Labour Market and Skill Gap Analysis for the Construction Sector in Bangladesh

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ACRONYMS

ADB	Asian Development Bank
AGM	Annual General Meeting
BACI	Bangladesh Association of Construction Industry
BBS	Bangladesh Bureau of Statistics
BDT	Bangladesh Taka
BEIOA	Bangladesh Engineering Industry Owners Association
BIDS	Bangladesh Institute of Development Studies
BILS	Bangladesh Institute of Labour Studies
BMET	Bureau of Manpower Employment and Training
BNBC	Bangladesh National Building Code
BRTC	Bangladesh Road Transport Corporation
BSIC	Bangladesh Standard Industrial Classification
BTEB	Bangladesh Technical Education Board
CBO	Community-Based Organization
CBT	Competency-Based Training
CISC	Construction Industry Skills Council
DTO	Directorate of Trade Organization
FBCCI	Federation of Bangladesh Chambers of Commerce and Industry
FGD	Focus Group Discussion
GDP	Gross Domestic Product
GED	General Economics Division
GOB	Government of Bangladesh
ICT	Information and Communications Technology
IFAWPCA	International Federation of Asian and Western Pacific Contractors' Associations
ISC	Industry Skills Council

ISIC	International Standard Industrial Classification
LFPR	Labour Force Participation Rate
LFS	Labour Force Survey
KII	Key Informant Interview
MFF	Multi-tranche Financing Facility
MoF	Ministry of Finance
NBR	National Board of Revenue
NGO	Non-Governmental Organization
NHRDF	National Human Resource Development Fund
NSDA	National Skills Development Authority
NSDC	National Skill Development Corporation
NTVQF	National Training and Vocational Qualifications Framework
PKSF	Palli Karma-Sahayak Foundation
PMU	Project Management Unit
PPP	Public-Private Partnership
RAJUK	Rajdhani Unnayan Kartripakkha
REHAB	Real Estate and Housing Association of Bangladesh
RMG	Ready-Made Garment
RMMRU	Refugee and Migratory Movements Research Unit
RPL	Recognition of Prior Learning
SDC	Swiss Agency for Development and Cooperation
SDCMU	Support to Skills Development Coordination and Monitoring Unit
SDGs	Sustainable Development Goals
SEIP	Skills for Employment Investment Program
TVET	Technical and Vocational Education and Training
UMIC	Upper Middle-Income Country
8FYP	8th Five Year Plan

EXECUTIVE SUMMARY

The construction sector of Bangladesh has expanded dramatically in recent years. The development of the construction industry plays an important role in the overall development of Bangladesh. In the government's 8th Five-Year Plan for fostering national economic development, the construction industry is recognized as one of the priority growth industries. The construction industry of the country has grown significantly during the last decade, accounting for approximately 8% of the total GDP (MoF, 2021). According to BBS (2020), the construction sector has shown promising growth over the last decade among the 15 important sectors that contribute to the country's GDP. The development of this sector has been aided by projects such as the Padma Multi-Purpose Bridge and the Dhaka Mass Rapid Transit Development. And the future growth of this sector will necessitate increased workforce productivity through skill development. And, to design particular strategies for skill development in the construction sector, a detailed assessment of the labour market and skill situation is required.

The main objective of this study is to explore the labour market and the overall skills gap in the construction sector. Besides, the specific objectives are: (i) to take stock of the overall demand and supply of skills in the construction sector, and how these demands and supply will change in the next 10 years; (ii) to measure various types of skill mismatch (i.e., skill gap, skill shortage, over and under-education, horizontal mismatch, etc.); (iii) to take stock of government policy and interventions to produce and upgrade the skills for the construction sector; and (iv) to assess the type of training programs required to meet the skill demand.

In determining the sample size of the establishment/firm survey, this study uses the methodology widely used by the World Bank in different surveys. Here, the population is the total number of firms/establishments involved with the Bangladesh Association of Construction Industry (BACI) and REHAB, which is 1118. BACI is involved in public construction as well as multi-storied building construction in Bangladesh. While REHAB works in promoting formal private sector Real Estate Development in Bangladesh. The estimated sample size of this study drawn from this population of 1118 firms is 108.

Further, under each of the sample firms, information has been collected from both the enterprises and the project levels including interviewing some selected employees as well. In addition, Focused Group Discussions (FGD) and Key Informants Interviews (KII) have been conducted to understand the workers' job conditions and future job aspirations in the sector and current conditions and future challenges and prospects of the sector.

According to Labour Force Survey (LFS) data, the construction sector is the second-largest generator of non-agricultural employment, trailing only the ready-made garments sector. Bangladesh's construction industry grew at an annual rate of roughly 8.69 percent in FY2006, but that rate dropped to 6.95 percent in FY2011, indicating a relatively downward trend throughout those years. Due to huge infrastructure investments and a rapid surge in housing demand, the situation began to shift in FY 2012 and jumped to 8.42 percent, after which it has remained stable

at around 8 percent. It then rose to roughly 9.92 percent in FY 2018 and 10.25 percent in 2019, an all-time high in the construction industry since FY 2006.

Employment generating potential of the construction sector can hardly be over-emphasized. From 1999 to 2000, total construction sector employment was around 1.13 million which increased to 2.6 million in 2010. Which eventually stood at 2.4 million in 2016-17 and employment in the construction sector occupied 5.6 percent of the total employed population. And the wages of the construction workers are higher than that of agricultural employees on average. This encourages potential workers to leave the agricultural sector and pursue skilled trades in the construction industry (BIDS, 2017).

But upon taking a closer look, the secondary literature paints a slightly different picture. The present scenario depicts that only 37.5% of the construction workers are skilled and 12.6% have advanced skills. Moreover, only 7.8% of the entire workforce are female workers in the construction industry and the majority of them are involved in low-skilled jobs and only are seen in a few occupations. And between 1976 and 2016, there were more than 10.45 million registered migrant workers, with over half of them classed as 'less-skilled', 15.2% as 'semi-skilled', and 32.5% as 'skilled'. Only 2% of the migrant workers were professionals. And to hone the skills of the workers, training is essential. But only 6.45 % of construction workers receive occupational training, while the remaining 93.55 % do not receive any work-related training. This untrained workforce could be detrimental to the construction project in a variety of ways.

It was found that the major challenges of this sector are: (i) major skills gap in the industry (ii) lack of knowledge about BNBC's standards and National Labour Law (iii) lack of knowledge about the standard using procedures of construction tools (iv) shortages in necessary working experience and training (v) absence of skilled trainers (vi) lack of minimal education needed for a successful construction project (vii) scarcity of skilled workers (viii) lack of stimulatory and supporting pay for the workers (ix) crisis of female workers' participation in the construction industry (x) increased demand for skilled and high skilled workers as opposed to current minimum competency levels.

This study further provides an overview of the features of the surveyed enterprises. The basic characteristics and structure of the construction enterprises/firms are reasonably uniform in Bangladesh. Construction enterprises handle together with a significant number of diverse small and large projects with varying collaborations. The large firms' performance is significantly impacted by their small supply chain partners' performance. Similarly, the small construction firm's activity also plays an instrumental role in the performance of large construction firms' supply chains. The successful management of these firms, however, is often plagued by their inherent characteristics. In particular, the problem arises due to lack of time and resources for innovation, excessive influence of owner-managers, difficulty in raising finances and maintaining adequate cash flows, failure of staff to demonstrate their capacity and capability, etc.

One of the striking characteristics of the enterprises is that in the senior management, engineering, and administrative positions, male holds over 95 percent of the positions dominating the females'

position of only around 0.5 percent to 5 percent. However, at the lower rank levels, the scenario is even more biased with 100% of positions being held by male counterparts. Furthermore, at the senior management level, 94.5% preference has been given to male workers, which is also true for other positions like engineering and administrative. For the other occupations, there is a 100% biased towards employing male workers and no preference exists for employing female workers. Simultaneously, the average salary and other benefits of the male senior management, engineering employees, administrative employees, and support staff are much higher than that of the female employees holding the same job title.

In the existing labour categories of the construction sector, other than the employees for senior management and support staff, all the other ones seem to have a skill gap. All the manual labour employees have been reported to be unskilled. The skill gap is also very prominent among the engineers and administrative employees of the sector. There may be two broad reasons behind the existing skill gap: organization-specific or due to lack of training or qualification of the employees. Simultaneously, there exists a skills shortage in the industry. Data however shows that the skill shortages are less problematic compared to the skill gap in the sector. The recruitment flows in the firms are good meaning that the occupation-wise vacancies are easily filled with the existing labour force in the construction industry.

Furthermore, due to the outbreak of the COVID-19 epidemic, much of the development accomplished in the construction industry over the years came undone. Initially, the enterprises were barely making any form of profit as a result of the work stoppage, and on the contrary, more losses were recorded during Covid time. Not only were the corporations losing money, but so were all of the suppliers that supplied the necessary supplies to the various enterprises for use in the construction sector. As a result, businesses have been unable to appropriately compensate their employees, and as a result, many workers have been laid off. That is, all areas of the construction sector encountered challenges during this time, and it will take a substantial length of time to properly recover from the uncertain situation that arose as a result of the epidemic.

Other than the challenges posed by the COVID-19 pandemic, alarming issues as found in the study are the increased price of construction materials, failure of the completion of the projects, lack of skilled workers and delay in repaying government and bank loans, and lack of technological knowledge, lack of manpower, lack of safety training, lack of necessary knowledge about safety rules and machinery, political interferences, financial default of contractor, the intervention of RAJUK, unavailability or high turnover of skilled labourers, unsettled labour conditions and appropriation of property or confiscation of private property cause impediments to the growth of the sector. Other challenges are forced bribery to various agencies, strife regarding properties, poor project planning, and control, sound pollution, traffic jam, narrow street lanes, etc.

Another important part of this study is the projection of labour and its changing demands. According to the surveyed employers, except for tillers and aluminum fitters, almost all labour categories will have a moderate increase in the near future. Following that, strong growth would prevail in the labour categories. There would be no such thing as extremely high or negative staff

growth. Moderate and high-growth scenarios will become more prevalent for all construction industry employees. The same is true for newly introduced or relatively new in-demand jobs. These labour occupation categories are expected to grow at a moderate to a rapid rate.

Overall, it can be said that the contribution of this particular sector to GDP is significant and employs a large number of workers. However, the sector is still fully male-dominated. There also exists some skill shortages and significant skill gaps among the workers working in the sector. Data however shows that the skill shortages are less problematic compared to the skill gap in the sector. An overwhelming majority of the respondents identified the skill gap as one of the major impediments to the growth of the sector. Technological backwardness and lack of policy support from the government and delays in approval processes in various agencies have also been identified as other impediments. Thus, several recommendations come up as the solution to the challenges that are faced by the overall construction industry. These are:

- Formal education in colleges and universities must reorganize the needs of current times. To keep up with the demand, the teacher training curriculum should be revised regularly. And the gap between the educational system and the labour market should be reduced by a proper TVET system which must be easily accessible and free of cost, relatively inexpensive for the majority, and relevant to labour demands. In this regard, the partnership between private organizations and government agencies is essential.
- Another important issue is that women, in particular, are under-educated and not trained. They need to be prioritized in certain trades of the construction industry and the government can provide programs accessible to them. The government should begin an investment program that will encourage skill training in a variety of industries.
- Also, other vocational skills are needed to diversify the construction sector, and internationally, such training is required to raise migrant workers' wages. Improvements in a variety of international languages, and computer abilities can boost skills and productivity by allowing the workforce to involve in various multifaceted jobs globally.
- Wage growth should also be in unison with rising labour productivity if job quality is to improve. Lower wages do not offer an incentive for workers to invest in technology, and as a result, future productivity growth may be hampered. Also, to address workforce shortages, providing competitive salaries and benefits, and cultivating a strong company culture should be established that encourages and rewards hard work and devotion.

CHAPTER I: INTRODUCTION

1.1. Background

Bangladesh was ranked 8th globally in terms of population density in 2018 with 1,240 people per square kilometer and a yearly urbanization rate of 3.19 percent (WB, 2019). In the same year, Dhaka, the capital of Bangladesh, was also ranked the most densely populated city in Bangladesh with 47,400 people per square kilometer. Moreover, the projection of the United Nations (2018) shows that by 2050 Bangladesh's urban population will increase by 50 million. This implies that there will be a huge change and increase in housing demand in Bangladesh in the coming years. To accommodate the increasing urban population, the development of local residential real estate is essential to provide appropriate housing to all the citizens.

For the past few years, the construction sector plays a significant role in Bangladesh's economy. Bangladesh has a high investment in the construction industry, particularly commercial, residential, and multipurpose building projects. Almost 2 million people are working in this industry with a wide range of skill sets and backgrounds contributing 7.8 percent to the national GDP (BBS 2019). Therefore, real estate has emerged as a crucial sector of the economy in Bangladesh with a huge multiplier effect on economic activities, and hence, popularizing as a big driver of economic growth. It is also one of the largest employment-generating sectors in Bangladesh after agriculture and garments.

1.2. Objectives of the Current Study

The main objective of this study is to explore the labour market and the overall skills gap in the construction sector. Besides, the specific objectives are:

(a) To take stock of overall demand and supply of skills in the construction sector, and how these demands and supply will change in the next 10 years;
(b) To measure various types of skill mismatch (i.e., skill gap, skill shortage, over and under-education, horizontal mismatch, etc.);
(c) To take stock of government policy and interventions to produce and upgrade the skills for the construction sector; and
(d) To assess the type of training programs required to meet the skill demand.

1.3. Methodology and Sampling

Bangladesh achieved tremendous economic growth and also experiences rapid expansion of urbanization where the construction sector plays a prominent role. The contribution of the construction sector to Bangladesh's GDP is about 7.5 percent at constant prices in the fiscal year 2017-2018 (Ministry of Finance, 2018). According to International Standard Industrial Classification (ISIC) Revision 4 or Bangladesh Standard Industrial Classification (BSIC) 2009, construction activities are classified into three major categories: general construction, specialized construction activities for buildings, and civil engineering works. It includes new construction works, repairs, additions and alterations, manufacture of buildings or structures on the site, and construction of a temporary nature[1].

Within the construction, residential and non-residential housing comprises about 78% of total construction spending (BBS, 2015). Most of the construction activities are accounted for by the private sector with 'private building' accounting for 65% of total construction expenditure. The employment nature of this sector is highly informal because of the job nature. Skilled workers are more required for public construction projects, multi-storied buildings and construction of bridges, etc. There are two key organizations; the Bangladesh Association of Construction Industry (BACI) and the Real Estate & Housing Association of Bangladesh (REHAB) are involved in this sector.

Bangladesh Association of Construction Industry (BACI) with a member of 93 (General member 88 and Associate Member 5) are involved in public construction as well as multi-storied building construction in Bangladesh. While REHAB has 1025 members to promote formal private sector Real Estate Development in Bangladesh. Apart from this, there is individual construction unit including household all over the country and those are mostly run informally and individually. To fulfill the aims and objectives of the study, we choose the sample establishment from the BACI and REHAB for the questionnaire survey to collect information on skill demand and their future needs.

In determining the sample size of the establishment/firm survey, the study uses the methodology widely used by the World Bank. The following formula has been used in determining the sample size:

$$n = \left[\frac{1}{N} + \frac{N-1}{N} \cdot \frac{1}{PQ}\left(\frac{k}{Z_{1-\alpha/2}}\right)^2\right]$$

where, N=population size, P=population proportion, Q=1-P, k=desired level of precision, $Z_{1-\alpha/2}$ is the value of the normal standard coordinate for the desired level of confidence, 1-α.

[1]General construction is the construction of entire dwellings, office buildings, stores, and other public utility buildings, firm buildings etcetera. Construction of civil engineering works covers roads, streets, bridges, tunnels, railways, airfields, harbours and other water projects, irrigation systems, sewerage systems, industrial facilities, pipelines and electric lines, sports facilities etcetera (Construction Survey, BBS, 2015).

Given the limitations with the data, time, and budget constraints, we use a 90 percent confidence interval and 7.5 percent level of precision, which is also used by the World Bank at the World Bank Enterprise Survey 2009. Here, the population is the total number of firms/establishments are involved with BACI and REHAB, which is 1118. Thus, assuming these parameters, the estimated sample size using the above formula is 108.

In fact, in the construction sector, under each of the sample firms, we have collected information from both the enterprises and the project levels including interviewing some selected employees as well.

In addition, we also conducted Focused Group Discussions (FGD) and Key Informants Interviews (KII) to understand the workers' job conditions and future job aspirations in the sector and current conditions and future challenges and prospects of the sector.

We also collected information from various secondary sources to assess the macro scenario of the sector.

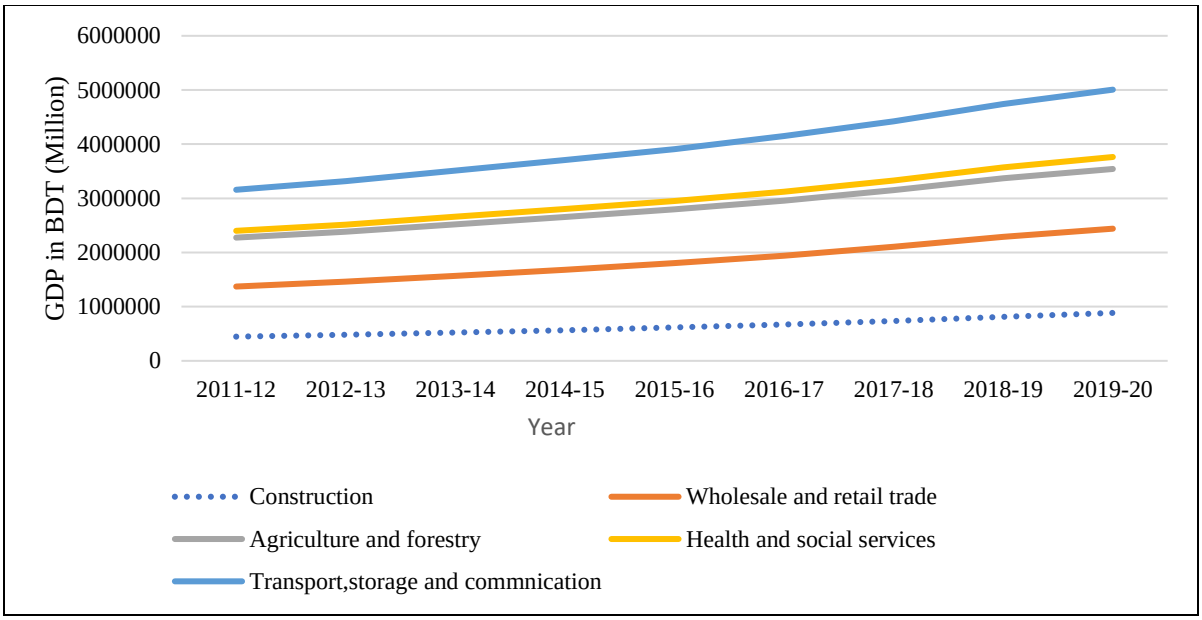
CHAPTER II: REVIEW OF CURRENT SCENARIO AND EXISTING SKILL-GAP IN THE CONSTRUCTION SECTOR

The rapidly growing construction industry plays an important role in a developing economy like Bangladesh. Along with creating job opportunities, this industry also crafts essential backward and forward connections with other industries of the country. As the country continues to urbanize and industrialize by embarking on some major infrastructural changes, this particular sector has come across to be a really important one to investigate. In 2017-18, the sector grew by 9.92% compared to 8.77% growth of the previous year. The sector's contribution to GDP climbed up to 7.50% in the former year (BBS, 2020; Mordor Intelligence, 2021).

This industry employs more than 3.3 million people and accounts for 7.6% of Bangladesh's GDP (Hossain, & Ahmed, 2018, p. 148). Bridges, special economic zones, tunnels, highways, railways, airports, seaports, power plants, dams, wastewater projects, and megaprojects are being considered as driving forces to achieve 'Vision 2021' and turn Bangladesh into a self-sufficient middle-income country (Saba, 2019, p. 3). No doubt, Bangladesh's construction industry is rapidly expanding as one of the most influential developing corporations.

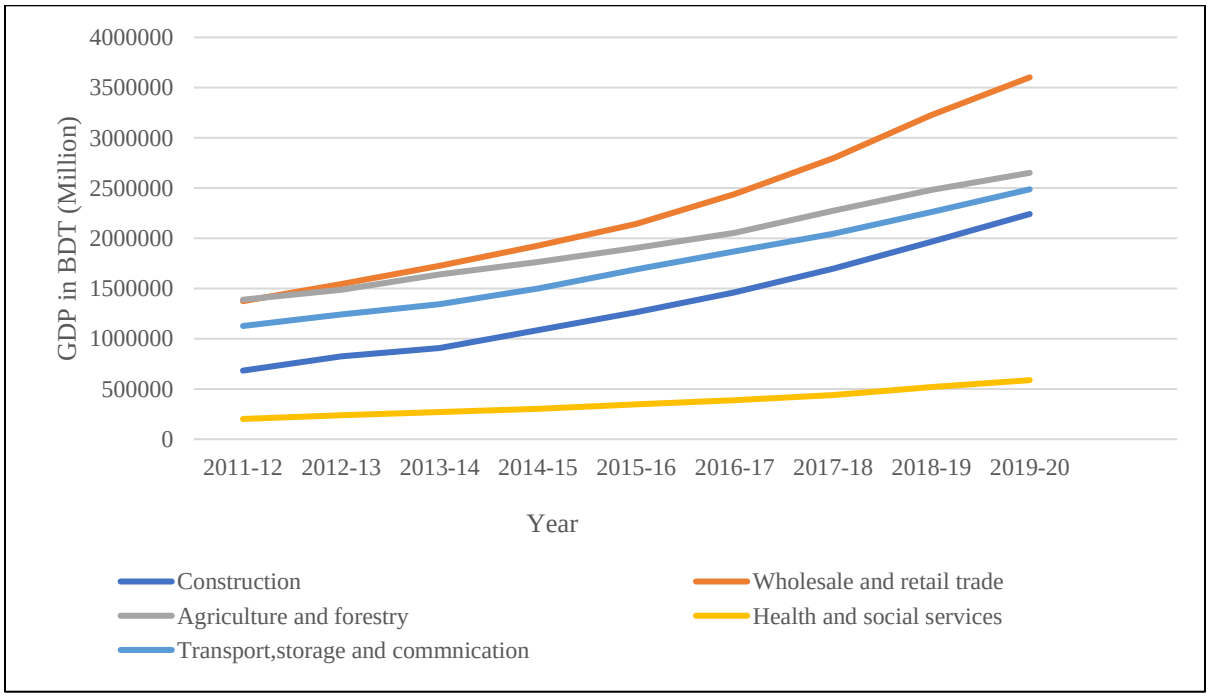
The construction sector of Bangladesh has been growing rapidly in recent years. In 2006, the construction industry's GDP was a record low of 2982.50 BDT million, but by 2018, it had risen to 7359.50 BDT million. The development of this sector has been aided by projects such as the Padma Multi-Purpose Bridge and the Dhaka Mass Rapid Transit Development. In recent years, the construction industry has been identified as one of the fifteen key contributors to the national GDP. In the government's 7th Five-Year Plan for fostering national economic development, the construction industry is recognized as one of the priority growth industries. According to recent figures, it is Bangladesh's fifth-largest sector (Figures 1, 2, 3 and 4). According to BBS, the construction sector has been producing a steadily increasing GDP over the last decade and its share in GDP has been reaching new heights as well. These estimations along with the recent growth data add to the claim of the sector's growth scenario.

Figure 1: GDP of top five sectors (at 2005-06 constant prices)



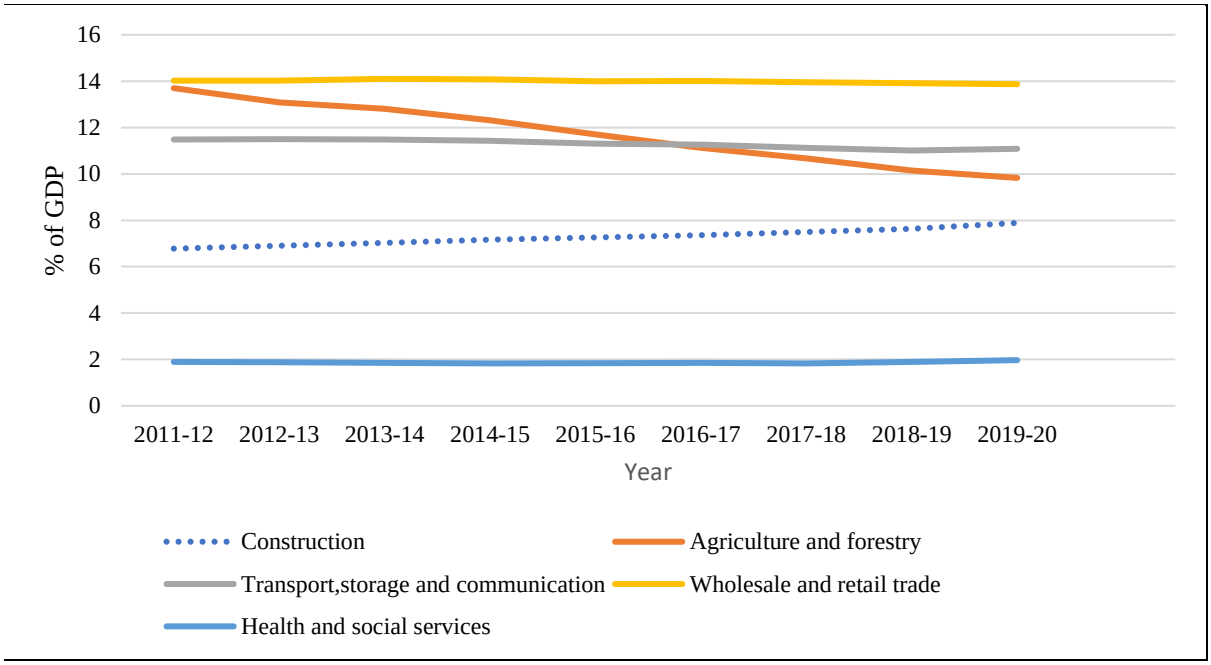
Source: BBS, Statistical Yearbook 2020

Figure 2: GDP of top five sectors (at current prices)



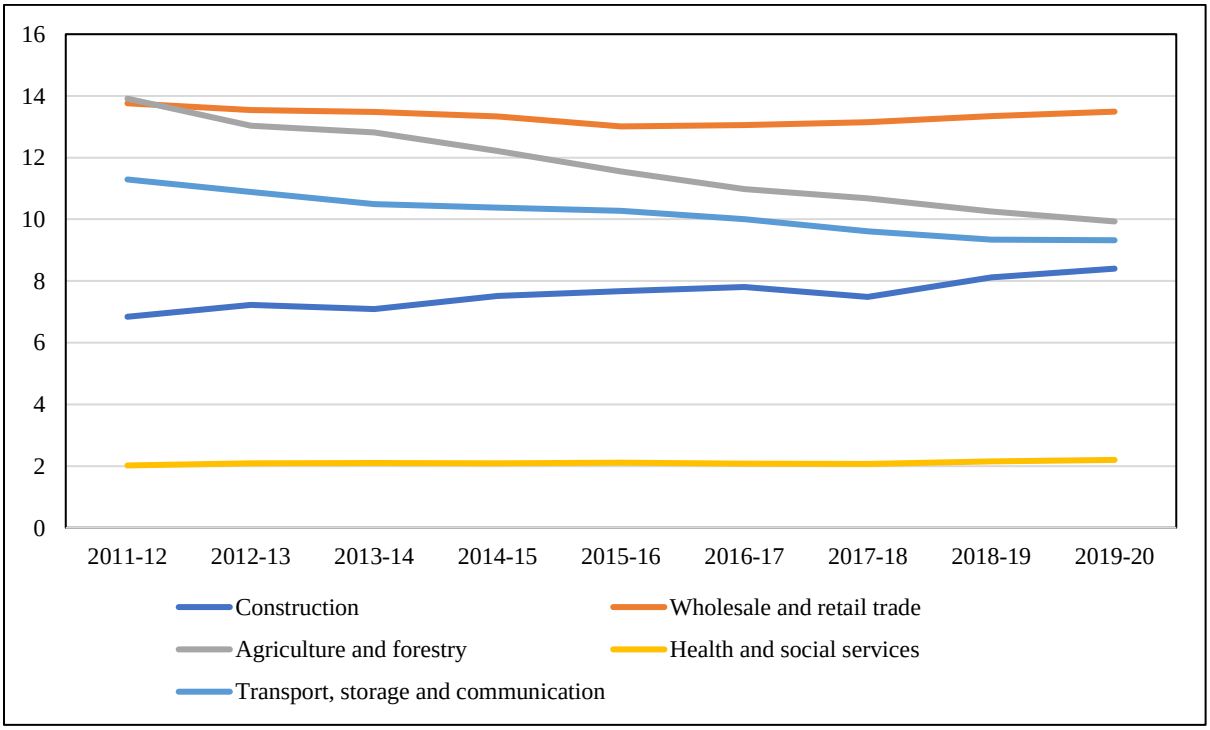
Source: BBS, Statistical Yearbook 2020

Figure 3: Share of GDP by top five sectors (at 2005-06 constant prices)



Source: BBS, Statistical Yearbook 2020

Figure 4: Share of GDP by top five sectors (at current prices)



Source: BBS, Statistical Yearbook 2020

2.1. Present Scenario of Construction Workers in Bangladesh

According to the Ministry of Finance (MoF) in Bangladesh, in 2016, the labour supply (15+ years) was expected to be 64.8 million, rising to 82.9 million in 2025. In ten years, there will be a 78 percent increase. This is less than the population change in the 15+ age group, which is predicted to increase by more than 100%. Because the labour supply projection is based on past LFPR (Labour Force Participation Rate) patterns, and LFPR has only increased slowly in recent years, the supply assumption may be underestimated. The labour demand is expected to rise from 63.5 million to 88.7 million throughout this time. The quick rise in expected labour demand is due to strong GDP growth estimates, which were assumed to be sustainable with the same employment elasticity as the previous decade. Demand for labour will exceed supply starting from the beginning of 2021. This claim has been supported by the Planning Commission which has predicted that labour demand creation will exceed supply during the Seventh Five Year Plan period (BIDS, 2017, p. 14).

(i) Distribution by employment and skill level

The distribution of employment by occupation and skill level is shown in evidence from the 2017 Employers Survey based on data from a sample of 44 construction sites (Table 1) (CISC, 2018, p. 22).

