getting inspiration from Canadian experience, Construction Workforce Development Center (CWDC) of United States also launched Craft Labor Forecasting Model focused on construction in 2009 (CURT & CWDC, 2009).

8. Gap Analysis

The literature review suggests that training of construction workers is a much neglected field in Pakistan. The developed countries have been able to cope with challenges faced by construction industry by adopting modern methods and techniques of construction and developing their workforce. Major discrepancies have been discussed in the succeeding paragraphs.

Absence of Construction Specific T & D Body in Pakistan

There is no institution/body specifically for the development of construction industry in Pakistan (World Bank, 2007), which can serve as a focal point for discussion and resolving issues related to the construction industry. Responsibilities of existing government departments are not limited to construction industry. As discussed, NAVTTC covers wide range industries and emphasis on any one industry is not possible. Many functions and responsibilities of Pakistan Engineering Council (PEC) are related to construction industry such as registration/classification of civil engineers, construction firms, training of engineers and construction mangers etc, training of construction workers remain neglected in list of many responsibilities as per PEC Act 1976 (GoP, 1976). Establishment of Construction specific body will address many issues including exchange of information amongst various stake holders. Many studies and reports have recommended establishment of industry specific institution. World Bank report by South Asian Sustainable Development Unit (SASSD) recommends establishment of an organization dedicated for the development of construction industry in Pakistan (World Bank, 2007b). The point has been included in the National Skill Strategy [2009– 2013](GoP, 2009a) , however, no practical step is visible.

Nonexistence of Construction Specific Training Institutes

In Pakistan most of the TVE institutes offer courses related to many industries. Except for CTTI there is no institution which provides specialized training in construction.

Lack of Information/data about Construction Employers & Employees

Labour Market Information and Analysis specific to every industry is required by the government for policy formulation and employers and trade association for strategy preparation. In Pakistan currently no institution has prepared LMI or LMA for the labour force including construction workers. NEVTTC is planning to establish a viable and sustainable LMI cell (Voogd & Qureshi, 2011). The data offered by Pakistan Bureau of Statistics in Labour Force Survey is insufficient to address the needs of the industry. World Bank report also recommends collection and dissemination of industry relevant statistics should be ensured to facilitate all stakeholders(World Bank, 2007b). The essentiality of labour market information is also acknowledged in many government reports(GoP, 2009a).

Pakistan Engineering Council (PEC) keeps record of registered engineers and construction firms, however, neglects data pertaining to construction workers(GoP, 1976).

National Vocational Qualification Framework

There are many countries in the world which have implemented Qualifications Framework (NQF) and many other planning (Pakistan not included in the list of countries considering implementation of NQF in near future) to follow them (ILO, 2007). Pakistan is also looking forward to prepare NQF encompassing vocational stream in consultation of NEVTTC and PEC (GoP & UNESCO, 2009). However, NQF in Pakistan is still under formulation and may take time for implementation in spite of being included in the National Skill Strategy [2009 – 2013] (GoP, 2009a).

Institutionalization of Informal Training

Informal sector in Pakistan is a leading provider of skills aswell as employment to the labour force. A comprehensive study carried out on Pakistan's informal sector recommends recognizing prior learning (RPL) should be done to institutionalize informal training and the master craftsmen should be given training so that they can pass on the knowledge to their students(Janjua & Naveed, 2009). National Skills Strategy(GoP, 2009a) also recognizes this issues, however practical step are not visible.

Role of Trade Associations

A strong link between industry and training institutions is essential for successful deliverance of training and its utility to the industry and the trainees. The leading construction companies' associations of Pakistan, Constructors Association of Pakistan and Association of Builders & Developers of Pakistan, have not shown any interest in the training of construction workers as is evident from their annual reports and online information exhibited on their respective websites. As per latest online figures 295 construction companies are members of Constructors Association of Pakistan(CAP, 2013)while Association of Builders & Developers of Pakistan (ABAD, 2013) has 577 members companies. In the absence of concerted effort from the trade associations training of workers cannot be formulated at any level properly.

Sustainability

Training and development of workforce requires determined efforts from all stake holders. Training institutes require funding and resources to operate and deliver. Reliance on funding by government or few donor agencies can never be sufficient and sustainable (International Relief & Development[IRD], 2012). Long term viability of training institutions will require a mechanism of fund generation primarily focused on contributions from industry through levies/taxes. Conversely, in Pakistan more 70% of the vocational training institutes are totally dependent on public funding (GoP, 2011).

9. Findings and Conclusions

Construction Industry plays a pivotal role in the economic and social development of Pakistan because of dependence of other industries on construction, significant share of construction in overall employment within the country and overseas, its contribution to GDP and most importantly its potential to grow further. Unfortunately, Pakistan's construction industry is plagued with low skill especially at the craftsmen level. Low skills of the workers contribute to low productivity, poor quality, lesser wages of workers, fewer opportunities for the progression and increase in accidents at construction sites etc. The construction industry of Pakistan is still at primitive stage from the perspective of development of its human resource. The majority of local construction firms do not practice modern HR practices. Where there is a dearth of skilled craftsmen in the industry, the industry fails to attract skilled and educated craftsmen due to low wages and inappropriate working conditions. The local construction industry is meeting majority of its skill demand from informal training, whereas a small percentage of skilled workers is contributed by formal vocational training system. The construction industry of Pakistan, with a large and young labour force, has a lot potential to grow. The development of its workforce is the one of the most important factors which can contribute to the better performance of construction industry. Global best practices many already identified by GoP must be adopted;

however, there is a dire need to localize the best practices in Pakistan's context and learn from the experience of other developing countries including Malaysia, Singapore and India. This research has also identified following for future research:

- This report has highlighted many gaps in the existing T & D system of construction workers in Pakistan. Researchers can pick any one of them for detailed study.
- Researchers can also study training system specifically for one trade (carpentry, masonry, plumbing, steel fixing etc) which may include micro level issues like curriculum, structure of trade specific centers, teachers training, career counseling of prospective trainees etc.
- Research on the compulsory requirements of minimum age, qualification and skills for entering the labour markets and regulatory framework can also be carried out.
- Not much work had been done on the role of various stake holders in Pakistan. Research can also be done to distribute responsibility of development of work amongst various stake holders.

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