Table 1: Distribution of workers (%) by occupation and skill level in housing projects

Occupations	Total					
	Unskilled	Semi-skilled	Skilled	Advanced Skilled	Total (N)	Col (%)
Mason/Plasterer	32.9	25.3	27.5	14.3	100.0 (1074)	16.7
Rod Binder	29.7	31.4	32.5	6.4	100.0 (879)	13.6
Shuttering carpenter	23.3	25.3	37.7	13.7	100.0 (292)	4.5
Tiller	19.2	25.5	43.6	11.6	100.0 (447)	6.9
Building Painter	17.2	30.1	42.5	10.3	100.0 (379)	5.9
Welder (grill maker)	17.9	31.1	37.8	13.2	100.0 (296)	4.6
House wiring electrician	12.9	29.1	44.0	13.9	100.0 (302)	4.7
Plumber	12.3	29.7	46.0	12.0	100.0 (300)	4.7
Aluminum Fitter	17.0	20.1	48.2	14.7	100.0 (224)	3.5

Occupations	Total					
	Unskilled	Semi-skilled	Skilled	Advanced Skilled	Total (N)	Col (%)
Finishing Carpenter/ dry wall	22.5	27.2	37.1	13.2	100.0 (151)	2.3
Scaffolder	16.4	19.3	52.1	12.2	100.0 (336)	5.2
False Ceiling Carpenter	18.6	26.1	39.4	16.0	100.0 (188)	2.9
RAC Technician	22.7	22.7	36.2	18.4	100.0 (163)	2.5
Water Proofer	42.0	21.4	28.5	8.2	100.0 (281)	4.4
Pile Driver	20.1	28.1	39.3	12.5	100.0 (399)	6.2
Concrete Pump Operator	28.9	24.8	32.2	14.0	100.0 (242)	3.8
Soil Tester	19.6	22.1	41.7	16.6	100.0 (163)	2.5
Generator and Water Pump Technician	15.5	17.5	48.5	18.6	100.0 (97)	1.5
Lift Technician	21.6	23.2	37.6	17.6	100.0 (125)	1.9
Fire Sprinkler Technician	16.5	22.3	37.9	23.3	100.0 (103)	1.6
Total	23.6	26.3	37.5	12.6	100.0 (6441)	100.0

Source: CISC Employer Survey 2017 (CISC, 2018, p. 22).

(ii) Participation of female workers in the construction industry

Only 7.8% of the entire workforce are female workers in the construction industry. This figure is half for the housing construction sub-sector. According to the CISC Employer Survey, the share of female workers in the construction sector is just 3.9% of the workforce, based on data obtained from Sub-contractors and Site Engineers at 40 building sites. Furthermore, the majority of female workers are involved in low-skilled jobs and only are seen in a few occupations, such as Water Proofer, Tile Fixer, Concrete Pump Operator, and Water Pump Technician, while they are even less seen in many others, such as Building Painter, Welder (Grill Maker), House Wiring Electrician, Finishing Carpenter/Drywall, Scaffolder, RAC Technician, and Lift Technician. Overall, the majority of female workers (53%) work in unskilled employment, with 17% working in semi-skilled jobs, 26.5% working in skilled jobs, and only 3.6% working in advanced skill professions (Table 3) (CISC, 2018, p. 39).

Table 2: Distribution of construction workers on housing projects by occupation, gender, and skill level (in % from site engineers' report)

Occupations	Women					Men				
	Unskilled	Semi-skilled	Skilled	Advanced skilled	Total (N)	Unskilled	Semi-skilled	Skilled	Advanced skilled	Total (N)
Mason/Plasterer	48.1	19.2	32.7	0.0	100.0	32.1	25.6	27.2	15.1	100.0
Rod Binder	0.0	76.9	23.1	0.0	100.0	30.1	30.7	32.7	6.5	100.0
Shuttering carpenter	0.0	100.0	0.0	0.0	100.0	24.1	22.7	39.0	14.2	100.0
Tiller	37.3	7.8	45.1	9.8	100.0	16.9	27.8	43.4	11.9	100.0
Building Painter	-	-	-	-	0.0	17.2	30.1	42.5	10.3	100.0
Welder (grill maker)	-	-	-	-	0.0	17.9	31.1	37.8	13.2	100.0
House wiring electrician	-	-	-	-	0.0	12.9	29.1	44.0	13.9	100.0
Plumber	0.0	0.0	100.1	0.0	100.0	12.7	30.5	44.5	12.3	100.0
Aluminum Fitter	62.5	0.0	37.5	0.0	100.0	15.3	20.8	48.6	15.3	100.0
Finishing Carpenter/ drywall	-	-	-	100.0	0.0	22.5	27.2	37.1	13.2	100.0
Scaffolder	-	-	-	100.0	0.0	16.4	19.3	52.1	12.2	100.0
False Ceiling Carpenter	0.0	0.0	0.0	100.0	100.0	18.7	26.2	39.6	15.5	100.0
RAC Technician	-	-	-	-	100.0	22.7	22.7	36.2	18.4	100.0
Water Proofer	93.8	0.0	4.2	2.1	100.0	31.3	25.8	33.5	9.4	100.0
Pile Driver	62.5	20.8	12.5	4.2	100.0	17.3	28.5	41.1	13.1	100.0
Concrete Pump Operator	79.2	8.3	8.3	4.2	100.0	23.4	26.6	34.9	15.1	100.0
Soil Tester	50.0	25.0	25.0	0.0	100.0	18.9	22.0	42.1	17.0	100.0
Generator and Water Pump Technician	25.0	12.5	62.5	0.0	100.0	14.6	18.0	47.2	20.2	100.0
Lift Technician	-	0.0	-	-	0.0	21.6	23.2	37.6	17.6	100.0
Fire Sprinkler Technician	100.0	-	0.0	0.0	100.0	14.9	22.8	38.6	23.8	100.0
Total	53.0	17.0	26.5	3.6	100.0	22.4	26.7	38.0	12.9	100.0

Source: CISC Employer Survey 2017 (CISC, 2018, p. 39).

Only 1.3 percent of the workers in the surveyed project sites are female, as shown in Table 3. This is much lower than the macro data in the Labour Force Survey (2013), which shows that women make up 7.8% of construction workers. The proportion of female skilled and semi-skilled workers

is much lower than that of male skilled and semi-skilled workers. Women make up 19% of the workforce, 38% of the semi-skilled workforce, and 43% of the unskilled workforce. At various stages of production, all of the female workers are employed as helpers or labourers (BIDS, 2017, p. 61).

Table 3: Female share by skill category

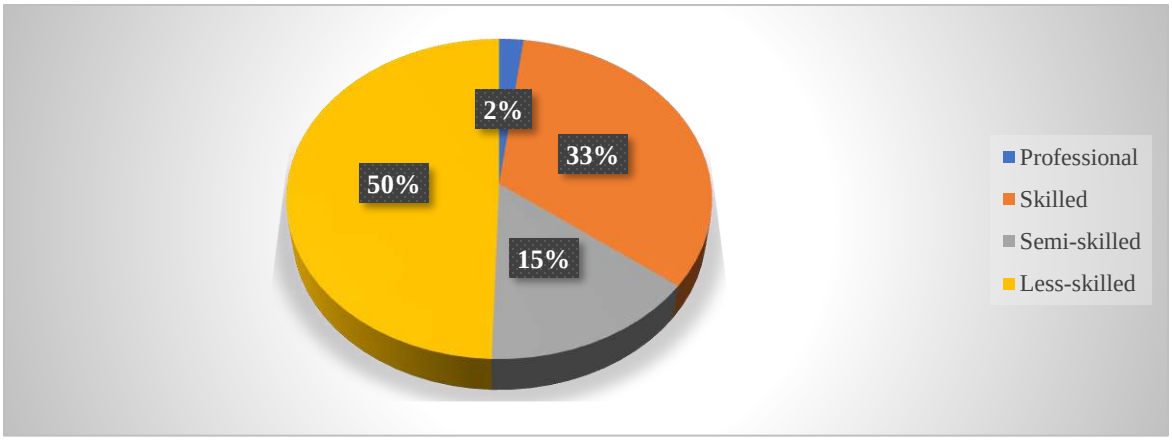
Skill Category	% of Female Workers
Skilled	0.26
Semi-Skilled	0.47
Unskilled	0.57
Total	1.30

Source: Construction Enterprise Survey (BIDS, 2016).

(iii) Status of migrant labour in terms of skill

Bangladesh relies substantially on migrant workers for its remittance income. The total number of migrant workers has surged threefold from 222,700 in 2000 to 757,700 in 2016, according to BMET statistics. With the recent elimination of visa limitations in Saudi Arabia, migrant worker numbers are expected to rise significantly in the coming years. The migrant workforce's skills profile is now dominated by low-skilled workers. Between 1976 and 2016, there were more than 10.45 million registered migrant workers, with over half of them (48.95%) classed as "less-skilled/unskilled", 1.59 million (15.2%) as "semi-skilled", and 3.4 million (32.5%) as "skilled". Only 2% of the population were professionals (doctors, engineers, teachers, and nurses) (Figure 5). According to BMET data, about 42% of Bangladeshi migrant workers were engaged in the construction sector abroad in 2021.

Figure 5: Profile of skilled migrant labour (1976-2016)

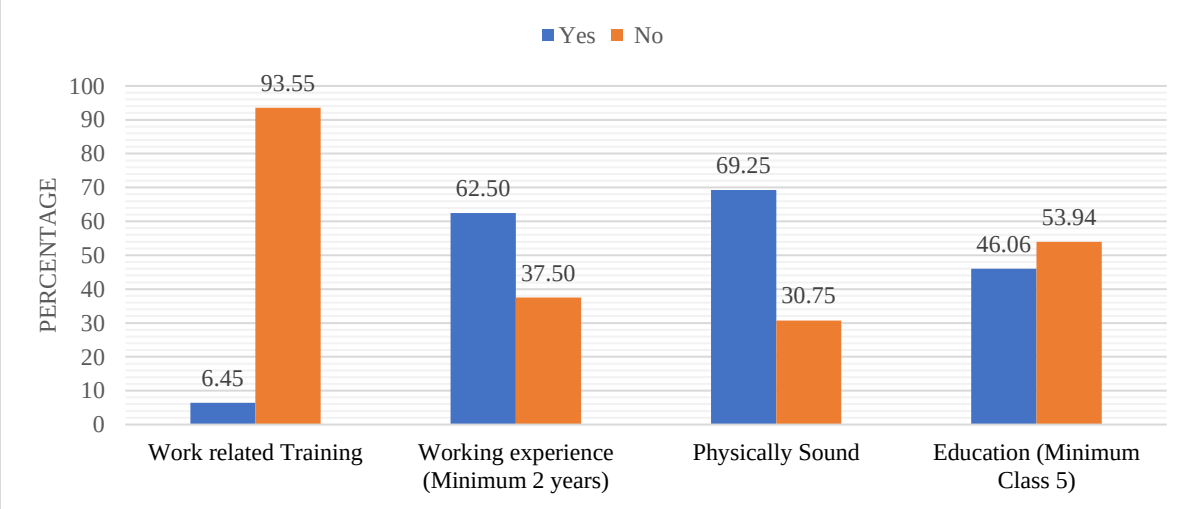


Source: BMET database, as cited in BIDS, 2017, p. 58.

(iv) Worker's training and skills in Bangladesh

Dong and Platner (2004) have deemed work-related training to be a major prerequisite for all professions. Billett *et al.* (2015) also illustrate that training transformed a person into an expert and made him more effective in his job. However, in Bangladesh, construction workers' training connected to their employment is a nightmare (Biswas, 2014). Figure 4 depicts a picture of how bad worker training conditions are in Bangladesh. Only 6.45 % of construction workers receive occupational training, while the remaining 93.55 % do not receive any work-related training. This untrained workforce could be detrimental to the construction project in a variety of ways. According to Love *et al.* (2015, 2016) and Zhou *et al.* (2015), untrained workers are a major source of quality and safety issues in the construction industry (Ahmed et al., 2018, p. 5). Figure 6 depicts the current position of Bangladeshi construction workers in terms of occupational training.

Figure 6: Statistics of worker status against skilled worker parameters



Source: International Journal of Construction Management (Ahmed et al., 2018, p. 7)

2.2. Existing Skill-Gap in the Construction Sector

The success of the construction industry is largely dependent on its workforce. Workers, who are not familiar with their work, do not add much value to the construction sector, but rather add complications and risk. A key element affecting building quality is the shortage of competent workers (Chan *et al.* 2004; Enshassi *et al.* 2009; and Abas *et al.* 2015). According to Agapiou *et al.* (1995), if a high level of construction output is expected by the authorities, the question that arises is how unskilled workers can meet the parameters of skilled workers. Construction delays and cost overruns are primarily caused by unskilled workers (Koushki *et al.*, 2005). They are also one of the most common causes of construction site accidents (Abdelhamid and Everett, 2000 and Suraji *et al.*, 2001). Construction delays, quality issues, cost overruns, and safety concerns are all important roadblocks to a project's progress and success. If any of these things happen, the project will almost certainly fail. As a result, the individual, local, and national economies are harmed,

and infrastructure development is slowed. Skilled labour is the most critical factor in our rapidly growing construction industry's success (Ahmed et al., 2018, p. 1).

(i) Major skills shortages in the industry

Labour shortages, particularly in skilled categories for most vocations in this industry, have been a serious challenge in recent years, especially in light of rapidly changing construction technologies. Most employers (property developers, site engineers, and building contractors) readily admit that a shortage of qualified labour is one of the most significant barriers to the construction industry's persistent development. There are already major skills shortages in the industry, especially for certain types of trades, and these shortages are projected to worsen over the next decade as the industry expands. Employers not only believe that the workforce is under-skilled, but they also believe that nothing is being done by the government and/or the sector to address these skills shortages. Currently, skilled workers are in short supply in almost all occupations, especially masonry, rod binding, painting, tiling, electrical installation and maintenance, plumbing, aluminum fabricators, and finishing carpenters. According to a recent BIDS analysis, the sector will require approximately 5 million workers by 2025-2026 (CISC, 2018, p. iii).

The largest percentage (33.3%) of employees working as steel fabricators were deemed competent by the company. One hundred percent of workers in skilled occupations (such as project manager and site engineer) were deemed incompetent. Estimates reveal that only three semi-skilled vocations or trades, Steel Fabricator, Plumber, and Electrician, were undertaken by some competent employees in the semi-skilled group. Surprisingly, competent employees were engaged in 8 of the 11 lower-skilled trades. Regardless of their skill level, the majority of workers are either less-competent or semi-competent across all occupations or trades. According to this evaluation, there is a major skill gap or shortage in numerous occupations/trades in Bangladesh's construction sector. According to reports, the existing skills gap in Bangladesh's construction sector is associated with the high turnover rate and poor training content or curriculum (Barkat et al., 2018, p. ii, iii).

According to Makhene and Thwala (2009), 82% of construction companies face a labour shortage. The shortage of competent workers is caused by a lack of suitably trained, skilled, and productive individuals for certain jobs, not by their young age. To ensure sustainable development for the industry, getting skilled workers is the biggest challenge now.

(ii) Lack of knowledge about BNBC's Standards and National Labour Law

In Bangladesh, the BNBC (Bangladesh National Building Code) is the only government-issued set of regulations and guidelines for the building and construction industries. It includes legal and technical criteria, as well as construction health and safety, construction quality, construction environmental regulations, worker salaries and rights, and more. As a result, avoiding, violating, and eliminating BNBC may result in construction accidents, quality hazards, labour conflicts over

salaries and rights, negative environmental impact, legal disputes, and so on. It is critical to know and grasp the present worker state in relation to this skilled worker characteristic, which is how workers in Bangladesh know and execute BNBC in construction projects. BNBC's standards and procedures are unknown to half of the construction workers (55.61%). Only 2.30% of workers have a complete understanding of BNBC norms and regulations, while 16.13% have a partial understanding, and they follow and practice them on the job. The remaining 5.88% are aware of BNBC policies and norms, while 20.08% are just aware of them in part, and do not follow or practice them at work. Construction accidents and risks are caused by avoiding and violating BNBC (Al Mamun *et al.*, 2014) and have an impact on construction quality (Biswas, 2014 and Ahmed *et al.*, 2018, p. 6).

The majority of Bangladeshi construction workers are unaware of the country's labour rules. A large percentage of construction employees, 72.53%, are completely unaware of and uninformed about national labour rules and regulations. Only 4.87% are completely aware, while another 2.50% are only slightly aware, and they adhere to labour regulations in their respective fields. Another 14.65% and 5.45% have some knowledge of labour rules, but they do not observe or practice them. Workers are not receiving their rights and salaries due to a lack of understanding of labour law. It is the primary cause of worker strikes, which results in a loss of production (Ibbs and Vaughn, 2015) and delays the completion of projects (Birgonul *et al.,* 2015). Because of their ignorance of labour laws, workers do not receive adequate compensation from the authorities in the event of an accident, and they feel misled (Morrison and Robinson, 1997). This sense of betrayal motivates people to do a shoddy and dangerous job, which has a detrimental impact on the company they work for (Rayton and Yalabik, 2014). It's also one of the leading causes of construction-related accidents and quality issues All of these factors, as well as their consequences, have a negative impact on employees' motivation to perform at their best (ibid.).

(iii) Lack of knowledge about the standard using procedures of construction tools

The most significant and visible items required to complete a building project are construction materials. Workers work with materials on a daily basis, therefore knowing all of the material’s qualities and typical use practices is essential. Workers in Bangladesh are largely oblivious to the problem. 6.45% have a complete understanding of building materials, their disadvantages, standard use procedures, and related safety issues, while 24.93% have a partial understanding. They also follow and put these issues into effect at work. A quarter of the construction workers (25.92%) are completely clueless. The remaining 11.00% and 31.70% are fully aware, however, they do not follow or practice at work (Ahmed *et al.*, 2018, p. 7).

(iv) Shortage in necessary working experience and training

In a variety of ways, the inexperienced workforce could be detrimental to a construction project. Working experience, hence, is one of the most important criteria for becoming a skilled worker. In Bangladesh, many immigrants work in the construction industry despite having no prior experience. Figure 3 depicts the size of construction employees with and without a minimum of

two years of experience. A favorable number of workers (62.50%) have more than two years of experience, while another proportion (37.50%) have less than two years of experience. According to Frey and Osborne (2017), workers with less job experience are less productive and have a higher rate of workplace mishaps. Salleh *et al.* (2017) thinks that working experience is important in the sense that the experience allows employees to make informed decisions and contribute to the organization as a valuable asset. As Wang *et al.* (2016) say, inexperienced workers are more likely to be involved in an accident than experienced workers. As a result, learning and gaining experience are inevitable for all construction workers (Ahmed et al., 2018, p. 7).

(v) Absence of skilled trainers

Only 26% of TVET (Technical and Vocational Education and Training) trainers (19% in private training institutions) possessed the essential technical abilities, while only 14% (11.4% in private training institutions) had acceptable pedagogical skills, according to a recent assessment of the country's public and commercial TVET institutions. As a result, many of the training providers now providing skills training in the construction industry may not be fully trained as trainers, and they almost certainly have not completed a CBT (Competency-Based Training) certification program (CISC, 2018, p. 55).

(vi) Lack of minimal education needed for a successful construction project

In whatever field of work, workers must have a minimum degree of education. The minimal level for Bangladeshi workers is set at class 5. The worker proportion is clearly presented against the minimum education in this study, which is a key parameter of skilled workers in the Bangladeshi construction sector. Well-educated workers are better able to comprehend their jobs and produce the finest results (Cairo and Cajner, 2018). As a result, having a minimal degree of education is very crucial for a worker, and it is one of the most critical criteria for qualified workers in the Bangladeshi construction sector (Ahmed et al., 2018, p. 8).

(vii) Scarcity of skilled workers

The less-skilled and semi-skilled occupations account for the majority of construction jobs in both the domestic and international markets, while the share of less-skilled jobs will slightly fall in the domestic market in the future (59.1% in 2017; 59.5% in 2022 and 58.7% in 2027). Despite the fact that the proportion of less-skilled positions in the Construction sector at home is dropping, the majority of jobs will be produced in this category, with 3.2 million jobs generated by 2027, up from 2.1 million in 2017. According to estimates, often these jobs in this category will be created in the home market in 2027 for Mason (1.2 million), followed by Tiles and marble mosaic fitter (0.51 million) and Marble cutting worker (0.51 million) (0.42 million) (Barkat et al., 2018, p. ii).

Despite the fact that labour supply will not be a major issue in the aggregate, a scarcity of skilled workers will be a major concern. Assuming no changes in the workforce's skills profile, by 2025, the industry will have added 1.7 million workers, with 578,000 (34%) skilled workers and 680,000

(40%) semi-skilled workers, all of whom will require some form of skill training (Ahmed et al., 2018, p. 7).

According to case studies reported by BIDS, further technological developments will pervade real estate production processes by 2021. As a result of technological advancements, the amount of labour used will decrease. While population expansion will result in more projects being started, this increased demand is expected to be matched by a proportionately bigger supply of trained labour. According to industry entrepreneurs, the need for qualified workers will expand in a variety of industries over the next 5-10 years. Small crane operations, for example, will increase, as will the utilization of masons, plumbers, electrical mechanics, rod-binders, painters, tiling, and shuttering workers in building construction. The top 20 firms in the sector have been able to increase their productivity as a result of technical developments, however, the rest of the industry may not benefit much in the future, at least without additional investments. Currently, however, skilled employees are in limited supply in all trades, particularly plumbing, electrical work, masonry, rod binding, painting, and tiling (BIDS, 2017, p. 58). Skills shortages are not uniformly distributed across all occupations, according to the estimations. Some professions are thought to be more critically in short supply than others. The workforce is dominated by a few jobs, notably, two occupations (Mason and Rod Binder) that account for nearly one-third of all workers working on building projects (CISC, 2018, p. 35).

Table 4 shows a further breakdown of these same jobs by skill level, revealing that, with the exception of Masonry/Plasterer, skilled employees account for more than half of the total number of workers in these occupations. Masonry is a notable exception, with about equal numbers of expert, unskilled, and semi-skilled workers (ibid.).

Table 4: Percentage of workers needed at present in the projects (by site engineers)

Occupations	Total					
	Unskilled	Semi-skilled	Skilled	Advanced Skilled	Total (N)	Col (%)
Mason/Plasterer	32.3	25.8	34.4	7.5	93	18.2
Rod Binder	19.6	19.6	51.0	9.8	51	10.0
Shuttering carpenter	8.5	17.0	55.3	19.1	47	9.2
Tiller	-	11.5	61.5	26.9	52	10.2
Building Painter	7.7	7.7	59.0	25.6	39	7.6
Welder (grill maker)	-	15.0	50.0	35.0	20	3.9
House wiring electrician	-	11.1	63.0	25.9	27	5.3
Plumber	4.8	14.3	47.6	33.3	21	4.1
Aluminum Fitter	2.9	5.9	61.8	29.4	34	6.6
Finishing Carpenter/ drywall	-	7.7	53.8	38.5	13	2.5
Scaffolder	25.0	12.5	50.0	12.5	24	4.7
False Ceiling Carpenter	-	/11.1	61.1	27.8	18	3.5

RAC Technician	-	20.0	50.0	30.0	10	2.0
Water Proofer	4.8	-	71.4	23.8	21	4.1
Pile Driver	-	-	-	100.0	2	0.4
Concrete Pump Operator	-	-	-	-	-	-
Soil Tester	-	25.0	50.0	25.0	12	2.3
Generator and Water Pump Technician	-	-	60.0	40.0	10	2.0
Lift Technician	-	11.1	55.6	33.3	9	1.8
Fire Sprinkler Technician	-	11.1	55.6	33.3	9	1.8
Total	10.9	14.6	52.5	21.9	512	100.0

Source: CISC Employer Survey 2017 (CISC, 2018, p. 35)

However, according to the BIDS report, due to technological changes in construction methods, there will be an increased demand for skilled workers, resulting in a shift in the skills composition of the workforce, with skilled workers accounting for 37% of the total by 2025 (a 3% increase), and semi-skilled workers accounting for slightly more at 41%. This will result in the addition of 630,000 skilled workers and 697,000 semi-skilled jobs. It has been estimated that 1.31 million new skilled and semi-skilled workers will require training over the next ten years, with an average training requirement of roughly 130,000 (BIDS, 2017, p. 59).

(viii) Lack of stimulatory and supporting pay for the workers

Construction workers are mostly disregarded due to a lack of stimulatory and supporting pay, safety and security, care, and food, all of which impede the sector's natural expansion. In the Workplace Safety Report-2011, the Bangladesh Institute of Labour Studies (BILS) reports that 107 workers were murdered and 195 injured in the construction sector due to accidents and violence at work. The percentage is worrisome and demonstrates the lack of any guidelines for employers to follow or maintain. It also implies that there is no protective legislation in place (Biswas, 2014, p. 83). The biggest restrictions that may impede employees from delivering the best output are a lack of motivation (51%), inadequate training (46%), poor skills (38%), an inability to use new technologies (35%), mental health (33%), and an unsatisfactory working environment (29%) (The Business Standard, 2021).

(ix) Crisis of female workers' participation in the construction industry

There is a myriad of reasons why women are still considered unsuitable for construction work and do not receive the same opportunities and benefits as males. In the construction industry, developers are hesitant to hire female workers for a variety of reasons. Some of these elements are included in Table 5.

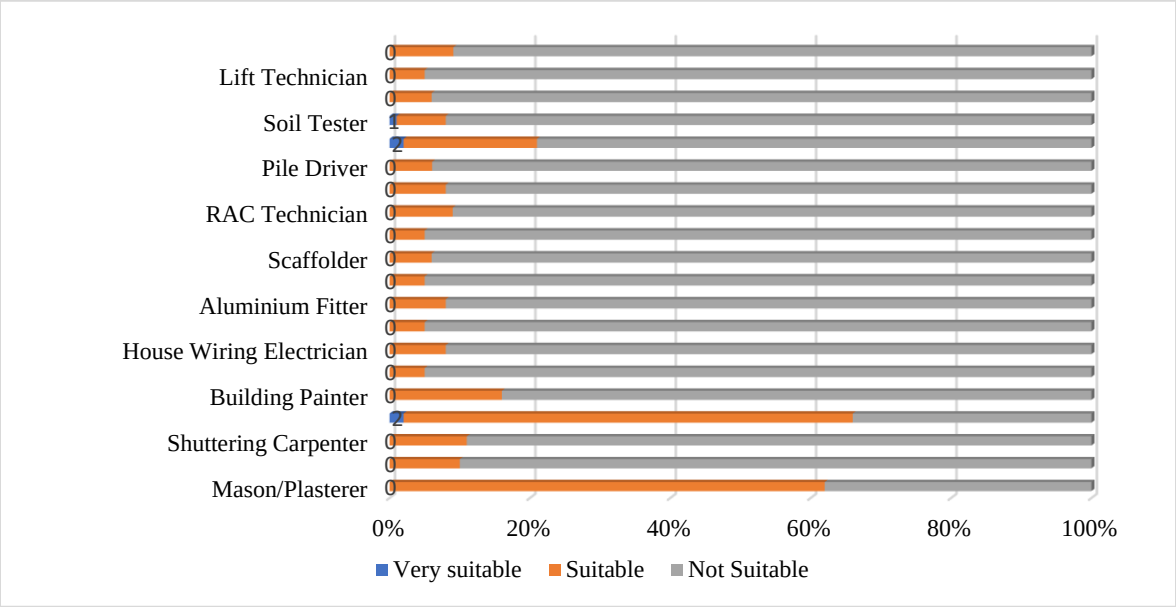
Table 5: Reasons cited by developers NOT willing to offer employment to women in construction work (Multiple responses)

Reasons for not willing to employ women	No. of responses	Percentage (%)
Cultural/social restrictions	37	74.0
Lack of personal safety measures to protect women workers at construction sites	28	56.0
Women are not reliable employees—they often get sick/pregnant, take off too much	23	46.0
Women are not strong enough to do physical work	13	26.0
Do not know	4	8.0
Total	105	-

Source: CISC employer survey 2017 (CISC, 2018, p. 41)

Developers also think women aren't suitable to work in most of the trades of the construction sector. From the CISC Employer Survey 2017, a picture of their perception can be observed, where it can be observed that in maximum cases, women are considered as not suitable workers (Figure-7) (CISC, 2018, p. 42).

Figure 7: Trades in housing construction work suitable for women (% of developers)



Source: CISC Employer Survey 2017

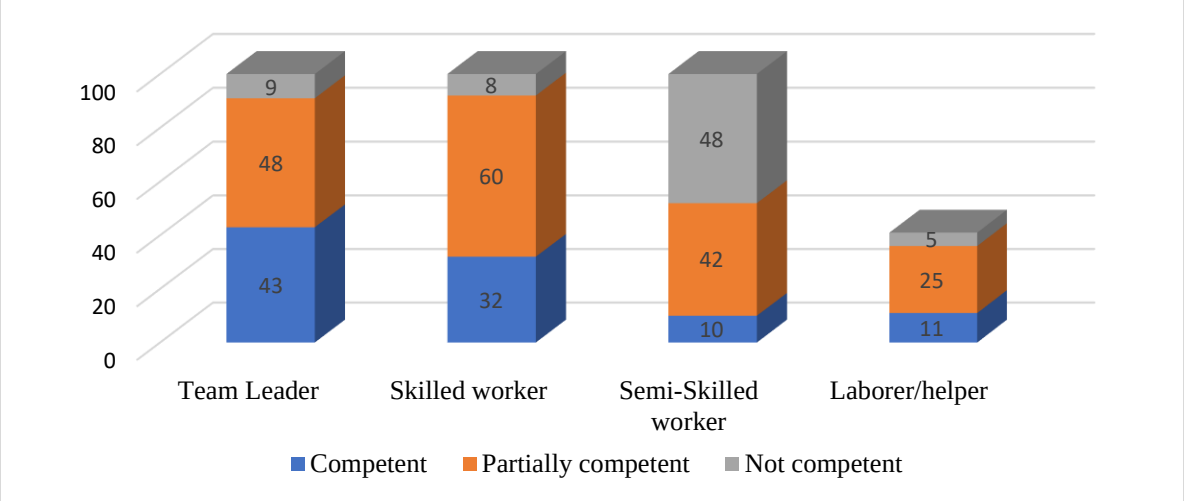
Increased demand for skilled and high skilled workers as opposed to current minimum competency levels

Another facet of the skills shortage issue is the current workforce, which is widely believed to be extremely under-skilled. Additional training is required to bring these workers up to minimum competency levels. Workplace competency is defined as the capacity to utilize skills and knowledge in a specific job function to produce a suitable level of output (productivity) while

maintaining safety. According to the CISC employer survey, many businesses believe that a major section of the current construction workforce is under-skilled and requires skills training to improve their competency. Employers were questioned if their employees were only somewhat competent (CISC, 2018, p. 37).

Figure 6 shows that the majority of employers responded that their workers were either not competent or partially competent, particularly for semi-skilled and unskilled workers, despite the fact that about a third thought their skilled workers were competent and over 40% thought their advanced skilled workers were competent. However, only roughly a quarter of employers thought their workers were competent when measured across all workers (Figure 8) (CISC, 2018, p. 37). This figure must be contrasted to the present annual training capacity of 90,000 people (possibly 70,000 if it is based on real utilization of seating capacity). In other words, existing training capacity can only accommodate about a third of actual demand, and thus, over the next ten years, a three-fold increase in training capacity and activity will be required to meet the skills demand in the housing sub-sector, without taking into account migrant worker skills training (ibid.).

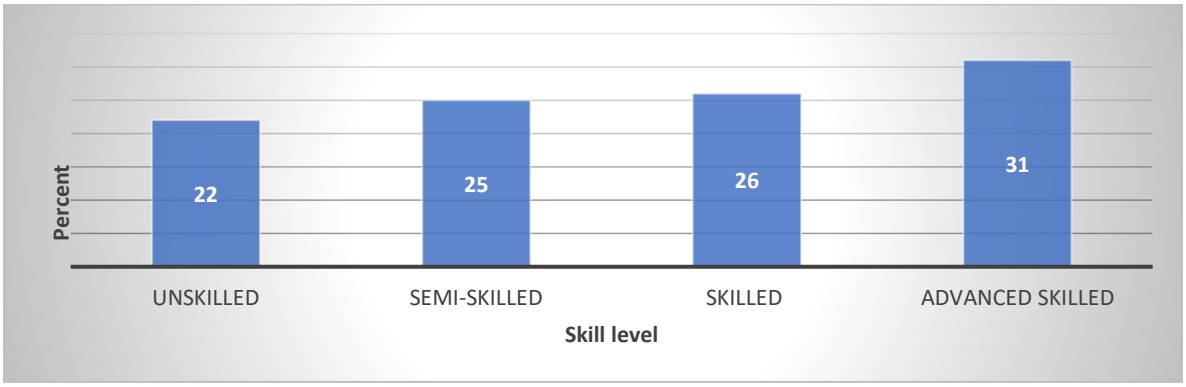
Figure 8: Employer perception of the competency level of their workforce, by skill category



Source: CISC Employer Survey 2017 (CISC, 2018, p. 37)

However, according to the CISC Employer Survey 2017, while the vast majority of workers do not have formal contractual agreements, about a quarter of sub-contractors' report that they sign contract agreements with some of their workers, particularly for skilled and advanced skilled workers, and that this proportion of workers securing work contracts increases for higher-skilled workers (Figure 9) (CISC, 2018, p. 25). This conclusion has an obvious implication: higher-skilled people can demand and expect better working circumstances than less-skilled workers.

Figure 9: Proportion of workers securing formal work contracts with workers by Sub-Contractor, by skill category level.



Source: CISC Employer Survey 2017

2.3. Strategies to Overcome The Existing Obstacles In The Construction Sector

Considering the present labour and skill scenario we present relevant policies, recommendations in the following sub-section. The government and private sector must take decisive steps to reinvent the wheel of existing policies in order to create future-proof initiatives that will boost skills development momentum. In light of this, one of the most important methods for reducing skill mismatch could be as follows:

(i) Connecting the existing curriculum with current industry needs and future market trends

Increasing collaboration between vocational institutes and industry like that has been done by Thailand and China; including industry-sector representation in curriculum development as is practiced in India; introducing, validating, and updating industry qualification packs like National Training and Vocational Qualifications Framework (NTVQF) and National Qualification Framework (NQF) for industries like India; linking secondary education to TVET programs like India; introducing private sector apprenticeship programs for promoting earning while studying, maintaining ongoing contact between employers and training providers and creating an Industry-Academia Partnership Forum to develop a mechanism to register informal apprentices using a Recognition of Prior Learning (RPL) system can play a vital role in improving skill scenario (*The Independent*, 2018).

(ii) Increasing the training capacity of the construction workers

The current system of gradual development in training capacity will not be sufficient to meet the need for trained and semi-skilled personnel in the construction industry, even if training capacity grows at a 10% annual rate, capacity scarcity will persist in the next ten years (BIDS, 2017). Palli

Karma Sahayak Foundation (PKSF), in 2016, predicted that there will be 6.76 million construction jobs, according to projections of future job demand at home and abroad (5.40 million in the domestic market and 1.36 million in the overseas market) in 2027. According to estimates of future employment market projections in the domestic construction sector, the top-ranking occupations or trades will be Mason (1.2 million), Tiles and marble mosaic fitter (0.51 million), and Marble cutting workers (0.42 million). Construction worker (602,704), Mason (289,434), Carpenter (198,858), Painter (108,282), Electrician (72,188), and Plumber are among the jobs with the largest need for employment in the overseas construction sector, according to estimates (45,628).

(iii) Providing basic soft training and language proficiency

Develop entry-level basic skills training programmes targeted at unemployed youth who would otherwise enter the workforce as unskilled labourers and teach them basic skills so that they can transition to a semi-skilled position. CBT courses should be used, with durations ranging from 200 to 360 hours depending on the occupation. This will be possible with the existing Sudokkho and SEIP-funded courses. The training should be offered by qualified CBT trainers working for ISC-accredited training providers. External evaluators will conduct the evaluations.

The report conducted by PKSF, in 2016, revealed a significant skills gap in this sector across occupations/trades, with the majority of workers (72.5%) being incompetent in their existing jobs on the home market. Skill development initiatives should focus on a variety of semi-skilled and less-skilled occupations/trades. Mason; Tiles and marble mosaic fitting; Marble cutting; Rod binding; Rigger; Wood designer; Carpentry, Electric Works, and Plumbing are examples of such occupations/trades. Because a large number of less-skilled occupations/jobs will be created in the construction sector both at home and abroad, it would be more beneficial to provide some basic soft skills training, including an introduction to the major destination countries' elementary foreign languages, to Bangladeshi migrants. NSDA is developing competency standards for a variety of industries, including construction. The following training should be designed for the above-mentioned high-demand trades, according to the CBT&A defined and set by BTEB and NSDC. The courses and respective duration include Aluminum Fabrication 360 hours, Electrical Installation & Maintenance 360 hours, Finishing Carpentry 360 hours, Masonry 360 hours, painting 360 hours, Plumbing 360 hours, Rod Binding 520 hours, Tile work 360 hours, and Common (NPVC 2; pre-vocational) 360 hours. Also, competency-based learning materials (CBLMs) based on the BTEB-approved competency standard must be created and used in the training. The CBLM should be reviewed on a regular basis to guarantee that training schools are imparting the most up-to-date knowledge and technology.

Improving access to employment for females

Despite the low degree of support from Sub Contractors, Developers are sufficiently supportive of launching a campaign to employ more female workers in the business, particularly in the four crafts (Mason, Tile Fixer, Building Painter, and Concrete Pump Operator). As a result, the resources should be mobilized to encourage women to work in these fields. In this regard, a communication campaign should be conducted with a focus on persuading businesses, particularly

Sub Contractors, of the economic benefit of female employees who can provide a prospective labour force to alleviate labour shortages caused by the migration of (male) construction workers (which is likely to increase in the future). An investigation should be done on what steps developers and subcontractors should do to increase female safety (and hygiene) on building sites. Better safety and security measures are more likely to result in less opposition to hiring female personnel (CISC, 2018).

Improved access to skills will help women gain more work opportunities in the business. A skilled female worker will be able to easily compete with many semi-skilled male workers now employed in the business. Because women are underrepresented in the industry and are concentrated in low-skilled professions, there is a strong need to target female entry-level workers for training programs, particularly in certain crafts. As a result, training programs that prioritize females in masonry, tiling, and painting should be advocated for. Over the next ten years, all three trades are expected to have a medium to a high level of talent shortage (ibid.).

(iv) Renewing and implementing the competency standards

Efforts must be aimed toward formalizing and institutionalizing labour recruitment processes through the issuance of identity cards and letters of appointment, as well as the accountability of subcontractors. (RMMRU, 2013) Technical and vocational institutes in Bangladesh should adopt the new TVET in providing skills development training for the construction sector. Competency standards are being developed and certified by the parties involved, but they are not being implemented in practice. The majority of training centers do not follow CBT&A in terms of developing learning materials and giving instruction. Inability to conduct some things, such as imparting CBT, assessing by BTEB accredited assessors, and issuing NTVQF certificates, will keep the certificate's recognition difficult, both at home and abroad, as it is currently, and will cause problems aligning the certificate's level worldwide (PKSF, 2016).

(v) Following the labour laws with due diligence

Workers in Bangladesh's construction industry face a slew of issues and unethical tactics. The lack of adequate legal and institutional assistance, as well as collective bargaining agreements, exacerbates their susceptibility. It is necessary to ensure that existing labour laws are followed. The Directorate of Inspectors of Factories and Establishments' capacity should be strengthened by allocating more human and financial resources to it. Violators of labour laws and rules should be subjected to exemplary punishment. In addition, the government should establish awareness programs for construction workers, especially migrants, in partnership with trade unions and civil society organizations. Given that the vast majority of construction workers find work through social media, potential migrants should be urged to check the personal profiles of recruiters at the point of origin, i.e., sub-contractors, before accepting a migration offer. Local government offices and grassroots non-governmental organizations (NGOs) may want to include this subject in their public awareness campaigns (RMMU, 2013).

CHAPTER III: MACRO OVERVIEW OF THE CONSTRUCTION SECTOR IN BANGLADESH

The construction industry has a large influence on worldwide economic development. And economic development is linked to a country's welfare, and all sectors, including primary, secondary, and tertiary, contribute to economic stability (Alaloul *et al*., 2021). The construction industry is critical because it reflects the affluence, health, and quality of life of the population of a country (Lean, 2001). Because the construction sector is the backbone of every country's economic success, it has an impact on the role of every sector at all levels of an economy (Hillebrant, 1985). Developing countries rely significantly on the construction industry to carry out long-term development objectives (Pradip *et al*., 2016). As a result, a lack of suitable construction infrastructure leads to underdevelopment of different sectors of a country, an underdeveloped economy, a subpar standard of life, and unequal income distribution, all of which contribute to a country's economic failure (Gaal *et al.*, 2017). Effective construction industry management leads to higher life quality, including increased tourism, a more sustainable environment, increased money circulation, and job development across the country (Khan, 2008).

Thus, sufficient buildings and infrastructure built by the construction sector ensure a country's social progression, industrialization, sustainable development, and urbanization. As a result, the building industry is getting a lot of attention in developing countries. The development of the construction industry has a significant role in contributing to the overall development of a developing country like Bangladesh. In terms of output growth and employment generation, the building construction industry is one of Bangladesh's fastest expanding and largest industries. Bangladesh's construction industry has developed significantly during the previous decade, accounting for around 8% of the country's GDP (MoF, 2021). Furthermore, the sector employs about 2.4 million people, accounting for a substantial portion of Bangladesh's workforce (Labour Force Survey, 2016-17). This further has a multiplier effect on economic activities and therefore, this sector is a big driver of economic growth (BIDS, 2017).

We will present a macro-overview of the construction industry in this section. We will also take a look at the contribution of this sector to the country's GDP in comparison to other sectors, as well as how this sector has emerged as a critical component of the economy, and examine the sector's growth trajectory over the years. We will further observe the employment situation in this sector and the pattern of rising average construction worker wages across the country. And finally, we will outline the price and demand for housing in Dhaka.

3.1. Contribution of Construction Sector to GDP

According to BBS (2020), the construction sector has shown promising growth over the last decade among the 15 important sectors that contribute to the country's GDP. Construction like some other

industries has only demonstrated an upward trend at current prices since 2011-12. The growth in the case of construction has been steady throughout the years. Other significant sectors are shown to be manufacturing which has contributed about 19% of the GDP in 2019-20, wholesale and retail trade contributed around 13% in the same financial year. Unlike the construction sector, the contribution of the agricultural sector to the GDP has only gone down over the years (Table 6).

As a significant part of the construction sector, if we observe the contribution of the real estate sector to the GDP, we can see a similar upward trend as the construction sector over the years. Further, according to the Real Estate and Housing Association in Bangladesh (REHAB), the real estate renting and business services sector employs about 2.5 million skilled and unskilled labour. The annual turnover of this sector is BDT 28 billion, providing BDT 2 billion in tax revenue to the government. It also stimulates demand for 250 supplementary industries, e.g., steel, cement, tiles and sanitary ware, cable and electric ware, paint, glass and aluminum, brick and building materials, etc. (Seraj 2015).

Table 6: Sectorial Shares of Gross Domestic Product at Current Market Prices

(In percentage)

Activity/Sector	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20*
Agriculture and forestry	13.91	13.03	12.81	12.21	11.55	10.98	10.68	10.25	9.93
Fishing	3.19	3.24	3.30	3.29	3.22	3.19	3.14	3.07	3.09
Mining and Quarrying	1.67	1.71	1.65	1.65	1.73	1.83	1.83	1.82	1.77
Manufacturing	16.82	18.27	17.43	17.61	17.91	18.28	18.99	19.89	19.67
Electricity, gas and water supply	1.42	1.44	1.44	1.37	1.45	1.40	1.38	1.33	1.29
Construction	6.84	7.22	7.09	7.51	7.67	7.81	7.48	8.12	8.40
Wholesale and retail trade	13.76	13.54	13.48	13.33	13.01	13.05	13.15	13.34	13.49
Hotel and restaurant	0.98	0.99	1.02	1.03	1.04	1.03	1.04	1.04	1.07
Transport, storage and communication	11.29	10.89	10.49	10.38	10.27	10.00	9.61	9.34	9.32
Financial intermediation	3.64	3.70	3.79	3.86	3.86	3.91	3.93	3.89	3.79
Real estate, renting and business ser.	6.88	6.91	7.12	7.34	7.51	7.73	7.82	7.87	7.96
Public Administration and defense	3.35	3.30	3.49	3.51	4.05	4.19	4.24	4.09	4.19
Education	2.51	2.49	2.56	2.60	2.82	3.04	3.03	3.02	3.07
Health and social services	2.02	2.09	2.10	2.09	2.11	2.08	2.07	2.15	2.20
Community, social and personal ser.	11.75	12.18	12.23	12.21	11.79	11.46	11.11	10.78	10.78
Total	100	100	100	100	100	100	100	100	100

Source: BBS Statistical Yearbook, 2020. * Provisional

Further, according to Labour Force Survey (LFS) data, it is the second-largest provider of non-agricultural employment after the ready-made garments sector. The size of the construction industry which was around BDT 29,825 crore or 298.2 billons in FY 2006 gradually increased to around BDT 61,552 crore or 615.5 billion during FY 2016 and further increased to 88,491crore or 884.9 billion during FY 2020 (Table 2). This shows a huge growth in the sector over the years.

The contribution of the construction sector to GDP has shown a steady growth from FY 2006 to FY2020 from 6.5 percent to 7.89 percent at constant prices. Bangladesh's construction industry has grown at an annual growth rate of about 8.69% percent during FY2006 which decreased to 6.95 percent in FY 2011 and thus showed a somewhat downward trend during those years. The situation started to change from FY 2012 due to massive infrastructure investments and a rapid rise in housing demand and jumped to 8.42 percent and from then on it has been stagnant at 8 percent more or less. It then increased to about 9.92 percent in FY 2018 and increased to 10.25 percent in 2019 which is an all-time high in the construction sector since FY 2006.

But this all changed in early 2020. The economic activity which was rising steadily in the Construction and Building Sector was severely disrupted when the Government announced a national lockdown in movement order to prevent the spread of Covid-19 nationally. This resulted in a drastic drop in economic activities not just in the construction and building sector but also in other related real estate activities. In terms of GDP, the contribution of the real estate renting and business services sector is estimated at around BDT 719.25 billion from 2006-2020. The growth of this sector has been stagnant from FY 2006 to FY 2011 and then it increased from FY 2012 and peaked in 2019. But similar to the construction sector, the growth of this sector took a downturn due to Covid-19 (Table 7).

Table 7: Sectoral GDP and contribution to GDP (Constant Prices)

Year	Construction sector			Real Estate, renting, and business services		
	Size of the GDP in crore Tk.	GDP contribution (%)	Growth (%)	Size of the GDP in crore Tk.	GDP contribution (%)	Growth (%)
FY 2006	29825	6.52	8.69	37935	8.29	3.77
FY 2007	31836	6.49	6.74	39382	8.03	3.82
FY 2008	33742	6.5	5.99	40876	7.87	3.79
FY 2009	35962	6.58	6.58	42442	7.77	3.83
FY 2010	38554	6.65	7.21	44078	7.61	3.85
FY 2011	41235	6.67	6.95	45790	7.41	3.88
FY 2012	44709	6.78	8.42	47586	7.22	3.92
FY 2013	48305	6.9	8.04	49509	7.07	4.04
FY 2014	52209	7.03	8.08	51615	6.95	4.25
FY 2015	56698	7.16	8.60	53888	6.81	4.40

Year	Construction sector			Real Estate, renting, and business services		
	Size of the GDP in crore Tk.	GDP contribution (%)	Growth (%)	Size of the GDP in crore Tk.	GDP contribution (%)	Growth (%)
FY 2016	61552	7.28	8.56	56297	6.65	4.51
FY 2017	66951	7.36	8.77	58997	6.49	4.80
FY 2018	73595	7.50	9.92	61436	6.31	4.98
FY 2019	81139	7.63	10.25	65173	6.13	5.23
FY 2020	88491	7.89	8.66	68331	6.09	4.83

Source: BBS Statistical Yearbook, 2020; Bangladesh Economic Review, 2021

The growth of the construction sector can be backed up by the government gross fixed capital formation which shows us the new value-added in the economy that has been invested rather than consumed. We see that the construction sector in Bangladesh can be divided into three sub-sectors: (i)Residential building (ii) Non-residential building and (iii) Other construction except land improvement. And over the years, we see that the government gross fixed capital formation of all the sub-sectors of the construction sector has increased over time (Table 8).

Table 8: Government Gross Fixed Capital Formation (GFCF) (ADP)

(In Million Taka)

Items	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Construction	145408	207682	215819	264586	358965	431878	615521	659730
i) Residential building	2946	4207	4372	5360	7272	8749	12469	13364
ii) Non-residential building	39337	56184	58386	71579	97112	116837	166518	178478
iii) Other construction except land improvement	103125	147291	153061	187647	254581	306292	436534	467888
Land improvement, Plantation and orchard development	8441	12055	12527	15357	20835	25067	35726	38292
Machinery and equipment	56119	80152	83294	102116	138540	166684	237582	254624

Items	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Breeding stock drought animals, dairy cattle and the like	242	347	360	441	598	719	1025	10.99
Total	210210	300236	312000	382500	518940	624348	889834	953745

Notes: Gross fixed capital formation of the Government sector has been derived by analysis of the ADP and data also obtained through detailed questionnaires from Government agencies.
Source: BBS Statistical Yearbook, 2020

Further, the government's development projects under the annual development program have given a big boost to the construction sector, which resulted in higher production and consumption of construction materials i.e., steel and cement. The government has several ongoing flyovers and other construction projects in Dhaka and Chittagong, including four-lane highways. There is an expectation of increased growth in this sector in the near future (BIDS, 2017).

3.2. Employment Trend in Construction Sector

Employment generating potential of the construction sector can hardly be over-emphasized. The important fact here is that the construction industry is a labour-intensive industry, and by the same token, the same inference can be drawn for the real estate sector. After all, the real estate sector forms a major part of the construction sector and a major part of the labour force engaged in the construction sector is also engaged in the real estate sector (Ahmed, 2014).

Table 4 shows the employment trend in the construction sector over the period 1999-2017. From 1999-2000, total construction sector employment was around 1.13 million which increased to 2.6 million in 2010. Which eventually decreased in the following years and 2016-17 it stood at 2.4 million and employment in the construction sector occupied 5.6 percent of the total employed population.

While the RMG sector employs mainly female labour, the construction sector mostly deploys male labour (BIDS, 2017). According to gender-segregated data, more men are involved in the sector than women. Around 7.5 percent of the total male employed population are engaged in this sector and 1.4 percent of that of the female working population (Table 9).

Table 9: The labour force engaged in the construction sector, 1999-2017*

Year	Employed person (in "000")			% of total employed person		
	Male	Female	Total	Male	Female	Total
1999-2000	1045	91	1136	3.4	1.2	2.9
2002-2003	1445	97	1541	4.2	1.0	3.5
2005-2006	1421	104	1524	3.9	0.9	3.2
2010	2391	227	2617	6.3	1.4	4.8
2013	1975	168	2144	4.8	1.0	3.7
2016-17*	2308	142	2451	7.5	1.4	5.6

Source: Labour Force Survey, various years, BBS.

* The latest version of Labour Force Survey available so far in Bangladesh.

Furthermore, both in the formal and informal sectors, the sector creates jobs for skilled, semi-skilled, and unskilled workers. According to the Bangladesh Association of Construction Industry (BACI), the construction industry employs around 10,000 people. The construction industry's existing workforce is made up of 10% skilled workers, 20% semi-skilled workers, and 70% unskilled workers (BACI, 2016).

Although the building industry is expanding in all of Bangladesh's cities, the capital city of Dhaka has seen particularly rapid expansion. This is because Dhaka alone houses more than 40% of the urban population. As the middle class grows, more people are willing to buy houses, increasing housing demand (BIDS, 2017). The BBS Construction Cost Index (Building) also shows consistent growth in general construction activity, building materials, transportation, and labour from year to year (Table 10).

Table 10: Construction Cost Index (Building) Bangladesh

Year	General	Building Material	Transport	Labour
2007-08	163.89	159.46	202.69	174.36
2008-09	214.06	201.58	488.29	221.46
2009-10	222.30	207.11	566.89	241.61
2010-11	256.60	230.46	843.83	282.59
2011-12	321.01	268.46	1468.70	378.69
2012-13	362.62	299.03	1639.04	439.67
2013-14	427.61	360.87	1737.52	512.85
2014-15	461.13	396.65	1720.25	538.33
2015-16	490.09	421.02	1776.30	569.20
2016-17	516.49	448.62	1840.93	586.48
2017-18	544.79	476.91	1909.77	609.13
2018-19	572.58	501.25	1981.59	643.88
2019-20	597.11	523.52	2044.74	671.80

Source: BBS Statistical Yearbook, 2020

3.3. Average Wage in Construction Sector

When compared to the wage level of agricultural wage labourers, employment in the construction sector helps to alleviate poverty (who constitute the poorest segment of the rural population). Construction workers earn higher wages than agricultural employees on average, but lower wages than those in the manufacturing sector. Although the relative wage disparities between construction workers and agricultural wage workers have lessened in recent years, they remain significant (Table 11). This encourages potential workers to leave the agricultural sector and pursue skilled trades in the construction industry (BIDS, 2017).

Table 11: Average Monthly Income from Employment (Wage)

Industry	Male	Female	Total
Agriculture, forestry, and fishing	8915	7460	8712
Mining and quarrying	9767	11636	9818
Manufacturing	12983	10132	12068
Electricity, gas, steam, and air conditioner	28503	17289	27489
Water supply, sewerage, waste management	18955	10610	16584
Construction	**9951**	**8900**	**9864**
Wholesale and retail trade, repair of motor vehicle	12819	11419	12620
Transportation and storage	11918	12613	11981
Accommodation and food service activities	12904	10145	12314
Information and communication	24158	20749	23810
Financial and insurance activities	33576	26418	32278
Real estate activities	27215	31669	27529
Professional, scientific, and technical	24754	17809	23931
Administrative and support service activities	16229	18563	16581
Public administration and defense	24518	21795	24125
Education	24426	22701	23730
Human health and social work activities	24630	22224	23414
Arts, entertainment, and recreation	15005	15949	15148
Other service activities	14811	12724	14291
Activities of households as employers	9441	7644	8041
Activities of extraterritorial organization	23251	13368	21967
Total	13583	12254	13258

Source: Labour Force Survey, 2016-17.

Table 12: Annual Average Daily Wage Rate of Construction Labour by Type of Labour at Principal Towns

Type of Labour	Town	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Mason	Dhaka	448	478	496	510	533	548	558
	Narayanganj	424	435	451	465	622	887	887
	Chattogram	448	475	476	461	481	499	512
	Rajshahi	437	464	484	499	506	517	527
	Khulna	443	453	469	482	489	500	500
	Sylhet	417	428	445	458	464	473	474
	Rangpur	409	413	437	454	461	473	481
Helper	Dhaka	364	365	389	400	412	428	439
	Narayanganj	362	362	395	408	432	442	450
	Chattogram	370	372	395	415	430	447	447
	Rajshahi	363	364	387	402	419	436	479
	Khulna	335	364	388	401	415	420	445
	Sylhet	309	310	479	497	500	500	500
	Rangpur	-	333	467	494	486	492	500
Carpenter	Dhaka	448	458	478	490	490	496	-
	Narayanganj	500	501	502	442	451	515	-
	Chattogram	443	458	475	486	490	492	-
	Rajshahi	412	413	413	434	453	505	-
	Khulna	382	461	462	439	450	460	-
	Sylhet	418	439	513	520	521	448	-
	Rangpur	320	442	443	431	447	480	-

Source: BBS Statistical Yearbook, 2020.

If we take a closer look at the daily wages of the construction workers (masons, helpers, and carpenters) in the principal towns such as Dhaka, Narayanganj, Chattogram, Rajshahi, Khulna, Sylhet, Rangpur, we can observe that the daily wages of the construction workers have increased over time. Although daily wages of the masons, carpenters, and helpers have increased in all the principal towns, wages of masons in Narayanganj have seen a significant increase, from BDT 424 in 2013-14 to BDT 887 in 2019-20 (Table 12).

3.4. Trends in Housing Prices and Demand

In the late 1970s and early 1990s, private real estate development in Bangladesh began (Seraj, 2012). The public sector has historically been unable to meet the country's housing demand, with the demand-supply gap being greatest in Dhaka. This is because Dhaka and the towns that make up the Greater Dhaka Area have a combined population of about 18 million people, with the city growing at a rate of roughly 4.2 percent each year. Migration from Bangladesh's rural areas to the city of Dhaka is a major factor in the country's population growth. During the 1960s and 1970s, rural migration accounted for 60% of population growth. While this development had moderated since then, Dhaka continued to grow steadily. At this population growth rate, new houses were needed to meet the pressures of housing demand.

Under such circumstances, some local building enterprises took steps to provide private dwellings. As soon as it appeared that the business was a win-win situation for all three parties involved, the landowner, the developer, and the apartment buyer, more real estate developers entered the market. There were five developers at the start, in the late 1970s. In 1988, the number had risen to forty-two (42). The demand for apartment living continued to rise significantly. The necessity for a trade organization was quickly recognized to improve the real estate sector's role and assure ethical construction practices. Currently, the real estate sector employs over 2000 companies (Seraj, 2017).

With the growing number of companies, the official number of delivered flats has surpassed 10,000, with an annual demand of about 50,000 units in Dhaka now. In the market, there are approximately 2000 enterprises. It should be mentioned that the first 20 companies in the industry deliver half of the total units of an apartment sold each year, with the remaining 80 organizations delivering the remaining 50% of the apartments. Although there are some non-institutional developers in the scenario, the delivery of the next 1900 companies is insignificant compared to the first 100, with several roughly 4 or 5 units per year. (Seraj, 2017). As the demand for housing is high, real estate and development companies earned a huge amount of profit in the past two decades. The price of land, other real estate raw materials, and the cost of the labour force has also increased so has the commercial property price. Commercial property prices specifically in Dhaka have risen significantly from 2005 onwards. Prime locations like Dhanmondi, Gulshan, Banani, and Baridhara have risen from roughly BDT 3,100-4,000 per square foot in 2005 to BDT 13,500-22,000 per square foot in 2018 (Table 13).

Analyzing further, it can be seen that the commercial properties at Baridhara over time have shown the highest increase in price and Mirpur has seen the least price hike. Overall, apartment prices were BDT 1692 per square foot in 1990 which took a big jump to BDT 9500 per square foot in 2010 and reached BDT 11136 per square foot in 2018. Projections also show a further persistent increase in the prices (Figure 10).

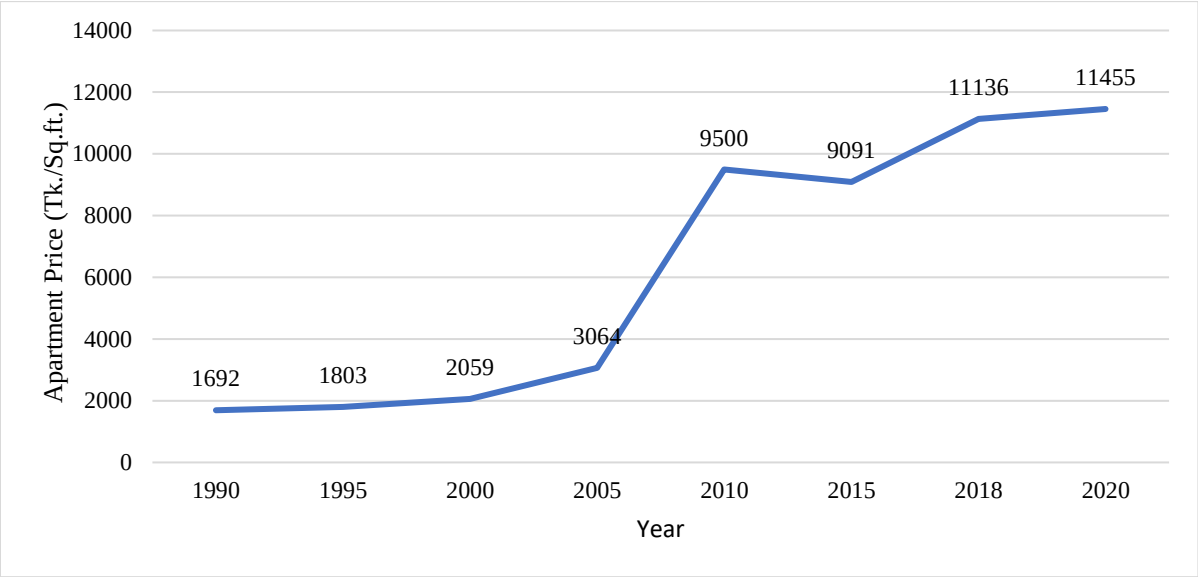
Therefore, high prices of land and houses due to excessive demand and other factors such as the high-interest rate on bank credit, scarcity of buildable land for affordable housing projects, and failure to implement need-based actions following the National Housing Policy to cater to the housing crisis for the middle and low-income population, are major contributors towards unaffordable housing in the country (RAJUK, 2015).

Table 13: Trend in Commercial Property Prices

Location	1990	1995	2000	2005	2010	2015	2018	2020*
Dhanmondi	2150	2200	2400	3300	15000	12000	15000	15000
Gulshan	2115	2080	2450	4500	15000	12500	15000	15000
Banani	1750	1950	2200	3100	13000	11000	13500	13500
Baridhara	1850	1950	2150	4000	18000	18000	22000	22000
Lalmatia	1800	1950	2400	3400	9000	9500	11000	11000
Mirpur	1250	1300	1500	2500	4500	5500	6500	7500
Uttara	1650	1750	2000	2700	5500	6000	7000	7500
Mohammadpur	1450	1600	1800	3500	7000	7000	8500	9000
Shyamoli	1350	1500	1600	2100	4500	5500	7000	7500
Kalabagan	1800	2000	2250	2100	7000	7000	9000	9500
Shantinagar	1450	1550	1900	2500	6000	6000	8000	8500
Average	1692	1803	2059	3064	9500	9091	11136	11455

Source: Sheltech, 2018 as cited in TOH et al. (2020). *Projections

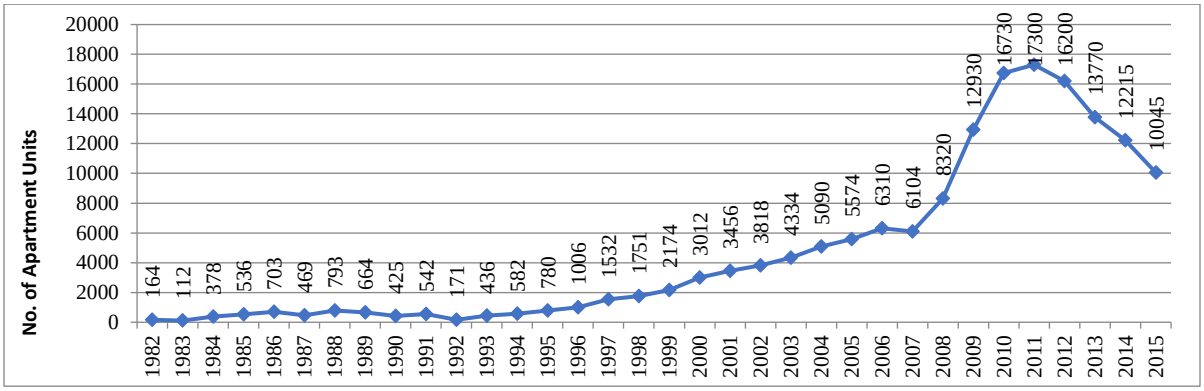
Figure 10: Average Apartment Prices Projection in Dhaka



Source: Sheltech, 2018 as cited in TOH et al. (2020).

Between 1990 and 2000, the industry experienced moderate growth, while between 2009 and 2011, the industry experienced exceptional growth. Strong remittance inflows in the second half of the 2000s are to blame for this. However, the real estate industry has been in a slump since 2012, with unit deliveries falling dramatically over that time. In the last decade, the cost of construction has risen significantly in tandem with the cost of acquiring land for real estate development. Thus, the real estate market experienced a downturn in the 2010s (Figure 11).

Figure 11: Yearly Apartment Delivery



Source: Seraj, 2015 as cited in BIDS (2017).

Sheltech, a pioneer real estate corporation in the country declared that the overall real estate market in 2015 was down by 40% compared to what it was in 2009-11. Before the boom, a slew of inexperienced developers flooded the market, causing unhealthy competition. Both land and apartment prices were put under pressure as a result of this. The number of buyers decreased as apartment prices rose and government regulations (such as taxes and registration fees) increased.

As a result, several smaller developer firms have exited the market, while existing firms have taken on fewer projects after 2012, resulting in a sharp drop in the number of flats available.

However, according to an article published by the country's leading newspaper The Daily Star, as per the data of the Real Estate and Housing Association of Bangladesh (REHAB), around 10,000 flats were sold in 2021, up from 8,500 to 9,000 per year since 2018. The demand for flats has started to rise in Dhaka, ending a three-year stagnation after the easing of the Covid-19 fallout. This is the result of restricted investment prospects in the productive sectors due to the pandemic-induced economic slowdown, a sharp drop in bank deposit rates, low-cost loans, and the ability to invest untaxed funds. According to the National Board of Revenue, 12,000 persons whitened around BDT 20,600 crore in the previous fiscal year (2019-20).

CHAPTER IV: POLICIES AND INTERVENTIONS: CONSTRUCTION SECTOR IN BANGLADESH

4.1. Government Policy on the Construction Sector

The government has adopted the much-anticipated 8th Five Year Plan (8FYP) for the years 2021 to 2025, which primarily focuses on some areas for immediate improvement in order to maintain Bangladesh's existing economic trajectory and attain higher growth. The title of this Five-Year Plan is "Promoting Prosperity and Fostering Inclusiveness," which encompasses growth for all citizens of the country, regardless of gender, race, caste, creed, economic status, and physical ability. However, due to the lack of necessary attention, there is no focused policy to be found regarding the construction sector in Bangladesh, and thus it has long been ignored by policymakers. There are policies being considered that represent government and semi-government infrastructure and housing, but none are focused on the construction industry and its possibilities or future. This industry should be reconsidered in light of the aforementioned demarcation in order to be properly addressed and reflected in the present 8FYP. In order to expedite development at pace with Bangladesh's current GDP growth, the construction sector must be included in all development initiatives and policies.

The assessment and information were identified from the preliminary synthesis due to the previous study's scope being limited in terms of the policy on the construction sector. Different Government policies regarding housing and infrastructure have been scaled down by scanning the desk review, literature review, and analyzing secondary data. The policies have been shortly described below:

8th Five-year Plan (2020-2025): Promoting Prosperity and Fostering Inclusiveness

This is the first phase of the Perspective Plan 2041 (PP2041) of Bangladesh, which intends to bring the country closer to the goals of becoming an Upper Middle-Income Country (UMIC), achieving major Sustainable Development Goals (SDGs), and eradicating extreme poverty by FY2031. The policy emphasizes ensuring that everyone has access to appropriate, safe, and affordable housing (8FYP, 2020, 513) and sustainable urban development for social integration and poverty eradication. The policy highlights the fact that the abolition of all types of discrimination can be ensured if everyone has fair opportunities for physical and social infrastructure, basic services, and suitable and affordable housing. Besides, by fostering full and productive employment and decent labour for all, as well as ensuring equal access to economic and productive resources and opportunities, sustainable and inclusive urban prosperity and opportunities can be ensured (ibid.).

- By 2030, ensure access for all to adequate, safe and affordable housing and basic services, and upgrade slums (8FYP, 2020, 513).
- Sustainable urban development for social inclusion and ending poverty including the promotion of health and well-being and the elimination of all forms of discrimination by providing equal access for all to physical and social infrastructure and basic services, as well as adequate and affordable housing.

- Sustainable and inclusive urban prosperity and opportunities for all by promoting full and productive employment and decent work for all and by ensuring equal access for all to economic and productive resources and opportunities (8FYP, 2020, 514).

National Housing Policy: 2016

The goal of the policy is to ensure that individuals from all walks of life have access to decent housing at reasonable prices, and it lays out a strategy to achieve that goal.

According to the strategy, the government would implement programs to maintain land prices, house construction expenses, and house rent at a minimum level to encourage people to buy homes. The government would work with the land ministry to establish urban land banks in urban areas to make housing development projects with unused *khas* land a reality. The government must establish land banks in order to supply affordable housing to the general public, and flat costs will drop significantly.

- In all government, semi-government and private housing projects, space will be designated for education institutes at primary and secondary levels, mosque, market place, service organizations, playground, swimming pool or pond and necessary system will be provided for service facilities like water, electricity, sewage disposal, waste disposal, water drainage and conservation of rain water.
- For construction of infrastructure, encouragement and priority will be given to adopt those technology and approaches which are money saving, environment friendly and progressively developable.
- Government will support those NGO, CBO, private development organizations who will play role to ensure public participation in infrastructure development.
- The initiative of public participation will be recognized and they will be given opportunity to pa1ticipate information of infrastructure plan, maintenance, and enhancement and in all other phases of a housing project.
- Through modern approach and legitimacy, the cost of infrastructure construction, expansion and maintenance will be calculated and recovered from the beneficiaries in a rational mode.
- Measures will be taken to install minimum basic infrastructure towards up- gradation of the subhuman and unhygienic settlements and to recover the cost involved. In this context, non-profit organization, local level institutes, groups or NGOs and representatives of the consumers will the incorporated.
- Research unit will be established with the aim to invent appropriate technology to ensure housing related services for low income, middle income and high-income population.
- Installation of solar panel and use of energy saving construction material will be guaranteed in building constructions.
- System will be developed for conservation of rain water in building construction.

- Measures will be taken regarding adoption of necessary legal act, survey and documentation, financing, provision for financial and other incentives, arrangement for training and publicizing to carry out plan for conservation of heritage relics, memorials, architectural works, residential and other buildings with special attention on history, culture and architectural style and to preserve natural characteristics. Measures will be taken for projects under implementation based on related gazette notification of government.
- Contemporary rules will be composed in the light of National Housing Policy in conformity with other building and land use related acts.
- In order to provide housing to all strata of the population and to improve the standard of housing activities. assessment and correction of urban planning and building construction related laws and acts will be done and if necessary new laws can be enacted.
- Under this law, measures will be taken to bring land and building construction/ activities of Developer Company under government control by imposing regulatory policies.
- A comprehensive plan at national level is required to implement hygienic and environment sensitive housing plan for the whole country. In this plan, residential land will be demarcated for housing based on population density and a super- infrastructure will be specified for the entire social and physical infrastructure to be used in the concerned residential land. Housing projects of urban and rural areas will be implemented after ensuring active participation of clients.
- Adequate law will be enacted regarding construction of houses and development in rural areas in a planned way with expected density to attain the goal of prevention of misuse of land, saving of agricultural and other resourceful land and to provide emergency services and facilities comfortably.
- Legal compulsion would be exercised towards execution of Housing Policy, Land Use Policy etc. in addition to assurance of proper adoption of Bangladesh National Building Code to ensure quality and safety in case of construction of different types of houses and apartments. Execution of Fire Resist and Extinguish Act 2003 and acquirement of "Occupancy Certificate" would be made compulsory in case of construction of high-rise apartment/building.
- Government will continue to play the role as facilitator and supervisor in housing activities, so that major share of responsibility is carried out by the private sector properly through upholding certain standard.
- Public Private Partnership (PPP) will be encouraged in housing activities (*National Housing Policy 2016*, 2016, p. 27, 41)

Dhaka Structure Plan (2016-2035) Strategic Direction: Affordable Housing for All

The creation of affordable housing solutions for city dwellers is one of the most potentially advantageous projects of the Dhaka Structure Plan 2016-2035. The initiative, once realized, will open up new prospects for growing the housing supply in a decentralized manner, allowing the population to be distributed more equally. There are also plans to make the area more environmentally friendly, encouraging residents to live a healthy lifestyle.

- Promote infrastructure and services in the potential and designated housing areas
- Ensure adequate supply of land for new residential development
- Devise effective and workable housing financing mechanism
- Expedite and ease planning permission to increase the rate of housing supply
- Public sector housing agencies should play greater role as housing facilitator instead of housing provider
- Encourage block housing concept
- Discourage, preferably cease plot-based housing development practice both, by public and private sector agencies
- Encourage to develop housing close to the transit stations
- Encourage housing development within the designated urban centers
- Public sector should provide affordable housing to the low- and middle-income groups
- Improve conditions in slums
- Public sector should provide affordable housing to the low- and middle-income groups *(Dhaka Structure Plan 2016-2035 (Draft)*, 2015, p. 12)

Table 14: Government Policy on Housing and Infrastructure

Serial no.	Name of the Document	Policy/Plan	Year	Implementing Agency	Category
1	8th Five-year Plan (2020-2025): Promoting Prosperity and Fostering Inclusiveness	• By 2030, ensure access for all to adequate, safe and affordable housing and basic services, and upgrade slums (8FYP, 2020, 513)	2020-2025	General Economics Division (GED), Bangladesh Planning Commission	Housing and Community Amenities
2	8th Five-year Plan (2020-2025): Promoting Prosperity and Fostering Inclusiveness	• Sustainable urban development for social inclusion and ending poverty including the promotion of health and well-being and elimination of all forms of discrimination by providing equal access for all to physical and social infrastructure and basic services, as well as adequate and affordable housing. • Sustainable and inclusive urban prosperity and opportunities for all by promoting full and productive employment and decent work for all and by ensuring equal access for all to economic and productive resources and opportunities. (8FYP, 2020, 514)	2020-2025	General Economics Division (GED), Bangladesh Planning Commission	Housing and Community Amenities
3	National Housing Policy 2016	• In all government, semi-government and private housing projects, space will be designated for education institutes at primary and secondary levels, mosque, market place, service organizations, playground, swimming pool or pond and necessary system will be provided for service facilities like water, electricity, sewage disposal,	2016	National Housing Authority Grihayan Bhaban	Housing, Building Materials, Land

		waste disposal, water drainage and conservation of rain water. • For construction of infrastructure, encouragement and priority will be given to adopt those technology and approaches which are money saving, environment friendly and progressively developable. • Government will support those NGO, CBO, private development organizations who will play role to ensure public participation in infrastructure development. • The initiative of public participation will be recognized and they will be given opportunity to pa1ticipate information of infrastructure plan, maintenance, and enhancement and in all other phases of a housing project. • Through modern approach and legitimacy, the cost of infrastructure construction, expansion and maintenance will be calculated and recovered from the beneficiaries in a rational mode. • Measures will be taken to install minimum basic infrastructure towards up- gradation of the subhuman and unhygienic settlements and to recover the cost involved. In this context, non-profit organization, local level institutes, groups or NGOs and representatives of the consumers will the incorporated. • Research unit will be established with the aim to invent appropriate technology to ensure housing related services for low			

		income, middle income and high-income population. • Installation of solar panel and use of energy saving construction material will be guaranteed in building constructions. • System will be developed for conservation of rain water in building construction. • Measures will be taken regarding adoption of necessary legal act, survey and documentation, financing, provision for financial and other incentives, arrangement for training and publicizing to carry out plan for conservation of heritage relics, memorials, architectural works, residential and other buildings with special attention on history, culture and architectural style and to preserve natural characteristics. Measures will be taken for projects under implementation based on related gazette notification of government. • Contemporary rules will be composed in the light of National Housing Policy in conformity with other building and land use related acts. • In order to provide housing to all strata of the population and to improve the standard of housing activities. assessment and correction of urban planning and building construction related laws and acts will be done and if necessary new laws can be enacted. • Under this law, measures will be taken to bring land and building construction			

		activities of Developer Company under government control by imposing regulatory policies. • A comprehensive plan at national level is required to implement hygienic and environment sensitive housing plan for the whole country. In this plan, residential land will be demarcated for housing based on population density and a super-infrastructure will be specified for the entire social and physical infrastructure to be used in the concerned residential land. Housing projects of urban and rural areas will be implemented after ensuring active participation of clients. • Adequate law will be enacted regarding construction of houses and development in rural areas in a planned way with expected density to attain the goal of prevention of misuse of land, saving of agricultural and other resourceful land and to provide emergency services and facilities comfortably. • Legal compulsion would be exercised towards execution of Housing Policy, Land Use Policy etc. in addition to assurance of proper adoption of Bangladesh National Building Code to ensure quality and safety in case of construction of different types of houses and apartments. Execution of Fire Resist and Extinguish Act 2003 and acquirement of "Occupancy Certificate" would be made compulsory in caseof construction of high-rise apartment/building.			

		• Government will continue to play the role as facilitator and supervisor in housing activities, so that major share of responsibility is carried out by the private sector properly through upholding certain standard. • Public Private Partnership (PPP) will be encouraged in housing activities (*National Housing Policy 2016*, 2016, p. 27, 41).			
4	Dhaka Structure Plan (2016-2035) Strategic Direction: Affordable Housing for All	• Promote infrastructure and services in the potential and designated housing areas • Ensure adequate supply of land for new residential development • Devise effective and workable housing financing mechanism • Expedite and ease planning permission to increase the rate of housing supply • Public sector housing agencies should play greater role as housing facilitator instead of housing provider • Encourage block housing concept • Discourage, preferably cease plot-based housing development practice both, by public and private sector agencies • Encourage to develop housing close to the transit stations • Encourage housing development within the designated urban centers • Public sector should provide affordable housing to the low- and middle-income groups	2016-2035	RAJUK	Infrastructure and Housing

		• Improve conditions in slums • Public sector should provide affordable housing to the low- and middle-income groups *(Dhaka Structure Plan 2016-2035 (Draft)*, 2015, p. 12)			

4.2. SEIP Interventions

Bangladesh's economy has been gradually improving, aided by reforms and more openness. Bangladesh has been seeing more than 7% GDP growth, which surpassed 8% in 2018-19, giving the country the opportunity to reach double digits. This could be bolstered by rising worker productivity as a result of improved skills and technical advancements, particularly the information and communication technology (ICT)-driven shift to a knowledge economy. However, after infrastructure and energy, skill is acknowledged as the most important component in industrial growth, productivity, export diversification, and the production of high-value products. The low competitiveness of enterprises, particularly low skills and low productivity of the workforce, is identified as a fundamental restriction to growth in the Asian Development Bank's (ADB) Bangladesh Country Partnership Strategy (for 2012-2016).

The Government has created the National Skills Development Policy, 2011 to coordinate the existing skills development and training initiatives that are conducted sporadically by roughly 23 ministries and divisions. The government recently established the National Skills Development Authority (NSDA) to run skills development programs in a holistic, coordinated, and standardized manner. The NSDA will bring all skills development activities under one umbrella to ensure uniform quality and standard across the country. In addition to the government's financial assistance for skills development initiatives, the National Human Resource Development Fund (NHRDF), which has already been established, will provide further funds. This fund will help deserving public and private training institutes continue their trading activity.

Skills for Employment Investment Program (SEIP)

In 2014, the Asian Development Bank (ADB) signed a Multi-tranche Financing Facility (MFF) Agreement with the Bangladesh Government to support long-term and comprehensive skills development efforts in Bangladesh, assessing the potential contribution of skilling and up-skilling a large number of working-age people in priority sectors to higher GDP growth. The initiative is also co-financed by the Swiss Agency for Development and Cooperation (SDC). The SEIP initiative is being implemented by the Finance Division, which is working with three ministries (Ministry of Expatriate Welfare, Education, and Industries), Bangladesh Bank, PKSF, and 13 industry associations. Aside from that, the BRTC, which is part of the Ministry of Road Transport and Highways, is working on this project to train and license 1,00,000 drivers in order to substantially reduce road accidents. The implementing agency is the Support to Skills Development Coordination and Monitoring Unit (SDCMU).

The Executive Project Director leads SDCMU, which is supported by four Deputy Executive Project Directors, ten Assistant Executive Project Directors, and a team of specialists. The Finance Division also has a Project Management Unit (PMU), which is led by the Finance Secretary and deals with policy concerns as well as overall project monitoring. The first tranche of the program

is being co-financed by ADB and SDC, with industry organizations contributing a portion of the total cost. However, due to internal policy changes, SDC will not be funding the second and third tranche activities. The total cost of the SEIP project for all three tranches (2014-2024) is expected to be BDT 3712.33 crore.

SEIP uses various assessment tools:

1. shuttering and scaffolding
2. duct fitting for air-conditioning and ventilation
3. tiles and marble works
4. steel binding and fabrication
5. plumbing
6. painting
7. masonry
8. electrical installation and maintenance
9. aluminum fabrication and installation

SEIP follows specific competency standards. A competency standard is a written specification of the knowledge, skills and attitudes required for the performance of an occupation, trade or job corresponding to the industry standard of performance required in the workplace.

The purpose of a competency standards is to:

- provide a consistent and reliable set of components for training, recognising and assessing people's skills, and may also have optional support materials
- enable industry recognised qualifications to be awarded through direct assessment of workplace competencies
- encourage the development and delivery of flexible training which suits individual and industry requirements
- encourage learning and assessment in a work-related environment which leads to verifiable workplace outcomes

Course-wise Training Summary Provided by SEIP in Association with BACI

Bangladesh Association of Construction Industry (BACI) is a government-approved trade organization for Bangladeshi construction enterprises that is non-political and non-profit. On December 19, 1995, BACI was established as the apex organization signifying and representing the country's entire construction sector. On January 25, 1996, the organization was registered as a trade organization with the "Directorate of Trade Organization" (DTO License No: 88) under the Ministry of Commerce, Government of Bangladesh (GoB), and with the Register of Joint Stock Companies under The Companies Act, 1994.

Bangladesh Association of Construction Industry, as a prominent construction industry organization, must collaborate with a variety of national and international organizations to advance

the interests of Bangladesh's construction industry. The Association holds exhibitions, seminars, training sessions, roundtable meetings, and workshops for the benefit of the country's construction industry. BACI holds an Annual General Meeting (AGM) and produces a report for its members every year. FBCCI has classified the organization as an "A" class member. It's also a member of the International Federation of Asian and Western Pacific Contractors' Associations on a regular basis (IFAWPCA). Table 2 shows construction-sector courses with various sorts of facilities are provided under the SEIP (Skills for Employment Investment Program) programme.

From the table it can be seen that the level of target enrollment and total enrollment is equal for all types of trainings. However, the number of females receiving the trainings is quiet low. The percentage of females receiving training ranges from 1.26% (Tiles and Marble Works) to 16.96% (Masonry). Number of absent students was highest for Rod Binding and & Fabrication and lowest for Painting. Total absent students sum to 61. Number of drop outs were seen to be highest for Rod Binding & Fabrication (92), Masonry (76), Tiles and Marble Works (65), Plumbing (52), Electrical (50). Certificates were provided to those that maintained regular presence in the training. We can see a remarkable impact of the trainings provided on job attainment rate. 100% workers who received trainings on Project Proposal Preparation, Supply Chain Management, Quality Control successfully got a job. Other high job attainment rate is 82.85% for Masonry, 83.14% for Plumbing, 82.84% for Tiles and Marble Works,

Table 15: Construction-sector courses with various sorts of facilities

SL.	Course Name	Enrollment			Assessment			Certification	Certification (JP Window End)	Job		Placement
		Target	Total	Female	Total	Absent	Dropout			Total	Percentage (%)	Percentage OP Window End) (%)
1	Masonry	2,553	2,553	433	2,466	11	76	2,466	2,466	2,043	82.85	82.85
2	Plumbing	2,237	2,237	29	2,177	8	52	2,177	2,177	1,810	83.14	83.14
3	Painting	120	120	-	113	2	5	113	113	88	77.88	77.88
4	Electrical	2,700	2,700	317	2,637	13	50	2,637	2,637	2,051	77.78	77.78
5	Rod Binding & Fabrication	3,474	3,474	254	3,363	19	92	3,363	3,363	2,319	68.96	68.96
6	Tiles & Marble Works	1,588	1,588	20	1,515	8	65	1,515	1,515	1,255	82.84	82.84
7	Aluminum Fabrication	195	195	-	188	-	7	188	188	150	79.79	79.79
8	Project Proposal Preparation	73	73	3	73		-	73	73	73	100.00	100.00
9	Supply Chain Management	110	110	12	108		2	108	108	108	100.00	100.00
10	Quality Control	60	60	7	60	-		60	60	60	100.00	100.00
11	CAD (2D 3D)	-	-	-	-				-			-
Total		13,110	13,110	1,075	12,700	61	349	12,700	12,700	9,957	78.40	78.40

List of Training Projects Undertaken by SEIP

BACI-SEIP Project (3-month long)

Course Name	Educational Requirement	Timing	Duration
Electrical installation and maintenance	At least passed class 5	Morning 08:00-Afternoon 01:00 Noon 01:30-Afternoon 06:30	November 2021-January 2022
Plumbing			
Painting			
Aluminum Fabrication			

BEIOA-SEIP Project (3-month long)

Course Name	Educational Requirement	Timing	Duration
Refrigeration and Air-conditioning	Passed class 8	Noon- 01:00-Afternoon 05:00	September-December 2021
Machine Shop Practice	Passed class 8	Noon 01:00-Afternoon 05:00	September-December 2021

PKSF-SEIP Project

Course Name	Educational Requirement	Term	Timing	Duration
Refrigeration and Air-conditioning	At least passed class 5	3 months	Morning 08:00-Afternoon 01:00	October-December 2021, January-March 2022
Lathe machine operation				
Welding				

CHAPTER V: FEATURES OF THE ENTERPRISES, STRUCTURE AND REVENUE-COST SCENARIO

The basic characteristics and structure of the construction enterprises/firms are reasonably uniform in Bangladesh. Construction enterprises handle together with a significant number of diverse small and large projects with varying collaborations. The large firms' performance is significantly impacted by their small supply chain partners' performance. Similarly, the small construction firm's activity also plays an instrumental role in the performance of large construction firms' supply chains.

The successful management of these firms, however, is often plagued by their inherent characteristics; in particular, staff capacity and capability, scarce time and resources for innovation; excessive influence of owner-managers, and difficulty in raising finances and maintaining adequate cash flows. This section provides a brief analysis of the surveyed construction firms in Bangladesh.

5.1. Basic Features of the Surveyed Firms

Table 16 provides the basic characteristics of the surveyed firms. It is found that the average gap between the start of business establishment, production, and project in the construction sector is minimum. Four kinds of business ownerships have been recorded in our primary data dominated by joint ownership (67%). Moreover, different types of legal ownerships have been identified which constitute single, joint, private limited company, etc. The majority of the representatives from construction firms have stated that they have more than one establishment (97.2%), while a few belongs to a partner of an organization (17%).

Table 16: Basic Characteristics of the Surveyed Firms

Characteristics	Percentage
Average Gap between Business Establishment and Start of Production	0.70
Average Gap between Business Establishment and Start of Project	0.88
Average Gap between the start of Production and the Start of Project	0.18
Type of Business Ownership	
Government Ownership	0.9
Local Private Ownership	32.1
Joint Ownership	67.0
Foreign Ownership	0
Type of Legal Ownership	

Single Ownership	19.8
Joint Ownership	29.3
Private Limited Company	50.9
Public Limited Company	0.0
Government Ownership	0.0
Is a Part of an Organization (yes=1)	17.0
Has More than One Establishments (yes=1)	97.2

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

5.2. Ongoing Projects and Projections for Future Projects

Table 17 provides brief information about the surveyed firms' completed projects. During 2019 to 2021, firms have completed almost 5-6 projects on average. The average number of 6-8 storied buildings completed is similar in the years 2020 and 2021. However, the average number of high-rise buildings (higher than 8 storied) completed is less in the year 2021 compared to previous years. Firms have utilized their highest capacity in terms of area (Square feet) in 2019 (1,41,194 square feet). Similar findings are reported for total square feet built in 2019.

Table 17: Project Related Information of the Enterprises (in last 3 years)

Project Information	2019	2020	2021
Average Number of Projects	6	6	5
Average Number of 6-8 Storied Buildings	3	4	4
Average Number of Higher than 8 Storied Buildings	5	5	4
Highest Capacity of Building Total Square Feet	141194	152737	148140
Total Square Feet Built	333698	318277	327807

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

The construction firms have provided their opinion on future project-related information for the next 5 years starting from 2022 onward. Table 18 depicts a positive picture of the future growth of the construction sector of Bangladesh as reported by the surveyed firms. The firms' projection on an average number of projects to be completed in the future is showing an upward trend from

2022 together with the total square feet to be constructed. At the same time, firms have reported a large number of medium and high-rise buildings to be completed in the upcoming 5 years.

Table 18: Future Project Related Information of the Enterprises (next 5 years)

Project Information	2022	2023	2024	2025	2026
Average Number of Projects	7	8	8	11	12
Total Square Feet	189953	193585	246144	322922	504872
Average Number of 6-8 Storied Buildings	4	4	6	7	11
Average Number of Higher than 8 Storied Buildings	7	7	7	9	11

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

5.3. Occupational Distribution

Table 19 provides gender-disaggregated information about various occupations that prevails in the construction sector. In the senior management, engineering, and administrative position male holds almost above 93 percent of the positions dominating the females' position of only around 0.2 percent to 7 percent. However, at the lower rank levels, the scenario is even more biased with 100% of positions being held by male counterparts (Figure 12). The number of workers engaged is higher in rod binders, masonry, tiling, and painters' level.

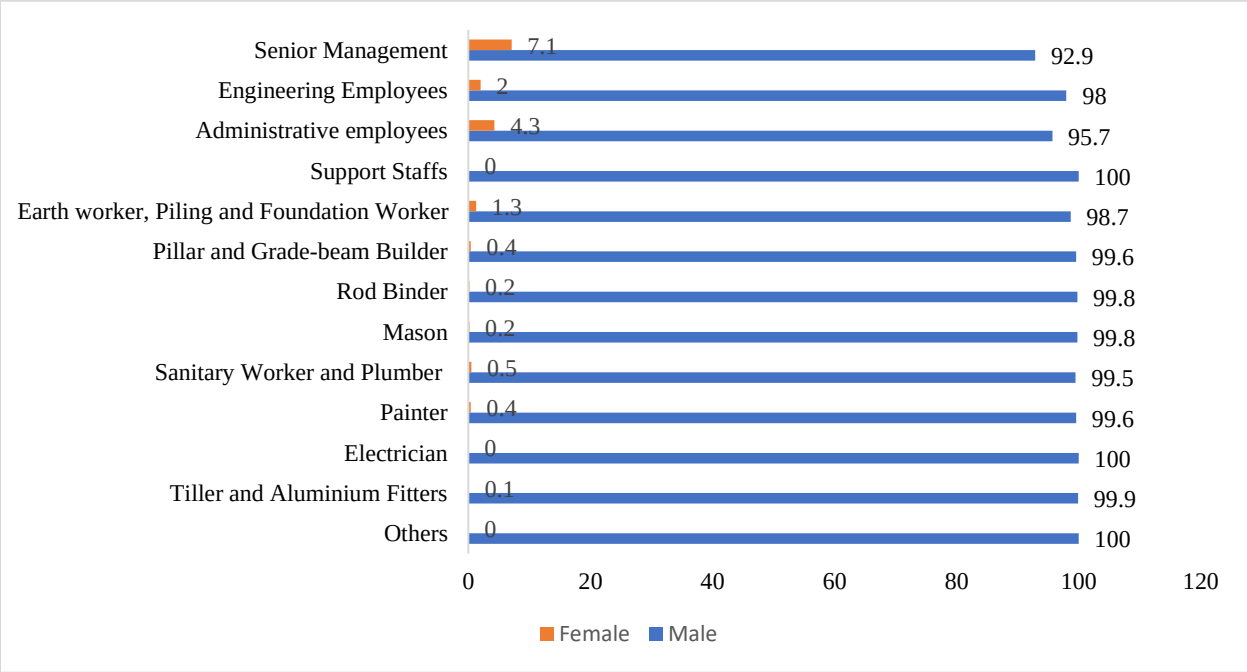
Table 19: Occupation and Gender Distribution in the Construction Sector

Occupation	Share in total employees			Share of Permanent employees	Share of temporary employees	Share of full-time employees	Share of part-time employees	Average age (Years)		Average working hours	
	Male	Female	Total					Male	Female	Full time	Part - time
Senior Management	92.9	7.1	0.7	62.3	37.7	83.5	16.5	49	43	7.06	0.18
Engineering Employees	98.0	2.0	1.8	77.7	22.3	92.3	7.7	36	32	8.24	0.88
Administrative Employees	95.7	4.3	0.8	96.8	3.2	92.7	7.3	39	34	7.83	0.36
Support Staffs	100	0.0	1.0	100.0	0.0	100.0	0.0	33	-	8.00	-
Earth Worker, Piling and Foundation Worker	98.7	1.3	10.1	2.9	97.1	75.2	24.8	37	39	7.62	8.98
Pillar and Grade-beam Builder	99.6	0.4	19.4	2.0	98.0	86.3	13.7	35	35	7.42	8.98
Rod Binder	99.8	0.2	15.0	2.0	98.0	86.3	13.7	35	35	7.42	8.98
Mason	99.8	0.2	11.5	7.3	92.7	80.8	19.2	36	40	7.79	8.96
Sanitary Worker and Plumber	99.5	0.5	7.9	2.4	97.6	82.7	17.3	36	32	7.31	8.81

Painter	99.6	0.4	10.5	1.1	98.9	89.2	10.8	35	28	7.90	8.23
Electrician	100	0.0	7.5	3.7	96.3	87.7	12.3	34	-	7.21	8.76
Tiller and Aluminum Fitter	99.9	0.1	10.1	1.7	98.3	85.9	14.1	33	31	7.38	8.91
Others	100	0.0	3.7	6.2	93.8	71.3	28.7	32	-	7.27	9.24

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

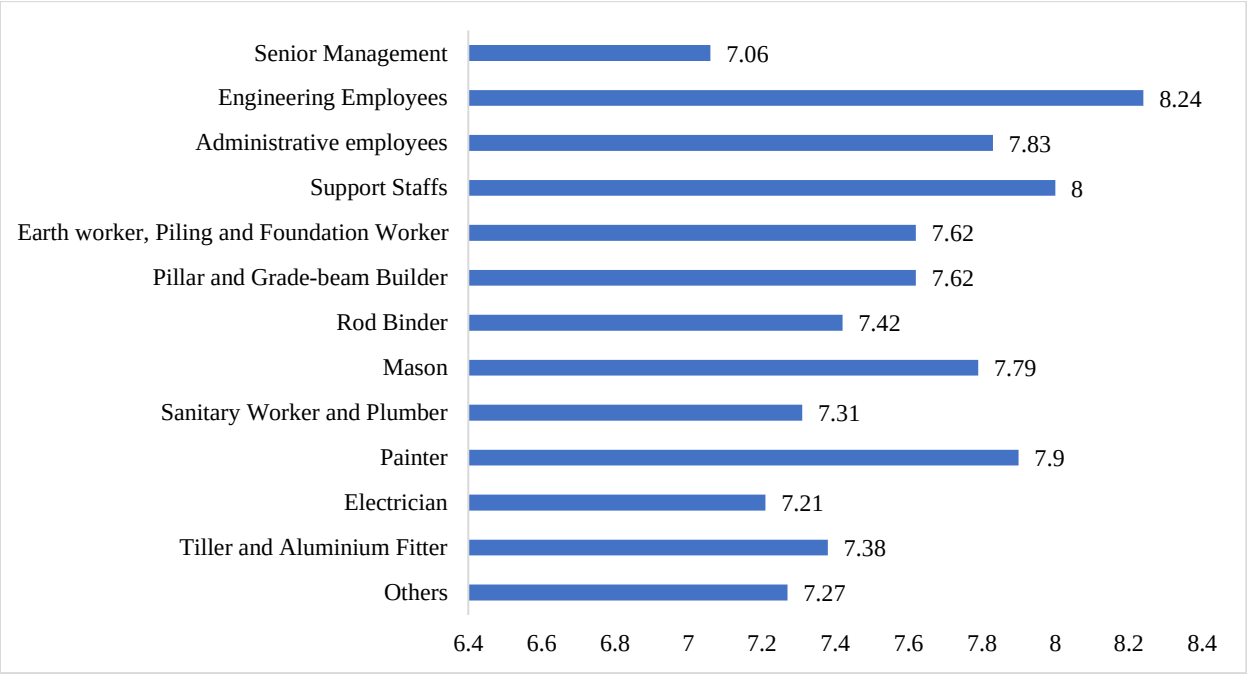
Figure 12: Gender Ratio in Various Occupations



Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

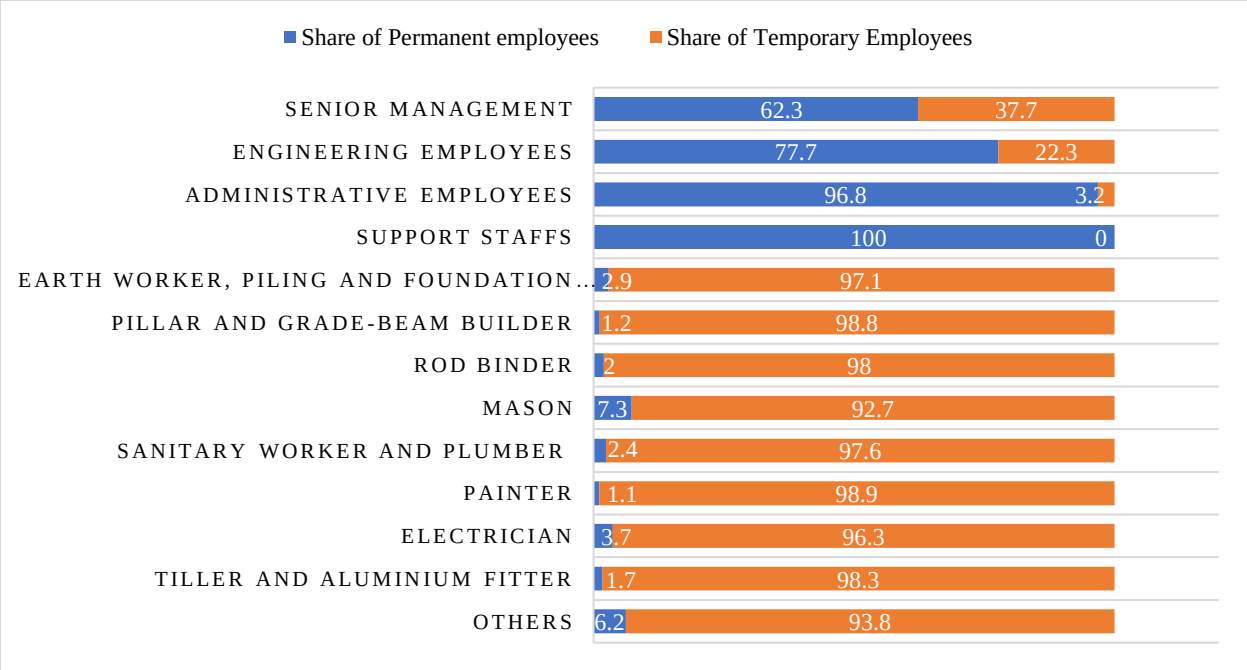
The share of permanent employees is higher in the top-tier of management and lower at the workers' level except for masons. The share of full-time employees is higher for masonry levels. The average age of senior male employees is higher than that of female employers by 6 years. We can also see that the average working hour also differs between top-tier and working-level employees (Figure 13 and Figure 14).

Figure 13: Average Working Hours of Full-time Employees



Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

Figure 14: Share of Full-time and Part-time Employees



Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

Table 20 shows the level of gender preference in the construction sector. At the senior management level, 93.5% preference has been given to male workers, which is also true for other positions like engineering and administrative. For the other occupations, there is almost 100% biased towards employing male workers and no preference exists for employing female workers.

Table 20: Percentage of Gender Preference for the Construction Employees

Occupation	Male Preference	Female Preference	No preference
Senior Management	93.5	3.6	2.9
Engineering Employees	89.8	1.2	9.0
Administrative Employees	88.5	1.8	9.7
Support Staffs	100.0	0.0	0.0
Earth Worker, Piling and Foundation Worker	95.9	1.0	3.1
Pillar and Grade-beam Builder	98.0	1.0	1.0
Rod Binder	99.0	0.0	1.0
Mason	99.0	0.0	1.1
Sanitary Worker and Plumber	97.9	2.1	0.0
Painter	95.8	3.2	1.1
Electrician	96.9	1.0	2.0
Tiller and Aluminum Fitter	97.9	1.0	1.0
Others	98.9	0.0	1.1

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

5.4. Salary and Other Benefits

Table 21 shows the salary and other cash benefits of the employees in the construction industry. It can be seen that the average salary and other benefits of the male senior management, engineering employees, administrative employees, support staffs are much higher than that of the female employees holding the same job title. Further, as we know that the number of labourers is much higher than the managerial, administrative staff, the average annual salary payment is of the labourers is seen to be higher.

Table 21: Salary and Other Cash Benefits Paid to the Employees in Construction Industries

Salary and Other Cash Benefits Paid to the Employees in Construction Industries				
Occupation	**Average annual salary/wage/honorarium paid**		**Other benefits paid (Cash benefit/non-cash benefit/social security/ pension)**	
	(In taka)		**(In taka)**	
	Male	**Female**	**Male**	**Female**
Senior Management	1772279	137059	286598	82983
Engineering Employees	820202	41077	117178	14727
Administrative Employees	687639	26296	75353	5111
Support Staffs	3296364	-	320364	-
Earth Worker, Piling and Foundation Worker	3641482	83571	8750	-
Pillar and Grade-beam Builder	6831190	-	8125	-
Rod Binder	3975328	-	3333	-
Mason	4031256	-	13333	-
Sanitary Worker and Plumber	2153756	-	10000	-
Painter	2019279	-	667	-
Electrician	2175753	-	13125	-
Tiller and Aluminum Fitter	3771389	-	667	-
Others	2412669	-	9500	-

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

Table 22 depicts the types of leaves for employees in the construction industries. We can see from the primary data that all of the companies grant maternity/paternity leave with salary. In addition, 99.1 percent of businesses provide sick leave, 95.2 percent of firms provide sick leave with salary, and just 2.9 percent of firms provide sick leave without salary. Similarly, 99.1 percent of firms offer weekly leave, with 93.3 percent of those offering weekly leave with salary. The percentage of firms that provide casual/earned leaves with salary is also high, at 96 percent.

Table 22: Type of Leaves for Employees in the Construction Industries

Type of Leaves for Employees in the Construction Industries	
Type of Leaves	**Percentage of Enterprises Giving Leaves**
Weekly Leave	99.1
Weekly leaves with salary	93.3
Weekly leaves without salary	1.9
Weekly leaves with and without salary	4.8
Casual or Earned Leaves	94.3
Casual/Earned leaves with salary	96.0
Casual/Earned leaves without salary	2.0
Casual/Earned leaves with and without salary	2.0
Sick Leave	99.1
Sick leave with salary	95.2
Sick leave without salary	2.9
Sick leave with and without salary	1.9
Maternity/Paternity Leave	55.8
Maternity/Paternity Leave with salary	96.6
Maternity/Paternity Leave without salary	-

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

Table 23 illustrates the percentage of employees/workers who are eligible for various benefits. Bonuses are given to over half of the senior management, engineering, and administrative staff. Similarly, around 21 to 45 percent of these employees have access to loan services. Conversely, these individuals receive minimal benefits such as a pension, life insurance, health insurance, and other miscellaneous benefits. That is, less than 25 percent of senior management, engineering, and administrative staff receive these benefits on average. If we look at the labourers, such as rod binders, tilers, painters, and so on, we can see that 20 to 43 percent of them get bonuses. Almost half of them are eligible for loans facilities. In addition, 20 to 35 percent of them are provided with other benefits.

Table 23: Percentage of Employees Getting Different Benefits

Percentage of Employees Getting Different Benefits						
Occupation	**Types of Benefits**					
	Bonus	**Pension**	**Life Insurance**	**Health Insurance**	**Loan Facilities**	**Other Benefits**
Senior Management	93.7	4.1	2.2	23.8	44.6	7.4
Engineering Employees	90.6	6.3	2.6	8.4	23.0	7.3
Administrative Employees	91.6	5.2	0.5	12.0	21.5	10.5
Support Staffs	50.0	-	10.0	10.0	80.0	-

Percentage of Employees Getting Different Benefits						
Occupation	**Types of Benefits**					
	Bonus	**Pension**	**Life Insurance**	**Health Insurance**	**Loan Facilities**	**Other Benefits**
Earth Worker, Piling and Foundation Worker	42.9	-	14.3	-	28.6	28.6
Pillar and Grade-beam Builder	40.0	-	-	-	60.0	20.0
Rod Binder	25.0	-	-	-	50.0	25.0
Mason	16.7	-	-	16.7	33.3	33.3
Sanitary Worker and Plumber	33.3	16.7	-	-	50.0	16.7
Painter	20.0	20.0	-	-	40.0	20.0
Electrician	28.6	14.3		14.3	42.9	14.3
Tiller and Aluminum Fitter	16.7	-	16.7	-	50.0	16.7
Others	33.3	-	-	33.3	50.0	-

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

5.5. Training and Skill Development

It has also been found that the employees in construction sector recently are getting less training compared to past, for an example, for the last 5 to 6 years. From table 24, it has become evident that the average percentage of trained employees was higher in the year 2015 (68%), whereas it has been seen decreasing in the following years gradually. Therefore, trained employees in the construction sector are in short supply in the construction sector.

Table 24: Percentage of Employees with Training in the Enterprises

Percentage of Employees with Training in the Enterprises	
Year	**Average Percentage of Training among Employees**
2015	68.0
2016	65.9
2017	63.4
2018	57.4
2019	52.5

2020	48.7
2021	46.5

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

5.6. Company Production Capacity and Cost

From table 25, we can see that the average number of 6-8 storied and higher than 8 storied buildings has decreased from the year 2019 to 2020. The highest capacity for erecting 6-8 storied buildings was 2,38,564 square feet on average in 2019, which dropped to 1,54,101 square feet in the year 2020. On the other hand, for higher than 8 storied buildings this capacity has also decreased from 2,89,704 square feet to 1,54,101 square feet.

However, there was a slight increase in the average square feet sold of 6-8 storied buildings over the course of one year and there was a fall of 1,278,550 square feet sold for more than 8 storied buildings. Average income from sales of 6-8 storied buildings increased by 4,45,95,139. On the other hand, there was a decrease of 31.82% in average income from higher than 8 storied buildings.

Table 25: Average of Actual Production and Production Capacity

Average of Actual Production and Production Capacity				
	2019		2020	
	6-8 Storied Buildings	Higher than 8 Storied Building	6-8 Storied Buildings	Higher than 8 Storied Building
Average Number of Buildings	4	3	2	382717
Highest Capacity of Building Total Square Feet (Average)	2,38,564	2,89,704	2,14,518	1,54,101
Actual Square Feet Built (Average)	3,03,220	1,44,961	90,898	1,34,128
Average Square Feet Sold	68,13,480	70,60,122	16,61,267	3,82,717
Average Income from Sales (in taka)	21,51,52,778	14,11,95,217	17,60,01,420	12,00,00,000

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

Table 26 shows the average running expenditure of the construction industries. The average cost of raw materials has increased by 2.41% from the year 2019 to 2020. The utility expenditure shows different scenarios: while gas bills and storage bills have increased by 52,88,793 and 25,714; electricity bills and water bills have gone down by 3,11,206 and 6,28,284. The cost of transportation has decreased by 19.94% in this one year. Construction industries had to pay 15,30,000 more interest in 2020 than in 2019. Surprisingly, the rent of machinery and buildings has decreased during this period

Table 26: Average Running Expenditure of the Construction Industries (in taka)

Average Running Expenditure of the Construction Industries (in taka)		
Variable Costs	2019	2020
Average Cost of Raw Materials	201201108	206045520
Average Interest Payment	13876667	15406667
Gas	1047448	5185655
Electricity	5584219	2473013
Water	1910716	1282432
Rent of Machineries	2667427	1862417
Rent of Building	2838095	1708571
Transport	1252584	1002798
Storage	682857	708571
Spare Parts	2348333	1760952
Others	6314554	4620429

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

Table 27 depicts the present capital expenditure scenario of the construction sector. The cost of machinery used for production is BDT 14,283,720. The present value of land owned is BDT 1,33,423,077 while the land development cost is BDT 22,073,159. Fixed cost of transportation vehicles is BDT 18,396,875. The cost of other capital assets is 1,427,320.

Table 27: Average Capital Expenditure of the Construction Industries (in taka)

Average Capital Expenditure of the Construction Industries (in taka)	
Fixed Costs	Present value
Average Cost of Machines	14283720
Building and Other Capital Expenditure	600000
Land (Owned)	133423077
Land Development Cost	22073159

Average Capital Expenditure of the Construction Industries (in taka)	
Building (Owned)	65244808
Cost of Machinery and Equipment (Used for Production)	10263953
Cost of Transportation Vehicles	18396875
Cost of Computer, Printers, and Other Equipment	956979
Cost of Other Capital Assets i.e., fan, light, chair, tables, etc.)	1427320

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021

5.7. Contract and Recruitment Procedures

Table 28 provides an image of the employment contracts that are provided to the employees of this sector. It is very clear from the table that senior management, engineers, administrative and supporting staff receive written contracts, but labourers (rod binders, tillers, painters, and so on) irrespective of the condition that whether they are employed on a permanent or temporary basis, hardly received any written contracts.

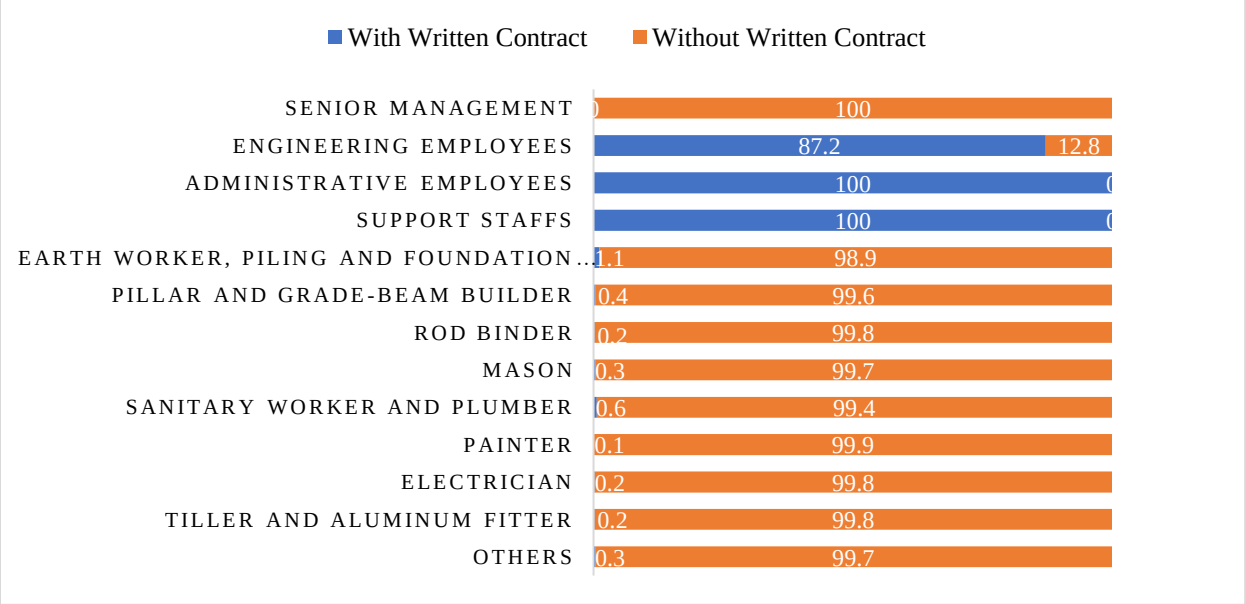
Table 28: Construction Sector Employees and Contracts

Construction Sector Employees and Contracts				
Occupation	**Share of permanent employees with a written contract**	**Share of permanent employees with non-written contract**	**Share of temporary employees with a written contract**	**Share of temporary employees with non-written contract**
Senior Management	99.2	0.8	0.0	100.0
Engineering Employees	99.6	0.4	87.2	12.8
Administrative Employees	99.7	0.3	100.0	-
Support Staffs	98.5	1.5	100.0	-
Earth Worker, Piling and Foundation Worker	-	-	1.1	98.9
Pillar and Grade-beam Builder	-	-	0.4	99.6
Rod Binder	-	-	0.2	99.8
Mason	61.5	38.5	0.3	99.7
Sanitary Worker and Plumber	-	-	0.6	99.4

Construction Sector Employees and Contracts				
Occupation	**Share of permanent employees with a written contract**	**Share of permanent employees with non-written contract**	**Share of temporary employees with a written contract**	**Share of temporary employees with non-written contract**
Painter	-	-	0.1	99.9
Electrician	-	-	0.2	99.8
Tiller and Aluminum Fitter	-	-	0.2	99.8
Others	25.0	75.0	0.3	99.7

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

Figure 15: Temporary Employees and Contracts



Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

The extent of physical labour for senior management, engineering, administrative, and supporting staff is in the midpoint of the scale, whereas the extent of physical labour for manual labourers is substantially higher, towards the higher end of the range, as shown in Table 29. Furthermore, the percentage of senior management, engineers, and administrative staff that are recruited informally is 40, whereas almost 85 percent of labourers are hired informally. Similarly, it takes more time to fill managerial staff positions than it does to hire labourers. In addition, the cost of hiring managerial, administrative, and support staff is unquestionably higher.

Table 29: Recruitment in the Construction Industries

Recruitment in the Construction Industries				
Occupation	**The Extent of Physical Labour**	**% of Informal Recruitment**	**Time spent to fill the post (from advertisement to hiring) (in days)**	**Cost of Recruitment (taka)**
Senior Management	3.29	23.1	10	4714
Engineering Employees	5.35	41.6	31	6917
Administrative Employees	4.73	40.0	37	10597
Support Staffs	4.40	0.0	30	100000
Earth Worker, Piling and Foundation Worker	9.65	82.6	11	-
Pillar and Grade-beam Builder	9.64	82.6	11	-
Rod Binder	9.52	82.6	11	-
Mason	9.31	82.9	11	-
Sanitary Worker and Plumber	8.66	84.0	11	-
Painter	8.27	82.6	11	-
Electrician	8.17	85.1	11	167
Tiller and Aluminum Fitter	8.54	82.6	11	-
Others	8.05	84.1	11	-

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

To conclude, it can be said that in the senior management, engineering, and administrative position male positions dominate the female position. The average salary and benefits of the male senior management, engineering employees, administrative employees, support staffs are much higher than that of the female employees holding the same job position. The employees in the construction sector recently are getting less training compared to the past. Therefore, trained employees in the construction sector nowadays are in short supply.

CHAPTER VI: SKILLS IN THE CONSTRUCTION SECTOR: IDENTIFYING THE SKILL MISMATCH, SHORTAGE, GAP, TRAINING AND FUTURE PROJECTION OF REQUIRED SKILLS

In this section, we discuss the skill-related issues of the industry like the composition of skills in the industry, skill mismatch, skill shortage, skill gap, trainings of the employees and the future labour demand scenario of the industry. We also see the effects of automation in the industry and what automation means for the employees and employers. We differentiate between skilled and unskilled employees through employers' views on how efficiently they see their employees doing their jobs. In ranking the employees for their level of efficiency in doing their jobs, '1' stands for employees with no skills and '10' stands for employees with very high skilled qualities.

6.1. Skill Mismatch: Desired and Actual Qualifications and Skills of the Employees in the Construction Industries

The following sub-section discusses the skill composition of the construction employees from employers' perspectives. We try to find out about the existing workforce in the industry along with their skill composition. Moreover, we try to decipher what the employers want and find among the qualities of employees. Following through, we ask the enterprises what qualities i.e., level of education and years of experience they prefer for different employees to have and what qualities they actually get in them. The concept of skill mismatch comes from gap in the desired qualifications and actual qualifications of the employers' expectations for their employees. So, we collected data on the same and tried to find out about the prevalence of skill mismatch in the industry.

Enterprise survey data shows that there are differences in the employers' preference for educational qualifications in employees and their actual qualification level. For all the occupations except for administrative support staff, employers required or desired education level (in years) is greater than that of the employees' actual education level. For all the management, administrative, and engineering staff, employers prefer 17 years of education (Master's Degree), while their support staffs need to have passed at least higher secondary education (HSC). Earth workers, piling and foundation workers, pillar, grade-beam builders and rod binders, masons, sanitary workers and plumbers, painters, electricians, tillers and aluminum fitters and others in the construction industry need to have passed at least their class 9 education. This particular requirement may indicate that employers think having at least 9 years of formal education makes these employees more competent and qualified to do their jobs.

There is at least a year gap in the desired and actual education level of all the employees in senior management, engineering posts, administrative employees, and their support staff in the construction industries. For the other employees in the industry, the gap is even higher. Interestingly, the actual and desired experience level for the employees of the construction industry

shows a reverse scenario except for tiller and aluminum fitter and others category. In this particular case specifically, the actual experience level (in years) is significantly higher among all the employees than that of the employers' preference or requirement. This may mean that having more experience does not give the employees much room for improvement in their careers. According to the employers, it is also evident that the existing employees of this industry are skilled. The average skill levels of different employees are very high (More than and equal to 8 out of 10). Table 30 shows the desired and actual qualifications and skills of employees in the construction sector.

Table 30: Desired and Actual Qualifications and Skills of the Employees in the Construction Industries

Desired and Actual Qualifications and Skills of the Employees in the Construction Industries					
Occupation	**Desired/ Minimum Expected Level on an Average**		**Actual Level on an Average**		**Average Level of Skill***
	Education (Years)	**Experience (Years)**	**Education (Years)**	**Experience (Years)**	
Senior Management	17	14	16	16	9
Engineering Employees	17	9	16	10	8
Administrative Employees	17	9	16	10	8
Support Staffs	12	6	12	11	9
Earth Worker, Piling and Foundation Worker	9	12	6	12	9
Pillar and Grade-beam Builder	9	12	6	12	9
Rod Binder	9	11	6	11	9
Mason	9	12	6	12	9
Sanitary Worker and Plumber	9	11	7	11	9
Painter	9	10	6	10	8
Electrician	10	12	8	12	8
Tiller and Aluminum Fitter	9	11	7	10	8
Others	9	9	7	8	8

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.
Note: 1=Unskilled Labour, 10=Skilled Labour.

6.2 Skill Composition in the Construction Industries-Skill Shortage and Skill Gap

In the analysis of the skill gap, we also consider another skill-related phenomenon termed as 'skill shortage'. Where skill gap stands for the lack of efficiency among the employees to fulfill their job responsibilities accordingly; skill shortage stands for the lack of available human resources in the industry for doing jobs. There is a clear difference between the two terms. The skill gap concerns the quality of employees and skill shortage concerns the quantity element of the industry. The following sub-sections describe different issues related to skill shortage and skill gap. In the continuation of discussing the prevalence of these issues, we also accumulated data on the consequences of these phenomena and present some plausible outlook on how to combat problems arising from these issues.

6.2.1 Prevalence of Skill Shortage in the Construction Industry

As stated earlier, skill shortage refers to the quantitative deficiency of human resources. In this study, we thus relate it to the number of vacancies in the industry at different occupation levels. If there are vacancies in the industry, we conclude that it means the employers could not find people to fill up the existing posts. We also see why that happens as well as what are the consequences of this skill shortage and what are being done to combat the problems of skill shortage.

In Table 31, some issues related to skill shortage are presented. On average, we do not see many vacant positions in the senior management, administrative, engineering, and management support staff. Among the other employment categories, the highest number of average vacancies in the surveyed firms are among the manual workers of the sector. This number of vacancies varies from 4 to 8 posts. It is also evident from the survey data that it is not very difficult to fulfill the posts which means recruitment of these employees does not take much time. Support staffs working with the management, engineering, and administrative employees are the easiest to recruit immediately.

According to survey data, more than 80% of the manual employees (earth-workers, piling and foundation workers, pillar and grade-beam builders and rod binders, masons, sanitary workers and plumbers, painters, electricians, tillers and aluminum fitters and others) in the construction industry can find jobs or are recruited in less than a month with half of them reportedly being recruited in less than a week. This indicates an easy flow in employee recruitment in the sector. Recruitment of more than 86% of the senior management staff takes around a month. This percentage is more than 74% for the engineering and administrative employees. Support staff and labour employee-related posts do not ever take more than a month to be recruited. In sum, we can say that though there is a very little skills shortage in the industry, the recruitment flows are good meaning that the occupation-wise vacancies are easily filled with the existing labour force in the construction industry.

Table 31: Skill Shortage in the Construction Industry

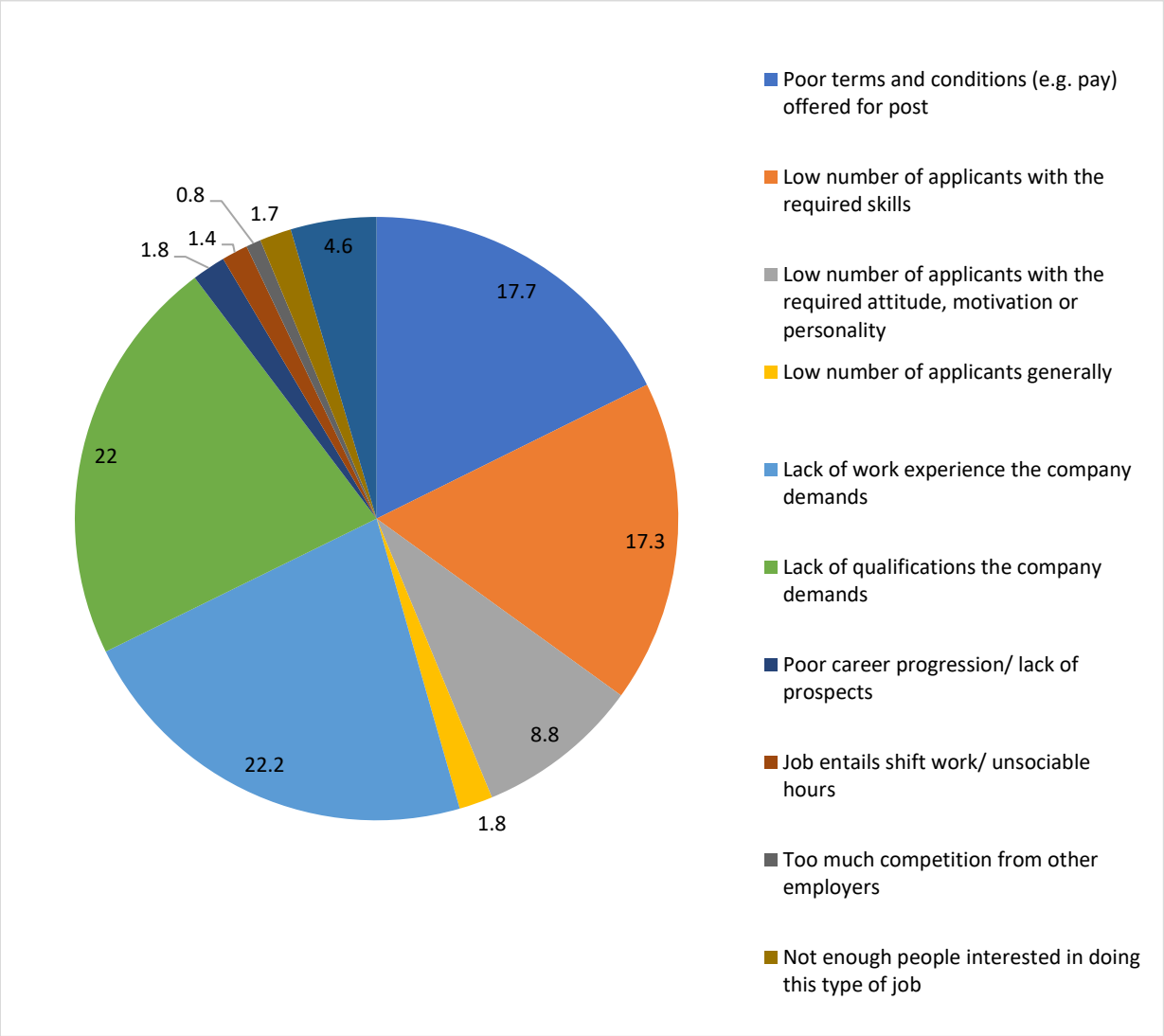
Skill Shortage in the Construction Industry						
Occupation	Average Number of Unfilled Vacancies at Present	The average level of difficulties in filling up the vacancies*	Time Required to Fill up a Vacant Post (%)			
			Immediate	Less than a week	More than a week but less than a month	More than a Month
Senior Management	1	1.91	13.10	14.80	59.00	13.10
Engineering Employees	1	4.60	9.30	3.50	62.80	24.40
Administrative Employees	1	3.40	4.80	8.30	77.40	9.50
Support Staffs	0	1.56	28.60	42.90	28.60	0.00
Earth Worker, Piling and Foundation Worker	8	3.12	16.70	43.30	40.00	0.00
Pillar and Grade-beam Builder	8	2.78	22.60	38.70	38.70	0.00
Rod Binder	6	2.38	25.80	35.50	38.70	0.00
Mason	5	2.72	26.70	33.30	40.00	0.00
Sanitary Worker and Plumber	4	3.54	31.60	34.20	34.20	0.00
Painter	5	2.78	28.10	31.30	37.50	3.10
Electrician	4	3.30	36.80	29.00	34.20	0.00
Tillers and Aluminum Fitter	5	3.09	25.00	34.40	40.60	0.00
Others	4	2.57	27.60	34.50	37.90	0.00

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.
Note: *1=not difficult at all 10=very difficult

When asked about the reasons behind the few skills shortages reported during the interview, employers listed a varied sort of reasons working behind that; including poor pay and other facilities offered to the employees, low number of skilled people, low number of people with a proper attitude, motivation and personality, lack of work experience required for the post, lack of qualified people for different occupations, etc. Among all these 22.20% (the highest percentage) reported that they do not get people with the same experience level as they require and 22.00% reported that the lack of qualification among the applicants for the job dissuades them from recruiting them. Interestingly, lack of experience on part of the employees has been listed as one of these reasons. Because previously the employers reported that their desired experience from their employees does not surpass the experience level of the existing employees. This may mean

that experience does not always beget quality service and this, in turn, forces the employers to include this as a cause of hard-to-fill vacancies (Figure 16).

Figure 16: Causes of Hardships to Fill Vacancies



Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

Due to the existing skill shortage, many problems may arise for the employers in the industry. Most popular among these impacts is that the employers experience increased operating costs (25.00% of the employers reported) due to the existing skill shortage. This is followed by facing difficulties in introducing new working practices (17.00%), having difficulties in meeting customer service objectives (16.00%) and facing difficulties in starting any new type of work in the industry (14.10%). Other impacts of skill shortage in the construction industry include delay in developing new products or services, having to outsource the works, losing business or orders to competitors, increase in the workload of the present employees, etc. (Table 32).

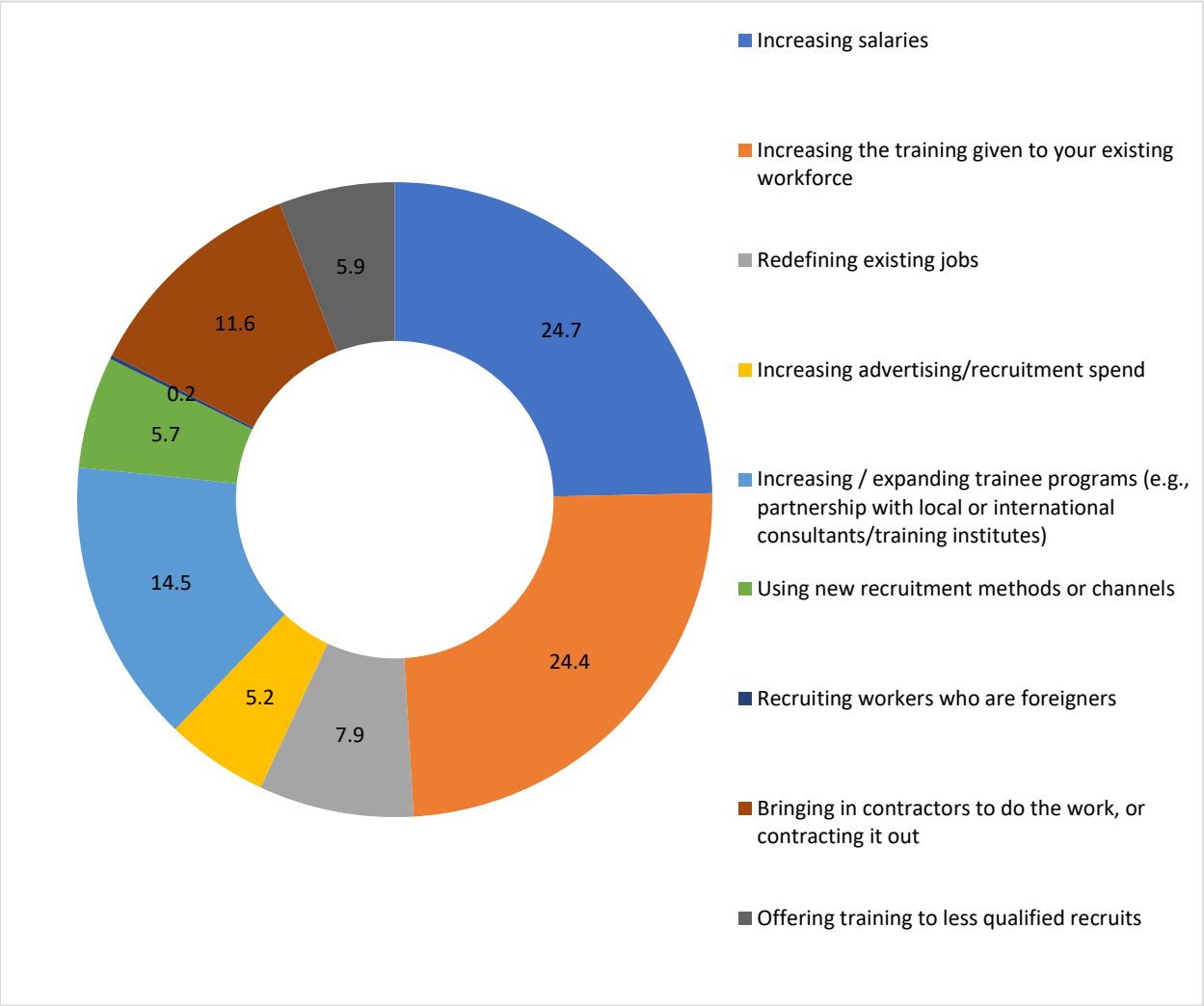
Table 32: Impact of Hard to Fill Vacancies/Skill Shortage

Impact of Hard to Fill Vacancies/Skill Shortage	
Impacts	**Share of Enterprises**
Lose business or orders to competitors (National/International)	4.00
Delay developing new products or services	7.90
Have difficulties meeting quality standard	2.60
Experience increased operating costs	25.00
Have difficulties in introducing new working practice	17.00
Increase workload for other staff	3.60
Outsource work	9.60
Withdraw from offering certain products or services altogether	0.30
Have difficulties meeting customer service objective	16.00
Have difficulties starting new type of work	14.10

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

To combat the impacts of skill shortage in the construction sector, employers were asked about some preventive measures that could be taken. From employers' responses to the issue, increasing the salary of the employees could be the best solution to fill up their vacant posts in a particular industry. About 24.70% of the employers suggested doing that in the primary survey. Increasing the training given to their existing workforce (24.40%), increasing/expanding trainee programs (e.g., partnership with local or international consultant's/training institutes) (14.50%), and bringing in contractors to hire employees/ hiring through agencies (11.60%) were among the top responses of the employers. Also redefining the job descriptions of the existing jobs (7.90%), offering training to less qualified recruits (5.90%), using new channels or methods for hiring (5.70%), and increasing the recruitment expenditure (5.20%), and could be useful in addressing the skill shortage related problems (Figure 17). It is important to notice that, though there are shortages in the skill of the domestic industry recruitment, employers choose not to think of hiring foreign people for the jobs who may have better skill sets or be more available.

Figure 17: Addressing Skill Shortage in the Construction Industries

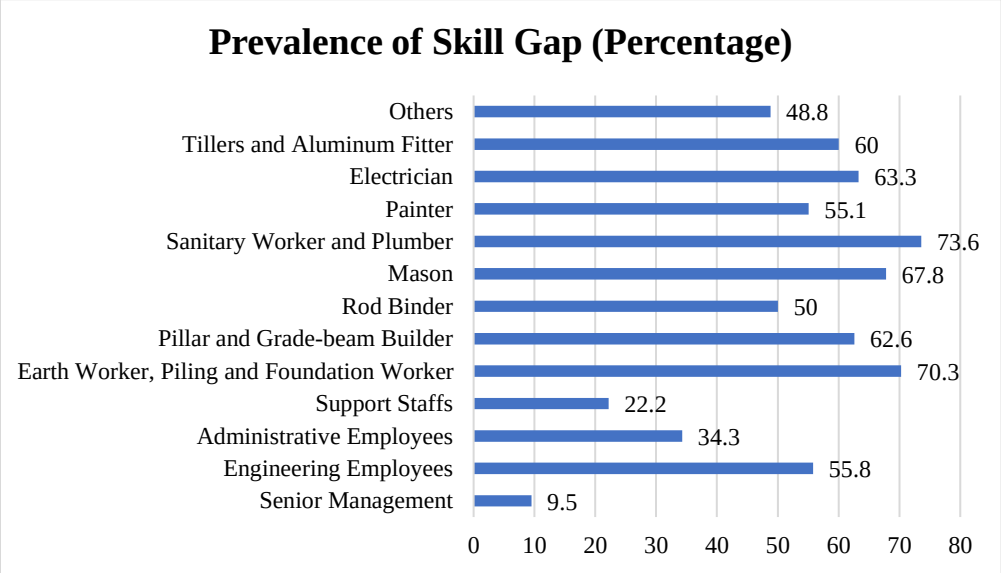


Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

6.2.2. Prevalence of Skill Gap in the Construction Sector

In the existing labour categories of the construction sector, other than the employees for senior management and support staff, all the other ones seem to have a skill gap (Figure 18). About 9.50% and 22.20% of the surveyed firms in the industry reported a prevalence of skill gaps in these occupations respectively.

Figure 18: Prevalence of Skill Gap (%)



Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

Table 33 shows that all the manual labour employees have been reported to be mostly unskilled (from 50% of the rod binders to 73.60% of the sanitary and plumbing workers). The skill gap seems to be the highest among the sanitary workers and plumbers (73.60%), earth workers, piling and foundation workers (70.30%) and mason (67.80%) categories. The skill gap is also quite visible among the engineers (55.80%) and administrative employees (34.30%) of the sector. There may be two broad reasons behind the existing skill gap - organization-specific or due to lack of training or qualification of the employees. These two types are separated to draw the line between privileges provided by the industry to the employees or hindrances created through them and lack of training or other qualification on part of the employees. For all the employees, lack of training or qualification problems outweighs the organization-specific ones. Though both organization-specific problems and lack of training or qualifications are almost equally responsible for the existing skill gap among management and administrative employees; for the engineers, support staff and all the manual labour employees, lack of training or qualification seems to be the key factor working behind the skill gap in their disposition.

Table 33: Prevalence of Skill Gap and Reasons behind the Gap

Prevalence of Skill Gap and Reasons behind the Gap (Percentage of respondents)			
Occupation	**Prevalence of Skill Gap**	**Reasons for Skill Gap**	
		Organization specific	**Lack of training/qualifications received by employees**
Senior Management	9.50	50.00	50.00
Engineering Employees	55.80	32.90	67.20
Administrative Employees	34.30	42.60	57.50
Support Staffs	22.20	0.00	100.00
Earth Worker, Piling and Foundation Worker	70.30	24.40	75.60
Pillar and Grade-beam Builder	62.60	22.90	77.10
Rod Binder	50.00	25.40	74.60
Mason	67.80	24.40	75.60
Sanitary Worker and Plumber	73.60	25.30	74.70
Painter	55.10	24.20	75.80
Electrician	63.30	23.30	76.70
Tiller and Aluminum Fitter	60.00	24.30	75.70
Others	48.80	27.30	72.70

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

To address the skill gap problem in the construction industry, employers are willing to increase training activities or are willing to spend more or even expand more trainee programs (29.10%), arrange for more staff appraisals or performance reviews (19.50%), arrange for more supervisions for the employees (14.50%) and reallocate job responsibilities (13.70%). Implementation of mentoring or buddying scheme (11.70%) and changing the norms of present working practice (7.90%) are also likely solutions to combat skill gap problems for the employers. Hiring staff from abroad and increasing recruiting costs do not seem to be good choices on part of the employers to address the skill gap issue of the industry (Table 34).

Table 34: Addressing Skill Gap in the Construction Industries

Addressing Skill Gap in the Construction Industries	
Actions to be Taken	**Share of Enterprises**
Increase training activity/spend or increase/expand trainee programs	29.10
Reallocating work	13.70
Increase recruitment activity / spend	0.60
More staff appraisals/performance reviews	19.50
Implementation of mentoring/buddying scheme	11.70
More supervision of staffs	14.50
Recruiting workers who are foreigners	0.10
Changing working practice	7.90
Others	3.10

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

Skill development is a process to learn things so that one can do things properly and efficiently. Training and experience can contribute much to the process of a person's skill development. In this section, we collect data on the employer's perspective on to what extent do they think that training and employees' experience can help them develop their skills. According to the employers of the construction industry, training the employees can help them develop their skills to some extent. Training can partially improve the skills of the employees for all of the senior management, administrative, engineering employees, and support staffs and can almost fully improve the skills of the manual labour employees like earth-workers, piling and foundation workers, pillar and grade-beam builders and rod binders, masons, sanitary workers and plumbers, painters, electricians, tillers and aluminum fitters and others in the industry (Table 35). Only for the support staff working in this industry training may not be of any help.

In case of experience being able to help the employees develop skills, all of the management, engineering, and administrative employees can develop skills fully through experience. That means over the years, these employees of the industry become more efficient in their respective jobs. Also, it may also mean that experience teaches them more in this field of work than anything else. Experience can also help develop the skills of almost all of the manual construction employees. In fact, for all these employees, experience garners the most skill. This reflects that with time spent on the jobs, the manual employees can develop their skills very well, where getting trained can help them almost fully to develop their skill component.

Table 35: Minimizing Skill Gap through Providing Training to the Employees and with Experience

Minimizing Skill Gap through Providing Training to the Employees and with Experience						
Occupation	**Reducing Skill Gap Through Training**			**Reducing Skill Gap Through Experience**		
	Fully	**Partially**	**Not at all**	**Fully**	**Partially**	**Not at all**
Senior Management	26.70	70.00	3.30	16.70	83.30	0.00
Engineering Employees	55.60	42.60	1.90	19.20	80.90	0.00
Administrative Employees	44.60	54.10	1.40	19.70	80.30	0.00
Support Staffs	50.00	50.00	0.00	50.00	50.00	0.00
Earth Worker, Piling and Foundation Worker	62.10	33.30	4.60	12.10	74.10	13.80
Pillar and Grade-beam Builder	64.40	32.20	3.40	12.30	71.90	15.80
Rod Binder	58.30	35.40	6.30	13.00	71.70	15.20
Mason	61.90	34.90	3.20	10.50	71.90	17.50
Sanitary Worker and Plumber	59.40	37.70	2.90	11.70	75.00	13.30
Painter	65.40	32.70	1.90	12.00	70.00	18.00
Electrician	65.00	33.30	1.70	16.10	71.40	12.50
Tiller and Aluminum Fitter	66.10	32.10	1.80	13.20	69.80	17.00
Others	63.60	34.10	2.30	11.90	69.10	19.10

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

6.3. Previous and Future Training of the Employees

Skill composition and skill development depend respectively on the accumulation of training and future training of the employees. About 69.80% of the surveyed enterprises financed training for their employees at different occupation levels. 94.30% of the enterprises know about TVET training and 95.00% of them would give priority to trainees trained through TVET organized training (Table 36). This indicates that the employers also give greater importance to trained personnel and prefer to recruit them.

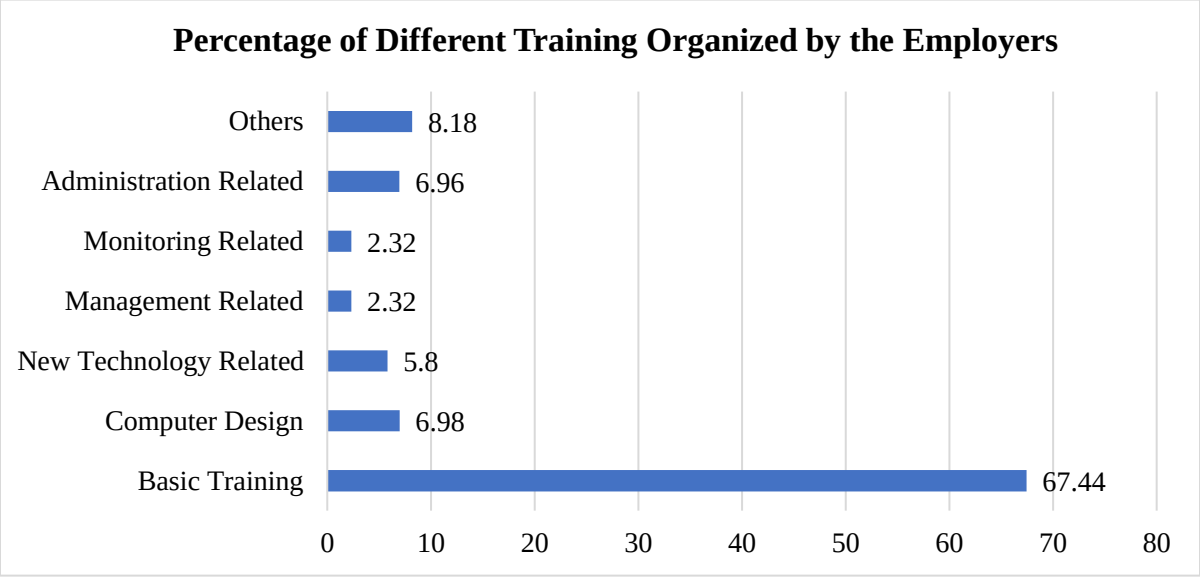
Table 36: Training by the Enterprises and TVET Knowledge

Training by the Enterprises and TVET Knowledge	
Component	**Percentage of Enterprises**
Enterprises That Organized or Financed Training for their Employees	69.80
Enterprises that Know about TVET Training	94.30
Enterprises that Give Priority to TVET Trainees while Recruiting	95.00

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

The enterprises included in this study reported to have had arranged for basic (on-the-job) training, management training, monitoring-related training, administrative training, training on new technology, training on computer design, etc. for their employees (Figure 19). Among them, 67.44% of training is related to basic job responsibilities or on-the-job training. Though initial training includes all types of employees in the construction industry, all the other training mentioned by the employers are related to management, administration, and engineering in the enterprises. The cost of the training is also pretty high for the enterprises. But many times, enterprises seem willing to pay for this training. This may be due to the fact that the rate of returns of trained employees is much higher than the expenditure on them. If it was not true, then the employers would have taken the painstaking job of training their respective employees.

Figure 19: Percentage of Different Training Organized by the Employers



Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

The training organized or financed by the employees is mostly short-term training. Evidence from the data shows that almost for all of the considered manual labour employee categories (earth-workers, piling and foundation workers, pillar and grade-beam builders, and rod binders, masons, sanitary workers and plumbers, painters, electricians, tillers and aluminum fitters and others),

duration of training organized or financed by their employers is less than a week (short-term). Only for some small percentage of the senior management employees, engineering employees, and support staff, the training programs run for more than 3-4 weeks and only a very few exceed this duration for engineering and administrative staffs (Table 37). It may be due to the fact that organizing training for a small amount of time would not severely affect their regular productivity and output. Also, these training programs encompass only basic or primary job-related issues which can be learned in this short period of time.

Table 37: Occupation wise Training Organized by Enterprises

Occupation	Average Duration of Training					
	<1 week	1-2 weeks	3-4 weeks	1-3 months	4-6 months	> 6 months
Senior Management	38.50	30.80	15.40	15.40	0.00	0.00
Engineering Employees	52.90	29.90	6.90	3.50	1.20	5.80
Administrative Employees	82.70	9.30	1.30	1.30	4.00	1.30
Support Staff	50.00	25.00	0.00	0.00	25.00	0.00
Earth Worker, Piling and Foundation Worker	93.80	6.30	0.00	0.00	0.00	0.00
Pillar and Grade-beam Builder	93.80	6.30	0.00	0.00	0.00	0.00
Rod Binder	100.00	0.00	0.00	0.00	0.00	0.00
Mason	100.00	0.00	0.00	0.00	0.00	0.00
Sanitary Worker and Plumber	93.30	6.70	0.00	0.00	0.00	0.00
Painter	100.00	0.00	0.00	0.00	0.00	0.00
Electrician	93.30	0.00	0.00	6.70	0.00	0.00
Tiller and Aluminum Fitter	100.00	0.00	0.00	0.00	0.00	0.00
Others	92.90	0.00	7.10	0.00	0.00	0.00

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

6.4. Training Needs of the Employees

Most of the employers emphasized some very basic training that would be needed for the employees in near future. According to their perception, this training would be able to help the employees to be more efficient and skilled. This training may also help them feel secure and comfortable in their working environment which would also increase their productivity and competency. These training are inclusively suggested for all the employees of the construction sector. From their point of view, though some of the trainings already are common in the construction industries, their appeal would not decrease in the future. The suggested training that may be needed for the employees, in the long run, are basic or on-the-job training, safety, security,

and health hazard-related training, new technology-related training, software-related training, skill development-related advanced training for different occupations, etc. The employers in this survey also expressed their willingness to pay for this training which is summarized in Table 38. For most to all of the employees in the management, engineering, administrative, and support staff level, employers are willing to fund the full or partial amount of the training. Employers are reluctant to pay for the skill development of manual labour employees. This may be because these employees in the construction sector are floating employees and are mostly contractually involved with the respective firms. This makes the employees not interested in training them, as there is no guarantee that they would remain affiliated with any particular enterprise.

Table 38: Employers' Willingness to Pay for Training

Employers' Willingness to Pay for Training			
Occupation	**Percentage of Enterprises that is Willing to Fund**		
	Full Amount	**Partial Amount**	**No Amount**
Senior Management	61.50	38.50	0.00
Engineering Employees	14.20	66.10	19.70
Administrative Employees	7.50	90.00	2.50
Support Staff	0.00	100.00	0.00
Earth Worker, Piling and Foundation Worker	2.90	16.20	80.90
Pillar and Grade-beam Builder	3.30	16.70	80.00
Rod Binder	3.80	17.00	79.30
Mason	3.30	14.80	82.00
Sanitary Worker and Plumber	4.80	14.50	80.70
Painter	2.50	22.50	75.00
Electrician	3.60	17.90	78.60
Tiller and Aluminum Fitter	7.00	18.60	74.40
Others	3.20	22.60	74.20

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

REHAB, SEIP to train Workers[2]

Feeling the importance of training need of employees, the Real Estate and Housing Association of Bangladesh (REHAB) signed an agreement with the Ministry of Finance's Skills for Employment Investment Program (SEIP) to generate 10,000 skilled workers for the construction sector.

REHAB President Alamgir Shamsul Alamin and Executive Project Director of SEIP Md. Zahidul Haque signed the agreement on behalf of their respective sides.

[2] Source: https://tvetbangladesh.com/?p=3500

Training will be given in Electrical Installation and Maintenance, Plumbing, Masonry and Steel Binding and Fabrication. It is worth mentioning that training is free of charge where each trainee will receive scholarships.

The duration of the training will be three months. At the end of the training, students will have employment opportunities in the country and abroad.

Earlier, training of about 10,000 construction workers has been completed through REHAB training institutes and 15 outsourcing institutes. Of them, 90 percent is working abroad for various developer companies.

6.5. Automation and Construction Industry

With the changing technological scenario in the world, almost regularly many changes are brought about in the manufacturing industry. Bangladesh is a country with a labour-intensive manufacturing industry, changing or improving technology may present a different direction for the industry's output and growth. On one hand, adapting newer technologies can bring about improved and better-quality output and on the other hand, it may mean the loss of jobs for the existing workforce. However, according to the employers' perspective of the construction industry, automation will not heavily affect the workers and the industry much. We rank the relationship between automation and employees' dependency and automation and employees' job replacement 'possibility from 1 to 10 where 1 represents no relationship and 10 represents full dependency between the two (Table 39). According to the employers, there is not much relationship between automation and the employees' work (the average not being more than 6 for all employees). Also, the possibility of automation not replacing their jobs is pretty low (the average not being more than 5). That means in the near future Bangladesh may still be more reliant on manual labours and their output than on introducing newer technologies and reaping benefits from that. It is also seen that if the employees' productivity could increase after bringing about technological changes and training them on those, almost all the employers are willing to train them in the same. This makes sense as chances of getting greater productivity would always encourage the employers to do certain things for increasing employees' skills.

Table 39: Automation and Construction Industry

Automation and Construction Industry			
Occupation	Relation between Automation and Employee Dependency (Average)*	Possibility of Automation Replacing the Employees (Average)*	Share of Enterprises Willing to Train Employees for Automation
Senior Management	2.93	3.46	41.70
Engineering Employees	4.33	3.67	60.20
Administrative Employees	5.80	5.31	77.90
Support Staff	5.07	4.00	69.20
Earth Worker, Piling and Foundation Worker	4.56	4.18	47.70
Pillar and Grade-beam Builder	5.13	4.64	66.70
Rod Binder	4.94	4.60	76.00
Mason	3.75	3.49	68.30
Sanitary Worker and Plumber	4.04	3.76	71.70
Painter	5.45	4.95	61.70
Electrician	3.55	3.12	74.00
Tiller and Aluminum Fitter	5.52	5.14	71.70
Others	3.33	3.25	86.10

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

Note: *1=not at all, 10=fully

6.6. Future Labour Demand Growth in the Construction Sector

Projection on labour and their changing demands were an integral part of the study. We collected the opinions of the employers on what they think would happen to the labour demand growth of the industry. Almost all the labour categories other than tiling and aluminum fitting would show moderate growth in the near future (Table 40). Next, high growth would prevail for the labour categories. There would be no such thing as very high or negative growth for the employees. Moderate and high growth scenarios are to be more common for all the employees of the construction industry. For the newly introduced or relatively new in-demand posts, the same situation prevails. These labour occupation categories would mostly show moderate to high growth

(see Appendix Table 1). It is important to note that the labour growth scenario in this industry is going towards bringing about positive changes meaning that labour demand is likely to increase in the upcoming days.

Table 40: Labour Demand Growth in the Future (for Existing Posts)

Labour Demand Growth in the Future (for Existing Posts)					
Occupation	No growth (as usual)	Moderate Growth	High growth	Very high growth	Negative growth
Senior Management	56.50	36.60	4.20	0.00	2.80
Engineering Employees	1.70	77.00	18.50	1.70	1.10
Administrative Employees	9.40	70.70	19.40	0.00	0.50
Support Staff	0.00	76.90	23.10	0.00	0.00
Earth Worker, Piling and Foundation Worker	4.90	74.50	11.80	0.00	8.80
Pillar and Grade-beam Builder	4.90	74.50	10.80	1.00	8.80
Rod Binder	9.70	75.70	14.60	0.00	0.00
Mason	4.90	80.60	13.60	1.00	0.00
Sanitary Worker and Plumber	5.80	79.60	14.60	0.00	0.00
Painter	5.80	74.00	14.40	0.00	5.80
Electrician	3.90	75.00	21.20	0.00	0.00
Tiller and Aluminum Fitter	5.90	72.60	15.70	0.00	5.90
Others	4.10	83.70	12.20	0.00	0.00

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

Though the overall employment growth of the industry leans towards the possibility of moderate to high growth, when asked about quantifying these growth amounts, employers reported that the changes would come gradually. Thus, while the average number projected for different employee categories seem to increase in general, this is coming at an increasing rate. The projected employee numbers are the lowest for 2023, in 2025 and 2030 the numbers are increasing.it is evident from the projected data that, labour demand would change more for the manual labour employees than the management, administrative, engineers, and their supporting staff (Table 41). For the labour categories that are going to be in demand in the future, there are seen increasing employment too (Appendix Table 2).

Table 41: Future Labour Demand by Occupation in the Construction Industry

Future Labour Demand by Occupation in the Construction Industry (for Existing Posts)					
Occupation	Average Number of Employees at Present	Projected Average Employment for 2023	Projected Average Employment for 2025	Projected Average Employment for 2030	Average Annual growth (%) (2022-30)
Senior Management	2	2	2	3	6.25
Engineering Employees	5	7	9	13	20.00
Administrative Employees	3	4	5	8	20.83
Support Staff	22	25	29	37	8.52
Earth Worker, Piling and Foundation Worker	66	76	83	100	6.44
Pillar and Grade-beam Builder	113	130	143	165	5.75
Rod Binder	87	99	108	128	5.89
Mason	65	113	97	127	11.92
Sanitary Worker and Plumber	46	54	64	83	10.05
Painter	63	69	75	91	5.56
Electrician	44	51	59	72	7.95
Tiller and Aluminum Fitter	61	70	78	89	5.74
Others	24	30	37	51	14.06

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

Previously, we enlisted some occupation names that are likely to be more popular or in demand in the near future. In Appendix (Table 3), we also reported the education and experience level desired for the respective posts. Among these reported occupations, other than occupations including crane operators, customer care people, and electro-mechanical engineers, most are difficult to be hired from the Bangladeshi labour market meaning that they could be available to be hired from the global market.

CHAPTER VII: SKILLS, TRAINING, WORK EXPERIENCE AND SATISFACTION: PERCEPTION OF THE EMPLOYEES

In this chapter, some findings from the employees' survey are presented. Employees in the construction sector, in general, do not seem to move much to any other sector. Doing manual jobs in most cases is related to this sector. The construction employees at different levels were included in this survey investigation and here we present findings on some key features of the relatively important employees, e.g., site/ project engineers, rod binders, masons, sanitary workers and plumbers, tillers and aluminum fitters and electricians. This chapter mainly includes discussions on their skills, training, work experiences, and satisfaction with the job they do.

7.1. Employees' Perception of Skill

The main focus of this study is the skill analysis of the employees. Previously we discussed employers' views on the existing skill scenario in the construction industry. This section is dedicated to employees' views on their skill level. For getting a clear picture, various components were taken into account. Those included learning about the perception of employees of each category about their skill level, level of problems faced due to current education, experience, and skills, level of help formal education has provided to the workers to be more skilled at their work, level of help any off-the job-training has provided workers to become more skilled at their work, level of help any on-the-job-training has provided workers to become more skilled at their work, and increase in the skill level of the workers by working at their respective firms.

Table 42 contains all the data on these issues. It is seen that employees of the construction industry have a good perception of their skills. Employees of all these important occupation categories rank their skills at an above-average level. In fact, for tiller and Aluminum Fitter, site/project engineers, mason and sanitary and plumbers their perception of their skills is very good, e.g., they see themselves as pretty highly skilled ones. Seeing that the employee's perception of their skills is very good, they do not think that their current level of education, experience, and skill level causes many problems in fulfilling their job descriptions. Other than site/project engineers, all employees perceive that their formal education does not help them much in becoming more skilled. Employees' view on on-the-job training and off-the-job training increasing their skills is more or less the same. Also, other than sanitary and plumbing workers and electricians, employees from the construction industry think that on-the-job training is more useful in increasing their skill level than off-the-job training.

Firms' respective contribution to the employee's skill development is thought to be quite satisfying for the employees of the sector. All the employee categories in the survey data find that working in the respective enterprises has significantly increased their skills. Skill-related other information is included in the appendix.

Table 42: Skill Related Information

Sl. No.	Question	Responses (% of Respondents)
1.	**The average level of skills of the workers (1=Unskilled, 10=Highly Skilled)**	
	Mason	7.26
	Site/ Project Engineer	7.60
	Tiller and Aluminum Fitter	7.83
	Sanitary Worker and Plumber	7.25
	Electrician	6.65
	Rod Binder	8.19
2.	**The average level of problems faced due to current education, experience, and skills (1=Not at all, 10=Very much)**	
	Mason	3.41
	Site/Project Engineer	1.77
	Tiller and Aluminum Fitter	2.77
	Sanitary Worker and Plumber	3.80
	Electrician	4.17
	Rod Binder	2.88
3.	**The average level of help formal education has provided to the workers to be more skilled at their work (1=Not at all, 10=Very much)**	
	Mason	5.55
	Site/ Project Engineer	7.07
	Tiller and Aluminum Fitter	5.54
	Sanitary Worker and Plumber	5.27
	Electrician	5.84
	Rod Binder	4.41

Sl. No.	Question	Responses (% of Respondents)
4.	**The average level of help any off-the job-training has provided workers to become more skilled at their work (1=Not at all, 10=Very much)**	
	Mason	6.29
	Site/ Project Engineer	6.07
	Tiller and Aluminum Fitter	6.30
	Sanitary Worker and Plumber	6.21
	Electrician	6.61
	Rod Binder	5.28
5.	**The average level of help any on-the-job-training has provided workers to become more skilled at their work (1=Not at all, 10=Very much)**	
	Mason	6.50
	Site/ Project Engineer	7.36
	Tiller and Aluminum Fitter	6.94
	Sanitary Worker and Plumber	6.20
	Electrician	5.67
	Rod Binder	7.03
6.	**The average increase in the skill level of the workers by working at their respective firms (1=Not at all, 10=Very much)**	
	Mason	7.53
	Site/ Project Engineer	7.87
	Tiller and Aluminum Fitter	8.02
	Sanitary Worker and Plumber	7.40
	Electrician	6.70
	Rod Binder	7.93

Source: BIDS Survey, 2021

7.2. Employees' Perception of Training

Identifying the training needs of the employees is another major objective of this study. For doing that employees' training experience and their perceptions of other training-related things have been investigated. Sometimes training from the past also influences employees' training choices for their future. And so, it has been included in this section. Data in table 43 shows that among the surveyed employees in different categories, 26.50% of the masonry employees, 86.70% of the site/project engineers, 63.00% of the tillers and aluminum fitters, 55.00% of the sanitary and plumbing workers, 70.00% of the electricians and 61.90% of the rod binders have had previous training. It is seen that in most cases employees' previous training is associated with their present designation or field of work.

Among the respondents, Masonry training (50% of respondents), Plaster related training (50% of respondents), Primary training (50% of respondents), Health-related training (50% of respondents), Layout training (25% of respondents), and Plumbing training (25% of respondents) are popular among the mason category employees. Auto-cad (100%), Computer (100%), Photoshop (100%), and Hardware (100%) training was attended by the site/project engineers. Likewise, Tile cutting (33.33%), Helper (33.33%), Tiller (33.33%), and Foreman (33.33%) were popular with tillers and aluminum fitters; Plumbing (28.57%), Pipe fittings (28.57%), Uses of new machinery (14.28%), sanitary related training (57.14%), and main line bulb related training (14.28%) were popular with sanitary workers and plumbers; Circuit Box (11.11%), DB Box (11.11%), Electrical (88.88%) were popular among the electricians and though 10% of the rod binders have been previously trained, none of reported of the name or type of any training.

Almost all the employees think that they need training for career progression, for increasing their current level of efficiency, and for adapting to technological changes in the industry. This emphasizes the need for training for the employees. Despite this training need perception of the employees, very few employers seem to provide their employees with various training opportunities. In most of the cases, the construction workers working in the project sites are hired through informal outsourcing agents/sub-contractors. They usually work on a temporary and seasonal basis and moves between different enterprises depending on demand for their work. So, providing on the job or workplace training would be beneficial for the workers as it will contribute to enhancing their skills level, and their demand will also be increased. However, as they are not hired by the firm on a regular or permanent basis, incentive for the enterprises to invest on workers for on-the-job training is much less though it will be highly beneficial for the sector as a whole. So, the authority may work closely with the associations and encourage the enterprises to introduce and invest on the job training for the workers.

According to the employees, different training is useful for different categories. For instance, findings from our survey data show that mason employees perceive Training in masonry, Painting related training, Machine operating training, Safety training, Thai glass-related training, Plaster related training, and Rod training to be useful for them. Similarly from other employee perspectives, Out-sourcing training, New technology-related training, Health-related training, Computer training, E-TAB design training, Auto CAD (2D, 3D) training, and Estimate training are important for site/project engineers; Mobile robot for automatic installation of floor tiles, Flooring installers, Mason Training, Construction painters training, Management, New technology-related training, Supervisor training, Primary training, Health safety issues training, Primary health care training, Foreman training, and Tiles cutting and fitting are important for tiller and aluminum fitter category; CPVC pipe fittings, Diploma, Modern piling machine training, Power civil training, New machinery training, and Supervising training for sanitary worker and plumber category; Diploma electric operator, Substation, Refrigerator, A.C, Training on new equipment, Machine handling, Cutting plug training for electrician and Rod binding training, Shuttering carpenter training, and Rod cutting training are important for rod binder category.

Table 43: Training Related Information

Sl. No.	Question	Responses (% of Respondents)
1.	**Workers who have previous training**	
	Mason	26.50
	Site/ Project Engineer	86.70
	Tiller and Aluminum Fitter	63.00
	Sanitary Worker and Plumber	55.00
	Electrician	70.00
	Rod Binder	61.90
2.	**Types of Previous Training Received (with %)**	
	Mason: Masonry training (50%), Plaster related training (50%), Primary training (50%), Health-related training (50%), Layout training (25%), Plumbing training (25%)	
	Site/ Project Engineer: Auto-cad (100%), Computer (100%), Photoshop (100%), Hardware (100%)	
	Tiller and Aluminum Fitter: Tile cutting (33.33%), Helper (33.33%), Tiller (33.33%), Foreman (33.33%),	

Sl. No.	Question	Responses (% of Respondents)
	Sanitary Worker and Plumber: Plumbing (28.57%), Pipe fittings (28.57%), Uses of new machinery (14.28%), sanitary related training (57.14%), main line bulb related training (14.28%)	
	Electrician: Circuit Box (11.11%), DB Box (11.11%), Electrical (88.88%)	
	Rod Binder: None Mentioned	
3.	**Workers who need training for the progression of career**	
	Mason	73.5
	Site/ Project Engineer	96.7
	Tiller and Aluminum Fitter	91.1
	Sanitary Worker and Plumber	85.0
	Electrician	85.0
	Rod Binder	88.1
4.	**Workers who need the training to increase the current level of efficiency**	
	Mason	64.7
	Site/ Project Engineer	96.7
	Tiller and Aluminum Fitter	89.1
	Sanitary Worker and Plumber	80.0
	Electrician	90.0
	Rod Binder	78.6
5.	**Workers who need the training to adapt to technological changes**	
	Mason	76.5
	Site/ Project Engineer	96.7
	Tiller and Aluminum Fitter	97.8

Sl. No.	Question	Responses (% of Respondents)
	Sanitary Worker and Plumber	85.0
	Electrician	90.0
	Rod Binder	97.6
6.	**Workers whose employers provide them with training**	
	Mason	15.2
	Site/ Project Engineer	13.3
	Tiller and Aluminum Fitter	17.4
	Sanitary Worker and Plumber	10.0
	Electrician	15.0
	Rod Binder	33.3
7.	**Future Training Needed**	
Mason: Training on masonry, Painting related training, Machine operating training, Safety training, Thai glass-related training, Plaster related training, Rod training		
Site/ Project Engineer: Out-sourcing training, New technology-related training, Health-related training, Computer training, E-TAB design training, Auto Cad (2D, 3D) training, Estimate training		
Tiller and Aluminum Fitter: Mobile robot for automatic installation of floor tiles, Flooring installers, Mason Training, Construction painters training, Management, New technology-related training, Supervisor training, Primary training, Health safety issues training, Primary health care training, Foreman training, Tiles cutting and fitting		
Sanitary Worker and Plumber: CPVC pipe fittings, Diploma, Modern piling machine training, Power civil training, New machinery training, Supervising training		
Electrician: Diploma electric operator, Substation, Refrigerator, A.C, Training on new equipment, Machine handling, Cutting a plug		
Rod Binder: Rod binding training, Shuttering carpenter training, Rod cutting training		

Source: BIDS Survey, 2021

7.3. Employees' Perception of Work Experience

In this section, employees' perceptions of their work-related issues are summarized. A good and comfortable working place can play a vital role in increasing efficiency and job satisfaction. As a satisfied employee is more conductive in fulfilling his duties and thus can add much to the industrial output, we try to see if there is any room for improvement on part of the employers by asking them about several work-related issues. Findings are presented in table 44. Among all the surveyed employees, 60.90% (highest among the categories) of the tillers and aluminum fitters and 50.00% (second highest) of the rod binders think that they are paid sufficiently. From the masonry perception, they are not at all paid enough. While 25.00% of both the sanitary workers and plumbers and electricians and 33.30% of the site/project engineers think that their pay is sufficient. Again, when asked about their prospect of jobs, tillers and aluminum fitters seem to be more satisfied with their job prospects than the other category employees. Only some of the other categories are satisfied with their job prospects (45.20% of the rod binders, 33.30% of site/project engineers, 25.00% of the electricians, 21.20% of the mason, and 20.00% of the sanitary workers and plumbers,).

The understanding between the supervisors and employees for different categories seems to be quite good. It seems that most of the respondents from different categories are happy about their understanding of their respective supervisors. Though site/project engineers, tillers and aluminum fitters, and sanitary workers and plumbers are quite satisfied with the safety in their workplaces, less of the masons, electricians and rod binders feel the same way about their workplace safety. As they deal with dangerous equipment (electricians and rod binders) and situations (mason), this should be a matter of concern for the employers. Again, other than the tiller and aluminum fitters, electricians and rod binders, employees think that they are not offered a competitive salary package. For tiller and aluminum fitters, electricians and rod binders this means that there is not much payment dissimilarity for them in the industry i.e., all of them are paid a similar amount.

Percentage of respondents on employees' perception on employers' concern about their (the employees') career progression, clarification in their respective job description, relationship with coworkers, and reward of their hard work is also included in the table. It is interesting to see that construction employees all over have a very good relationship with their coworkers indicating a good camaraderie among them.

Table 44: Work Experience Related Information

Perception of Work Experience	Responses (% of Respondents)					
	Mason	Site/ Project Engineer	Tiller and Aluminum Fitter	Sanitary Worker and Plumber	Electrician	Rod Binder
Workers who think they are being paid enough for their work	15.20	33.30	60.90	25.00	25.00	50.00
Workers who are satisfied with the prospect/promotion/salary increment of the	21.20	33.30	60.90	20.00	25.00	45.20
Workers who think their supervisor understands their work	84.90	100.00	97.80	80.00	75.00	100.00
Workers who are satisfied with the work safety/work environment of their job	54.60	73.30	82.60	80.00	65.00	69.10
Workers who think the benefits that they get are similar to other organizations (competitive salary package)	33.30	43.30	76.10	45.00	50.00	65.90
Workers whose employers care about their career progression	42.40	63.30	63.00	55.00	35.00	71.40
Workers whose works are well-instructed to them (work rules/job description)	81.80	100.00	95.70	70.00	60.00	100.00

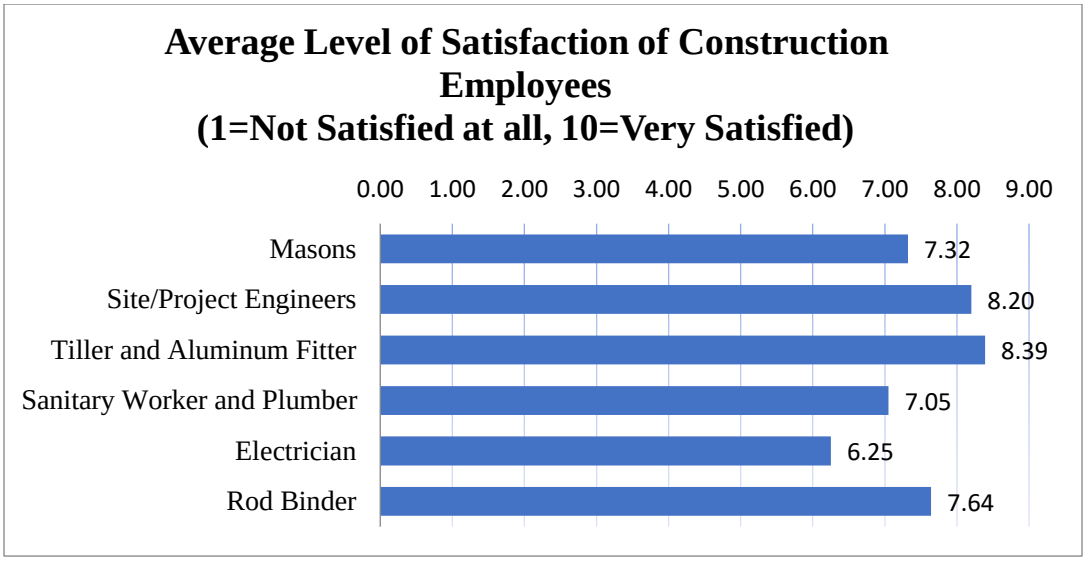
Perception of Work Experience	Responses (% of Respondents)					
Workers who have a good relationship with their coworkers	90.90	100.00	95.60	90.00	80.00	97.60
Workers whose employers reward them for their hard work	72.70	86.70	76.10	75.00	75.00	64.30

Source: BIDS Survey, 2021

7.4. Employees' Perception of Satisfaction

Overall, the employees of the construction sector are quite happy with their life. Though this is quite an abstract idea, the employees were asked about their level of satisfaction in life where they had to mark the level of their satisfaction (with 1 being not satisfied at all to 10 being very satisfied). Survey findings are presented in figure 20. It is seen that tiller and aluminum fitters are the most satisfied (8.39%) in their lives followed by site/project engineers (8.20%), rod binders (7.64%), masons (7.32%), sanitary worker and plumbers (7.05%) and electrician (6.25%). There is more information on the perceptions of the employees in the appendix tables.

Figure 20: Average Level of Satisfaction of Construction Employees



Source: BIDS Survey, 2021.

CHAPTER VIII: PERFORMANCE OF THE CONSTRUCTION SECTOR DURING COVID-19

The construction industry of Bangladesh is still very labour-intensive. According to Labour Force Survey 2017, 87 percent of the labour force in Bangladesh is employed in the informal sector. Most of the construction industry depends on temporary or informal labour force as indicated by the industry representatives. Currently, about 35 lakh workers are working in the housing sector.

The Construction Cost Index (Building) from the BBS showed a steady increase in general construction activity, building materials, transportation, and labour up until 2019. This was confirmed by the industry representatives as well. The average wages of workers on different levels of the supply chain of the construction industry also had an upward trend until 2019.

8.1. Negative Impact on Construction Sector

The COVID-19 pandemic has done a lot of damage to society. It has affected the society as well as the economy of every country. The disease is spreading so fast that the government has been forced to lockdown. As a result of the lockdown, all transportation systems have been shut down, supply chains have been disrupted and workers are not able to come to the construction site even from home. That's why work in the construction fields has stopped and the construction workers have also faced extreme uncertainty (Table 45).

Due to consecutive lockdowns, various construction materials required are not reaching the construction site from outside, which was hampering the construction work. The various materials that come from different factories in the country or abroad through different vehicles for construction work, those things cannot come.

It has not only shut down the construction sector, but it has also adversely affected the livelihoods of those who bring these things to the sites and the factories that make all these materials were also losing a lot of money because these were not being sold.

Workers are unable to reach their workplaces because the transportation system is completely closed. The disease is caused by a viral infection. So, workers are more likely to spread the disease when they come in contact with each other. Therefore, many workers are not willing to come to work. Moreover, it is not possible to make the workers work without any protection. After the withdrawal of the lockdown, construction workers were facing health hazards as most of the construction workers do not have any knowledge about health and safety measures. They do not want to wear the mask and maintain social distance. There are some practical issues as well in this respect. Construction workers need to put manual effort into their workplace, and hence, they need sufficient oxygen while they work, which they cannot have sufficiently if they wear masks. Also, they cannot maintain social distancing as most of them need to work closely with each other on the construction sites. In consequence, considering the safety of the workers, construction industries are facing difficulties in maintaining Covid related health protocols.

The companies were hardly making any kind of profit due to work stoppage in the companies and on the contrary more losses were being incurred during Covid time. Not only the company was losing profit but also all the suppliers who were providing the required materials to different companies to be used in the construction sector, were also incurring losses.

The companies have a contract with the contractors to work within a specific time base. However, lockdown causes a lot of financial loss when contractors stop working. Even after lockdown, it takes much time to recover from this pandemic situation.

Most of the companies are suffering huge economic losses during Covid time. That is why companies are not able to pay their employees properly, and as a result of which they are laying off a lot of workers. Due to this, many people's jobs have been snatched away. Their families are also going through a lot of hardships as a result of losing their jobs. All in all, a worrying situation has arisen during this pandemic.

Table 45: Risk factors hindering the growth of the construction sector

Factors	Percentage in terms of Respondents	Percentage in terms of Responses
Financial crisis	96.77	8.26
Panic among the workers due to the pandemic	93.55	7.99
Postponed ongoing work	93.55	7.99
Lockdown	90.32	7.71
Health hazards	83.87	7.16
Capital crisis	80.65	6.89
Employee termination	77.42	6.61
Labour crisis	74.19	6.34
Administerial difficulties	67.74	5.79
The increasing price of raw materials	67.74	5.79
Failure to meet the deadlines of the project	61.29	5.23
A number of sites were closed	61.29	5.23
Failure to pay the employees	58.06	4.96
Reduction in demand for flats	51.61	4.41
Shortage of raw building materials	35.48	3.03
Complexity in getting a bank loan	29.03	2.48
Supply chain disruption	29.03	2.48
Decreased construction investment	19.35	1.65

Source: Authors' calculation based on Primary data collected under BIDS Construction Industry Survey, 2021.

The linkage industries of the construction sector have also suffered the ripple effects of the pandemic. Cement and Steel producers in Bangladesh had undertaken large-scale expansionary measures over the past few years targeting the government megaprojects, meeting the rising consumer demand of the country, and exporting to neighboring countries. But this decision may

have backfired. The sales of individual Cement manufacturers had dropped ranging from 50 percent to 80 percent and small manufacturers are likely to be driven out of business and large ones might have to scale down due to the economic effects of the pandemic (LBAML, 2020). Another linkage industry of the construction sector is Steel. Bangladesh has a BDT 450 billion industry which has been enjoying decent growth over the past few years driven by increasing local consumption and increasing government demand for megaprojects. The pandemic has affected this sub-sector too.

8.2. Incentives for Consistent Labour Supply During the Pandemic

Due to the slackening of government megaprojects as well as all residential and commercial construction projects the demand side was down. According to Rehab, around 50 to 60 percent of projects have stalled. In the Dhaka district, there were around 15 lakh construction workers of which only a small proportion have returned to work. The wages of the construction workers especially in Dhaka have also decreased due to the pandemic. According to workers, those who earned Tk. 800 a day are now getting around Tk. 600 to 650; while those who made Tk. 600 are being paid Tk. 500.

However, existing workers were providing financial incentives such as food and shelter in the construction sites, higher wages, etc. throughout the Covid time so that they can safely continue their work in the construction sites. At the same time, they have taken some initiatives to protect the workers which include both pre-and post-infection initiatives. As part of the pre-infection initiative, they provided masks, hand sanitizers, and even sometimes lemon juice and saline to boost their immunity to fight against COVID-19. As part of the post-infection initiative, especially when they suspect them to be infected, they allow them to stay in a separate place. After that, they provide them with essential medicines and assist them to get admitted into hospitals if needed.

Table 46: Strategies for consistent labour supply throughout COVID

Factors	Percentage in terms of Respondents	Percentage in terms of Responses
Providing food and shelter for the labourers	100	13.36
Reducing health hazards regarding the pandemic	96.77	12.93
Increasing incentive	96.77	12.93
Salary increases	93.55	12.50
Increasing health safety issues	93.55	12.50
Financial compensation	90.32	12.07
Establishing an emergency fund for the labourers	87.10	11.64
Ensuring vaccination	74.19	9.91
Incentives to family members	16.13	2.16

Source: Authors' calculation based on Primary data collected under BIDS Construction Industry Survey, 2021

8.3. Skill Labour Shortage Constrained the Current Construction Activities

The construction labour shortage has been a problem for over a decade, but the COVID-19 pandemic has put even more pressure on an already understaffed workforce. The skilled labour shortage is decreasing the quality and productivity of this sector. An inexperienced project manager can create costly delays and a notable decrease in quality. According to the respondents, in an already competitive marketplace, most contractors simply can't afford to put inexperienced workers in vacant positions. The primary data shows that in all construction trades (Table 3), and at the skilled employee levels, the construction companies are facing skill labour shortages during this pandemic time.

All of our respondents have agreed that there is a shortage of skilled workers in the construction sector. Many of them have also mentioned the lack of efficient rod binder, plumber, and mason to work in this particular industry. Some of the respondents have pointed out the shortage of electricians and labourers delivering skilled productivity as well. Few of them have hinted at the dearth of skilled painters, whereas some respondents have indicated the lack of skilled civil engineers in the construction sector also (Table 47).

Among the white-collar employees, most of our respondents mentioned the lack of accountants and engineers in the sector. In addition, some of our respondents have also highlighted the shortage of managers and senior managers. A few of them have responded with the lack of senior executives and IT specialists in this particular sector (Table 48).

Table 47: Shortage of skilled labour presently constrain the production targets (by trade)

Factors	Percentage in terms of Respondents	Percentage in terms of Responses
Concrete Workers	100.00	17.22
Rod Mistry	96.77	16.67
Plumber	93.55	16.11
Mason	90.32	15.56
Electrician	83.87	14.44
Labourer	80.65	13.89
Painter	25.81	4.44
Civil Engineer	9.68	1.67

Source: Authors' calculation based on Primary data collected under BIDS Construction Industry Survey, 2021.

Table 48: Shortage of white-collar employees (engineers, managers, accountants, IT experts) during COVID

Factors	Percentage in terms of Respondents	Percentage in terms of Responses
Accountant	96.77	21.43
Engineer	93.55	20.71
Manager	77.42	17.14
Senior Manager	67.74	15.00
Senior Executive	61.29	13.57
IT Specialist	54.84	12.14

Source: Authors' calculation based on Primary data collected under BIDS Construction Industry Survey, 2021.

8.4. Strategies to Increase Skill Labour Supply During the Pandemic

Uncertainty has been created all over the world due to Covid-19. Work in all construction sectors has come to a standstill and in almost all countries the economy is going downhill. In this situation, some remedial measures have to be taken to revive the construction sector against this pandemic. Some remedial measures are discussed below.

The companies should provide some financial assistance or some financial loan to the employees and workers during the pandemic time. Besides, every company has to arrange health safety protocols for employees and workers in advance for each of their sites. Companies also need to organize occasional general checkups for employees and workers working at the sites.

Our primary data has explored a number of strategies that can be implemented to simultaneously increase the productivity of the construction workers and the labour supply. We have taken the suggestions of the respondents and listed them in table 5. Most of the respondents have mentioned that increasing incentives and salary are two major factors to be considered with paramount importance. Similarly, increasing health safety issues and ensuring allowance is essential to increase the supply of labour. Some of our respondents have further mentioned that providing emergency medical funds and allowance during the period of training is quintessential to attracting the labourers to work. Furthermore, a few respondents agree that providing transportation facilities and valuing the labour of the workers can work as an incentive too (Table 49).

Table 49: Strategies which should be adopted to increase the supply of skilled workers during the pandemic

Factors	Percentage in terms of Respondents	Percentage in terms of Responses
Increase Work Incentive	96.77	17.44
Increase Salary	93.55	16.86
Increase Health Safety Issues	90.32	16.28
Ensuring Allowance	83.87	15.12
Emergency Medical Fund	64.52	11.63
Providing Allowance during Training	61.29	11.05
Providing Transportation Facilities	51.61	9.30
Ensuring Value of Labour	12.90	2.33

Source: Authors' calculation based on Primary data collected under BIDS Construction Industry Survey, 2021.

To summarize, it can be said that the incentive programs are an important component of keeping construction employees engaged and the workplace safe and productive. Increasing salary as well as ensuring competitive salary packages can help increase labour supply in the construction sector. The pandemic has resulted in a significant shift in the working environment, as well as an increase in employee concerns about their physical health. The COVID-19 pandemic has had a considerable impact on the overall construction sector, which has been challenged to improve worker safety and well-being. Therefore, ensuring the health safety issues and providing necessary support materials, such as hand sanitizers and masks can increase the participation of labourers. Providing allowance during the training session can be motivating for the labourers to get skill development training. Besides, providing transportation facilities and acknowledging the workers' labour and contribution cannot be ignored in this respect.

CHAPTER IX: PERFORMANCES, CHALLENGES, AND PROSPECTS OF THE CONSTRUCTION SECTOR: FINDINGS FROM QUALITATIVE INVESTIGATION

Since the industry employs a significant number of people, it is worth noting their contribution to the national GDP is praiseworthy, moreover, the industry has seen positive growth in the past few years. Though there are several issues found which have a substantial impact on construction development in Bangladesh, the industry is seen as a driving factor in achieving 'Vision 2021' and turning Bangladesh into a self-sufficient middle-income country. However, there are a lot of challenges causing trouble in flourishing the growth of the construction industry simultaneously. It is worthwhile to point out that our primary data has attempted to explore several causes that are impeding the growth of the construction industry and hence has endeavored to find out ways to replenish the industry with labour-intensive technology and strategies.

Our primary data is collected from several respondents involved in the construction industry, i.e., engineers, project managers, site engineers, managing directors, and so on, and found the following responses regarding the performances, challenges, and prospects of this particular sector vividly.

9.1. Recruitment, Retention, Performances, and Other Aspects

While retention of skilled staff (including workers) is not a major problem for large and reputed enterprises, it is indeed a problem for other enterprises. They find it difficult to attract and retain qualified and skilled staff in their enterprises. When asked about what is needed to ensure the steady supply of qualified and skilled workers in the construction sector, an overwhelming majority of the respondents opined that increasing salary, especially in accordance with the productivity of the workers, and providing other benefits is the key to attracting and retaining the qualified and skilled staff in the enterprises (Annex Table: Chapter VIII). Providing health care security and health and/or life insurance are also referred to as important elements to attract and retain skilled workers in the enterprises.

Respondents were asked why construction work is rather slow in Bangladesh compared to East-Asian countries. In response, an overwhelming majority indicated ‘technological backwardness’ and ‘shortages of skilled workers’ as major reasons for slow progress in the sector. Other reasons included financial crisis, shortages of supply of raw materials, low salary, delay in approval processes in respective government offices, etc. (Annex Table: Chapter VIII).

While asked which trades/occupations might have increased demand in the future as a result of technological changes in the sector, the respondents indicated the following: electric work, plumbing, advanced machine operator, masonry, engineering (civil, electrical, and hydro-

mechanical), painting with the machine, piling machine, crane operator, ready-mix operator, etc. (Table Annex Table: Chapter VIII).

When asked how do you think government can contribute more to vocational training for the construction sector, about one-third of them indicated that government should increase the number of training centers in the country. Others indicated that the training should be free or low-cost and the workers should also be encouraged to participate in the training. Additional incentives may also be provided to those who have skills training (Annex Table: Chapter VIII).

Defining 'skilled worker' is an important step to understand 'skill shortage', skill mitch-match, and 'skill gap' in the sector. Respondents were asked how they define skilled workers, and in response, an overwhelming majority indicated that having on-the-job training (learning by doing) and gaining experiences through working are two important aspects to define a worker as a skilled worker. In both cases, they also indicated that they should have at least 3 years of work experience in the respective trade (Annex Table: Chapter VIII). In addition, they also indicated that having formal training from TVET institutions and demonstrating efficiency while performing the work are also important ways to define a worker as a skilled worker.

However, when asked about how the enterprises can get skilled workers, the majority of them indicated that TVET graduates can be an important source. They also mentioned about the existing labour market, attracting labour from other organizations, providing refreshers training to the existing workers, recruiting immigrant workers, and providing on-the-job training are other means to secure skilled workforces in the sector (Annex Table: Chapter VIII).

In the recruitment of employees in the construction sector, informal means are still the dominant processes of recruiting workers in the sector as indicated by the enterprises. Informal means include 'upon recommendation of existing employees' and 'recruiting workers from own villages/areas. However, in the construction sector, subcontracting is a common practice for the work in the project sites (e.g., masonry, electric and sanitary work, tiles fitting, etc.). Apart from the above, respondents also indicated that they sometimes recruit workers through walk-in interviews, contacting the TVET institutes, and sometimes even through advertisements (Annex Table: Chapter VIII). When asked about what the minimum level of educational qualification of the workers should be, about two-thirds of the respondents reported that they should have at least a secondary level of education while about one-third indicated that primary school graduates can also do the job (Annex Table: Chapter VIII).

There are signs of construction workers leaving their job and going abroad. Although the number is not high enough, data show that workers left their job and went abroad for work. This indicates that there is a market of construction workers abroad which can be explored further for enhancing manpower export related to the sector (Annex Table: Chapter VIII).

Respondents of the enterprises were also asked about how do they value education and/or skills training for the workers working in the sector. In response, over 80 percent of the respondents

reported that they value literacy while employing new workers in the enterprise; and 74 percent of the respondents prefer recruiting workers with formal training although they indicated that it costs them more money than recruiting workers without any formal training. Respondents also value skilled workers as more than 50 percent of the respondents reported that shortages of skilled labourers hinder production capacities which adversely affect their production targets. About the same proportion also indicated that retention of skilled workers is also a problem as there are shortages of skilled workers in the market (Annex Table: Chapter VIII).

9.2. Risk Factors Hindering the Growth of the Construction Sector

Several factors have been identified in our primary data that are impeding the development of the construction industry in Bangladesh as cited by various respondents working in various sections of the construction industry. These are mentioned in table 50.

Table 50 shows that among all the risk factors, one of the most severe is the unavailability of work during the lockdown enforced due to the outbreak of the pandemic Covid-19. Many companies have been shut down due to the failure of the completion of the projects. Unavailability of work during the lockdown also has made many labourers and workers jobless in the construction sector; overall for which the construction industry has faced ups and downs.

Furthermore, the majority of the respondents have also found several other risk factors to be alarming. That is, the most concerning factors cited by more than 85 percent of respondents were the increased price of construction materials, failure of the completion of the projects in time, lack of skilled worker, delay in repaying government and bank loans, and lack of technological knowledge.

Additionally, 50 to 80 percent of the respondents mentioned that lack of manpower, lack of safety training, lack of necessary knowledge about safety rules and machinery, political interferences, financial default of contractors, the intervention of RAJUK, unavailability of skilled labourers, unsettled labour conditions and appropriation of property or confiscation of private property cause impediments to the growth of the sector.

Other than the above-mentioned factors, forced bribery to various agencies, strife regarding properties, poor project planning, and control, sound pollution, traffic jam, narrow street lanes, etc. have also been cited by the interviewees as the factors that are negatively affecting the construction sector.

Table 50: Risk Factors Hindering the Growth of the Construction Sector

Factors	Percentage in terms of Responses	Percentage in terms of Respondents
Unavailability of work during the lockdown	7.66	100
The increased price of construction materials	6.90	90
Failure in the completion of the projects	6.90	90
Lack of skilled workers	6.51	85
Complexity and delay in subsidizing government and bank loan	6.51	85
Lack of technological knowledge	6.51	85
Lack of manpower	6.13	80
Lack of safety training	6.13	80
Lack of necessary knowledge about safety rules and machinery	5.75	75
Political interferences	5.36	70
Financial default of contractor	4.98	65
Intervention of RAJUK	4.60	60
Unavailability or turnover of skilled labourers	4.60	60
Unsettled labour conditions	4.21	55
Expropriation of property or confiscation of private property	3.83	50
Forced bribery of city corporations	3.45	45
Strife regarding properties	3.07	40
Poor project planning and control	3.07	40
Sound pollution	2.68	35
Traffic jam	0.77	10
Narrow street lane	0.38	5

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

9.3. Emerging Issues in the Construction Industry

Our primary survey has discovered that the construction industry has faced an incredible change in the past ten years. Some of the emerging issues in the construction sector are discussed in table 51.

About 90% of the respondents of our survey have agreed that technological advances, rising political intrusion, direct impacts on income due to Covid-19 are a few of the main emerging issues that are observed in the construction sector. Other issues that are surfacing as mentioned by 85 percent of the respondents are the increasing price of the construction raw materials, failure to cope with technological changes, lack of technological tools and devices to work faster and with

efficiency, forced extortion fees to allow work to proceed undisturbed, paucity of skilled and qualified employees, workplace absenteeism, etc.

Loans with a high-interest rate, unprecedented increases in land prices, reduction in productivity have been cited by 80 percent of the interviewees as problems that have been arising recently. One important piece of information that we have received from the survey is that about 80 percent of the interviewees have also reported that the participation of women in the construction industry is not up to the mark which is also supported by our secondary data; according to the CISC Employer Survey, the share of female workers in the construction is only 3.9% of the workforce (CISC, 2018, p. 39). At present, the lack of women's workforce is also inhibiting the growth of the sector tremendously. Further, the women who do participate in the labour force are considered low-skilled, cheap, readily available, and pliable workers. About 60% have admitted that there exists a bias against women in the workforce. Because of these gender prejudices, women in the construction industry are assigned to easy tasks that require the least amount of competence, and they are also paid unequally because this sector does not provide them with equal career chances.

Also, a significant number of the interviewees mentioned issues such as increased competitiveness in the construction sector, absence of coordination and communication, lack of adequate urban planning, inadequate funding support, etc. Overall, our primary data also demonstrates that the Covid-19 pandemic has recently caused direct impacts on income due to loss of employment, workplace absenteeism, and reduction in productivity which has severely impacted the construction sector.

Table 51: Current Emerging Issues in the Construction Industry

Factors	Percentage in terms of Responses	Percentage in terms of Respondents
Technological advances	6.90	90
Rising political intrusion	6.90	90
Direct impacts on income due to premature deaths (due to COVID-19)	6.90	90
The increasing price of the construction raw materials	6.51	85
Failure to cope with technological changes	6.51	85
Lack of technological tools and devices to work faster and with efficiency	6.51	85
Forced extortion fees to allow work to proceed undisturbed	6.51	85
A paucity of skilled and qualified employee	6.51	85
Workplace absenteeism	6.51	85
Loans with a high-interest rate	6.13	80

Factors	Percentage in terms of Responses	Percentage in terms of Respondents
Lower participation of women or lack of women workforce	6.13	80
Unprecedented increases in land prices	6.13	80
Reduction in productivity	6.13	80
Increasing competitiveness in the construction sector	5.75	75
Absence of communication	5.75	75
Gender prejudices	4.60	60
Lack of adequate urban planning	3.45	45
Inadequate funding support	2.68	35

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

9.4. Skill Gap in Construction Industry Encumbering the Growth and Production

There are several trades found in our primary data in which the respondents mention that the labourers lack the necessary potential. Besides, several impediments are restricting the workers to grab the opportunity to enhance their capability. In addition, our primary survey has revealed some of the strategies or prospects in the construction sector that can be utilized in increasing labour supply and enlarging scopes for uplifting skills for the construction workers through well-organized training, education, and work experience.

Skill Gap in the Construction Industry

There is a severe scarcity of skilled people in different sections of the construction industry. It turns out from our primary data that there are fewer qualified workers available for different trades in the construction sector.

Table 52 shows that about 100 percent of the respondents have agreed that skilled workers such as machine operators, plumbers, pipefitters are few in number. Similarly, 95 percent of respondents have mentioned that concrete labourers, technicians, technologically expert workers are hard to find. Civil engineers, electricians, tiles fixers, welders have also been cited as construction workers who are scarce as mentioned by more than 75 percent to 85 percent of the respondents.

And, such scarcity also implies that these occupations are in high demand. As a result, the contractors are forced to hire non-local workers, plan overtime work, or both due to a labour shortage in these areas. In either situation, labour efficiency will be hindered, as well as more expenses will be incurred. The degree to which a construction project's equipment and automation are utilized has a direct impact on labour productivity on the job site. The use of union or non-union labour, the use of subcontractors, and the level of field supervision, all of which have an

impact on job-site labour productivity, are all influenced by contractual agreements. Because, on-site construction entails a lot of outdoor work, the weather has a direct impact on worker productivity.

Table 52: Skill Gap in the Construction Industry (by Trade)

Factors	Percentage in terms of Responses	Percentage in terms of Respondents
Machine operators	7.66	100
Plumbers	7.66	100
Pipefitters	7.66	100
Concrete labourers	7.28	95
Technicians	7.28	95
Technologically expert workers	7.28	95
Civil engineers	6.51	85
Electricians	6.51	85
Tiller	5.75	75
Welders	5.36	70

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

Some of the interviewees also state that there is a great deal of shortage in the technological sector/ICT sector which is restricting the workers to cope with modern inventions associated with construction tools and equipment. By mobilizing significant investments into the industry and conducting large infrastructure projects, the Government of Bangladesh (GoB) should advocate a digital agenda to improve the local information communication technology ecosystem and train workers on ICTs for the construction sectors.

Key Barriers to Increase Construction Productivity

As noted from our primary data, various hurdles have indeed been discovered in the construction sector that has a direct impact on overall productivity. We have listed down the key barriers to the growth and productivity of the construction industry in table 53.

Table 4 shows that 100 percent of the respondents have mentioned that there is a lack of sufficient training centers and trainers to train the construction workers. The issue of less training available has been also found in a previous study done by Barkat *et al.* (2018), which states that the existing

skills gap in the construction sector of Bangladesh is associated with a high turnover rate and poor training content or curriculum. In the absence of formal institutions, protective legislation, development plans, training facilities for the root level workers, and qualified trainers, the situation for construction workers in Bangladesh has gotten worse.

Also, 95 percent of the survey respondents have pointed out that lack of well-trained workers, lack of educated workers, cross-institutional coordination across government agencies are a few of the crucial shortcomings to the growth of the industry. Furthermore, shortage of materials, lack of free skill development programs, absence of technical and vocational training schools has been noted by 90 percent of the respondents as the problem. Also, one of the alarming issues that have been noticed in the survey data is that 85 percent of the respondents have mentioned that the lack of decent worker-employee relationships has been found fundamentally in deterioration recently which is hampering the construction sector as well. Lack of consistent communication between employers and trainers, cross-institutional coordination across government institutions, labour market information, employment services, and performance are some of the barriers which need to be urgently addressed and resolved to increase productivity within the construction industry.

Table 53: Key Barriers to Increase Construction Productivity

Factors	Percentage in terms of Responses	Percentage in terms of Respondents
Lack of training centers and trainers	6.69	100
Crippling of industries because of the COVID-19 pandemic	6.35	95
Lack of well-trained workers	6.35	95
Lack of educated workers	6.35	95
Cross-institutional coordination across government institutions	6.35	95
Shortage of materials	6.02	90
Lack of free skill development programs	6.02	90
Absence of technical and vocational training schools	6.02	90
Lack of consistent communication between employers and trainers	5.69	85
Lack of protective legislation	5.35	80
Supply chain disruptions	5.02	75
Absence of training for the root level workers	5.02	75
Deterioration of worker-employee relationship	5.02	75
Contract terminations to cut costs	4.68	70
Lack of development plans	4.35	65
Shortage of subcontractors	3.68	55
Unreliable communication between project participants	3.01	45
Absence of employment services, and performance	2.34	35

Factors	Percentage in terms of Responses	Percentage in terms of Respondents
Absence of labour market information	2.01	30
Lack of organizational commitment	1.67	25
Lack of awareness about lean construction technology	1.00	15
Unwillingness to alter the existing culture	0.67	10
The fragmented and cyclic pattern of the construction project	0.33	5

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

It is also noticed that 55 to 80 percent of the respondents have mentioned that lack of protective legislation, supply chain disruptions, absence of training for the root level workers, deterioration of the worker-employee relationship, contract terminations to cut costs, lack of development plans, shortage of subcontractors have also obstructed the development of the sector. Other barriers to the expansion of the construction industry that has been found are unreliable communication between various agencies, absence of employment regulation, absence of labour market information, lack of organizational commitment, lack of awareness about construction technology, unwillingness to alter the existing culture, the fragmented and cyclic pattern of the construction project, etc.

Overall, in Bangladesh, more and more skills development programs are required, particularly with government assistance. Every Upazila in the country requires technologically sophisticated technical and vocational training schools so that people can learn the trades of their choice at a reasonable cost right in their neighborhoods.

9.5. How to Deal with Crisis Management in the Construction Industry to Increase Labour Supply?

There are many strategies that can be implemented to simultaneously increase the productivity of the construction workers and the labour supply. We have taken the suggestions of the respondents and listed them in table 54 below.

All of the respondents have mentioned that organizing skills development training is of paramount importance. Similarly, more than 90 percent of respondents also pointed out that it is essential that the training regarding ICT skills be arranged, and wages be increased as an incentive. They have further mentioned that reduction of the gap between the educational system and the labour market is vital and providing competitive salaries and benefits is crucial.

Furthermore, around 80 percent of respondents agree that the training institutes should provide tools and machinery free of cost, skill development programs should be made more accessible to the labour workforce (particularly women), safety and health issues must also be improved,

expansion of vocational training opportunities is important, the government should supervise the training centers and that priority should be given to the participation of women in the labour force.

Around 50 to 75 percent of respondents thought that it is necessary to make TVET Programs free of cost, female entry-level workers should be given priority for training programs, the collaboration between the government and various industry groups should be taken seriously, teacher training curriculum should be revised regularly, the government should provide learning and assessment tools and technologies, establishing industry-based skill development programs is of importance, proper monitoring of TVET system should be arranged, organizing education courses are essential for both new and existing workers to help them stay in the sector.

Other suggestions include that strong company culture should be established, financial and time commitment to the workforce regarding training and development is essential, private organizations must be proactive with identifying labour demand needs and training in a variety of international languages to create jobs in the international market for the workers, etc.

Table 54: Ways to Deal with Crisis Management in the Construction Industry to Increase Labour Supply

Factors	Percentage in terms of Responses	Percentage in terms of Respondents
Organizing skills development training	20	100
ICT skills should be developed	19	95
Wage growth should rise as an incentive	18	90
Reducing the gap between the educational system and the labour market	18	90
Increasing technical education	18	90
Providing competitive salaries and benefits	18	90
Training institutes should provide tools and machinery free	17	85
Advocating skill development programs more accessible to the labour workforce, particularly women	17	85
Safety and health issues must also be improved	17	85
Government observation of training centers, production of curricula, trainer manuals	16	80
Prioritization of the participation of women	16	80
Expanding vocational training opportunities	16	80
Making TVET Programs free of cost	15	75
Targeting female entry-level workers for training programs	15	75
Collaboration between the government and various industry groups should be taken seriously	15	75
Teacher training curriculum should be revised regularly	14	70

Factors	Percentage in terms of Responses	Percentage in terms of Respondents
Government observation of learning and assessment tools and technologies	13	65
Establishing industry-based skill development programs	13	65
Proper monitoring of the TVET system	11	55
Organizing education courses for both new and existing workers to help them stay in the sector	10	50
Strong company culture should be established	7	35
Financial and time commitment to the workforce regarding training and development	6	30
Private organizations must be concerned with identifying labour demand needs	5	25
Training in a variety of international languages to create international job marketplaces for the workers	2	10

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

CHAPTER X: CONCLUSION AND RECOMMENDATION

Construction is an important sector of the economy of Bangladesh. The contribution of this particular sector to GDP is significant and employs a large number of workers. However, the sector is still fully male-dominated. There also exists skill shortages, skill mitch-match, and skill gaps among the workers working in the sector. Data, however, shows that the skill shortages and skill mitch-match are less problematic compared to skill gap in the sector. An overwhelming majority of the respondents identified the skill gap as one of the major impediments to the growth of the sector. Technological backwardness and lack of policy support from the government and delays in approval processes in various agencies have also been identified as other impediments. Skills training has therefore been advocated as one of the major remedial measures from which the sector can benefit to a significant extent. Technological advancement and favorable policy support are also crucial.

While retention of skilled staff (including workers) is not a major problem for large and reputed enterprises, it is indeed a problem for other enterprises. They find it difficult to attract and retain qualified and skilled staff in their enterprises. In the recruitment of employees in the construction sector, informal means are still the dominant processes of recruiting workers in the sector. Informal means include ‘upon recommendation of existing employees’ and ‘recruiting workers from own villages/areas. However, in the construction sector, subcontracting is a common practice for the work in the project sites (e.g., masonry, electric and sanitary work, tiles fitting, etc.). Apart from the above, they sometimes recruit workers through walk-in interviews, contacting the TVET institutes, and sometimes even through advertisements.

Problems Faced by the Sector

Technological backwardness and shortages of skilled workers are among the major reasons for slow progress in the sector. Financial crisis, shortages of supply and increased prices of raw materials, delay in approval processes in respective government offices, etc. are also the reasons for slow progress in the sector.

Lack of trained manpower, lack of safety training, lack of necessary knowledge about safety rules and machinery, political interferences, financial default of contractors, unfair interventions of some authorities, unavailability of skilled labourers, unsettled labour conditions and appropriation of property or confiscation of private property cause impediments to the growth of the sector.

At present, the lack of women's workforce is also inhibiting the growth of the sector. Moreover, the women who do participate in the labour force are considered low-skilled, cheap, readily available, and pliable workers. There exists a bias against women in the workforce. Because of these gender prejudices, women in the construction industry are assigned to easy tasks that require

the least amount of competence, and they are also paid unequally because this sector does not provide them with equal career chances

There is a severe scarcity of skilled people in different sections of the construction industry. It turns out from our primary data that there are fewer skilled workers available for different trades in the construction sector. Skilled workers such as skilled machine operators, plumbers, pipefitters are few in numbers. Also, skilled technicians, technologically expert workers are hard to find. Civil engineers, electricians, trained tiles fixers and welders are also scarce. And such scarcity also implies that these occupations are in high demand.

Lack of well-trained workers, lack of educated workers, poor cross-institutional coordination across government agencies is a few of the crucial shortcomings to the growth of the industry. Furthermore, shortage of materials, lack of free skill development programs, absence of technical and vocational training schools has also been noted as the problem. Also, lack of decent worker-employee relationships has been found fundamentally in deterioration recently which is hampering the construction sector as well.

Formal education in colleges and universities must reorganize the needs of current times. To keep up with the demand, the teacher training curriculum should be revised regularly. And the gap between the educational system and the labour market should be reduced by a proper TVET system which must be easily accessible and free of cost, relatively inexpensive for the majority, and relevant to labour demands. While the government has a key role to play in developing a strategy in this area, private organizations must be substantially integrated with the process of identifying labour demand with required skills and delivery programs.

Two-thirds of Bangladesh's workforce had only minimal education, and only a small percentage obtained any training. And the skills development training that does exist can only satisfy roughly 20-30% of training demands, implying that many construction workers are unable to find suitable employment, hence underemployment is widespread, and earnings remain poor. So, industry-based skill development programs are of paramount importance and must address not just current but also future worker demands at the root level. To achieve this, a collaboration between the government and various industry groups is required.

Another important issue is that women, in particular, are under-educated and not trained. They need to be prioritized in certain trades of the construction industry and the government can provide programs accessible to them. The government should begin an investment program that will encourage skill training in a variety of industries.

In short, problems faced by the sector include, among others, the following:

- Inadequate supply and increased prices of raw materials
- Toll collection by local muscle powers
- Political instability/pressure

- Lack of skilled manpower
- Lack of training
- Reduced demand due to price hike of flats in recent times
- Bribing, to get clearance from most respective offices
- Delayed process of getting approvals
- Child labour in the sector
- Lack of finance/loan
- High cost of registration of flats
- Excessive time and money needed to get the plan approved
- Illegal transactions needed to get things done
- Lack of due enforcement of regulation
- Lack of monitoring
- Tendency of not taking any formal training among some workers, etc.

Ways Forward

Increasing salary, especially in accordance with the productivity of the workers, and providing other benefits is the key to attracting and retaining the qualified and skilled staff in the enterprises. Government should increase the number of training centers in the country, and the training should be free or low-cost and the workers should also be encouraged to participate in the training. Additional incentives may also be provided to those who have skills training.

Lack of consistent communication between employers and trainers, cross-institutional coordination across government institutions, labour market information, employment services, and performance are some of the barriers which need to be urgently addressed and resolved to increase productivity within the construction industry. Respective departments of the government can play am important role to bring all relevant stakeholders together to address the problem in this respect.

Organizing skills development training is of paramount importance. Similarly, it is essential that the training regarding ICT skills be arranged, and wages be increased as an incentive. Reduction of the gap between the education system and the labour market is vital and providing competitive salaries and benefits is crucial. Respective government agencies should play the regulatory as well as facilitating role in this respect so that the enterprises get the necessary inputs including skilled workers and comply with the rules and regulations.

Skill development programs should be made more accessible to the labour workforce (particularly women), safety and health issues must also be improved, expansion of vocational training opportunities is important, the government should supervise the training centers and that priority should be given to the participation of women in the labour force.

TVET Programs should be made free of cost, female entry-level workers should be given priority for training programs, the collaboration between the government and various industry groups should be taken seriously, teacher training curriculum should be revised regularly, the government should provide learning and assessment tools and technologies, establishing industry-based skill development programs is of importance, proper monitoring of TVET system should be arranged, organizing educational programs are essential for both new and existing workers to help them stay in the sector.

Other skills are also needed to be delivered for the construction sector workers, and internationally, such training is required to raise migrant workers' wages. Improvements in a variety of international languages, particularly English and Arabic, but also Spanish and French, are urgently required. Language abilities can open many doors for our workers in international job marketplaces in today's globalized world. Similarly, computer abilities can boost skills and productivity by allowing the workforce to involve in various multifaceted jobs globally.

Also, wage growth should be in unison with rising labour productivity if job quality is to improve. Lower wages do not offer an incentive for workers to invest in technology, and as a result, future productivity growth may be hampered. Also, to address workforce shortages, providing competitive salaries and benefits, and cultivating a strong company culture should be established that encourages and rewards hard work and devotion. This necessitates a financial and time commitment to the workforce of that organization's training and development.

There are several suggestions that came forward from the discussion with respondents to advance the status of the construction sector. One of the main suggestions is to work together to prepare an online database of both the employed and unemployed construction workers on the National Skills Portal after the end of the Covid period. In this case, the Industry Skills Council (ISC) and associations like the Bangladesh Association of Construction Industry (BACI) can work together to do this task.

The ongoing multiple mega projects in the construction sector of Bangladesh require workers who possess technical skills, physical endurance, and effective communication skills. So formal training before absorption into the mega-projects needs to be ensured. The problem of hiring mostly unskilled workers can be decreased by introducing formal in-firm training opportunities within construction sites.

The government should settle certain skills as standards and providing certification should be emphasized. Standards should be applied consistently across the construction industry. It is also necessary to empower training centers, vocational schools, and university departments to function as a certification agency.

During this pandemic like situation, supportive measures need to be put in place to ease the process of migration and foreign remittance receiving facilities for the migrant's families. Government policy should be established to uphold the interests of migrant workers who are staying overseas

and who have returned to Bangladesh and to provide diplomatic support to ensure that more migrant workers can go abroad once the situation improves.

In short, what needs to do for the development of the sector include, among other, the following:

- Need to provide better packages to the workers (salary, other benefits): Workers should be provided with decent wages and basic other benefits. State regulation should ensure this so that they are not subjected to exploitation.
- Skills training is essential: This is indeed a must thing. A large majority of the workers are either un-skilled or semi-skilled. There are also demand for skilled construction works abroad. Skills training would benefit the entire section including the workers and the enterprises. However, the training should be designed and provided based on current and future demand.
- Providing salaries based on skill and performances: A minimum wage for the sector should be announced, and then the rest should be provided based on skills and performances of the workers. This will encourage the workers to go for skills training, and enhance the productivity in the sector.
- Timely payment: In many enterprises, wages and salaries, especially for the workers re not paid on time. This should not be the common practice and the employees and workers should be paid on a timely manner in order to maintain a competitive and healthy environment in the sector.
- More training institutes with state-of-the-art instruments: There are training institutes – both public and private - in the country. More training institutes are needed, even at the district and sub-district levels, and in the public sector. Moreover, they should be equipped with modern equipment and facilities so that we can meet the demand of the time (not for now only, but for the future). This is also needed to compete in the international market. Also, in such a situation, young people with some education will also be encouraged to take part in the training and join the sector.
- Hands-on training: Apart from class-room or institution-based training, the trainees and the workers should also be provided with hands-on/work place training. For technical and vocational training, hands-on and work-place training in important.
- Need to have proper policies for salaries, wages and benefits for the sector and proper implementation of it: Policies regarding appointments and contracts; and salaries, wages and benefits should be made so that entire sector is run under a common system and no one can take undue advantage and exploit the workers.
- Need to improve the working condition and safety measures in the construction sites: Working in the construction sites is often risky. It is therefore important to have and enforce safety regulations. This will improve the working condition in the sector. The workers should also be provided with health support from the enterprises.

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APPENDIX

Table 1: Labour Demand Growth in the Future (for New Posts)						
Occupation	No growth (as usual)	Moderate growth	High growth	Very high growth	Negative growth	Total
Crane operator	-	33.30	66.70	-	-	100
IT specialist	-	57.10	42.90	-	-	100
Environmental Engineer	-	100.00	-	-	-	100
Data Science Engineer	-	50.00	50.00	-	-	100
Green Building	-	100.00	-	-	-	100
Software Engineer	-	50.00	50.00	-	-	100
Cyber Security Office	-	-	100.00	-	-	100
Eco-friendly Construction Engineer	-	-	100.00	-	-	100
Automatic Machine Operator	-	-	100.00	-	-	100
Data Warehouse Engineer	-	-	100.00	-	-	100
Foreclosure Specialist	-	100.00	-	-	-	100
Residential Appraiser	-	100.00	-	-	-	100
Plaster Machine Operator	-	-	100.00	-	-	100
Real Estate investor	-	100.00	-	-	-	100
Customer Care	-	-	100.00	-	-	100
Electro Mechanical Engineer	-	100.00	-	-	-	100
Market Analyst	-	100.00	-	-	-	100
Auto casting Driver	-	100.00	-	-	-	100
Total	2.60	59.10	34.80	2.60	0.90	100

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

Table 2: Future Labour Demand by Occupation in the Construction Industry (for New Posts)			
Occupation	**Projected Average Employment for 2023**	**Projected Average Employment for 2025**	**Projected Average Employment for 2030**
Crane Operator	4	3	7
IT Specialist	1	2	3
Environmental Engineer	6	9	12
Data Science Engineer	0	1	3
Green Building	4	8	13
Cyber Security Officer	4	7	6
Eco-friendly Construction Engineer	30	50	100
Automatic Machine Operator	10	20	4
Data Warehouse Engineer	3	5	9
Foreclosure Specialist	1	2	3
Residential Appraiser	2	5	10
Plaster Machine Operator	5	7	12
Real Estate investor		1	2
Customer Care	1	2	3
Market Analyst	1	2	3
Auto casting Driver	2	3	5

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

Table 3: New Positions for the Construction Sector				
Occupation Name	**Required Average Qualifications**		**Average Level of Difficulty to Find Employees in**	
	Education Level	**Experience (Years)**	**Domestic Market**	**Global Market**
Crane Operator	9	2	3.00	3.00
IT Specialist	17	7	5.82	3.30
Environmental Engineer	17	5	4.50	5.00
Data Science Engineer	17	6	5.50	4.00
Green Building Engineer	16	4	6.33	5.00
Eco-friendly Construction Engineer	17	5	10.00	5.00
Automatic Machine Operator	17	5	8.00	4.00
Foreclosure Specialist	17	5	9.50	6.50
Commercial Appraiser	16	4	9.00	6.00
Residential Appraiser	17	5	10.00	6.00
Land Manager	17	9	7.00	1.00
Customer Care	12	1	2.00	1.00
Electro Mechanical Engineer	16	4	3.50	2.50

Source: Authors' calculation based on BIDS Construction Industry Survey, 2021.

Perceptions of the Employees: Appendix Tables (Chapter VI)

Masons

Sl. No.	Question	Responses (%)
1.	Workers who have previous training	33.33
2.	Types of Previous Training Received (%)	
2.1	Masonry training	50.00
2.2	Plaster related training	50.00
2.3	Primary training	50.00
2.4	Health-related training	50.00
2.5	Layout training	25.00
2.6	Plumbing training	25.00
3.	Workers who need training for the progression of career	91.67
4.	Workers who need the training to increase the current level of efficiency	83.33
5.	Workers who need the training to adapt to technological changes	83.33
6.	Workers whose jobs are permanent	41.66
7.	Workers who think they are being paid enough for their work	08.33
8.	Workers who are satisfied with the prospect/promotion/salary increment of the	16.67
9.	Workers who think their supervisor understands their work	91.67
10.	Workers who are satisfied with the work safety/work environment of their job	58.33
11.	Workers who think the benefits that they get are similar to other organizations (competitive salary package)	33.33

Sl. No.	Question	Responses (%)
12.	Workers whose employers provide them with training	16.67
13.	Workers whose employers care about their career progression	41.66
14.	Workers whose works are well-instructed to them (work rules/job description)	91.67
15.	Workers who have a good relationship with their coworkers	91.67
16.	Workers whose employers reward them for their hard work	75.00

Sl. No.	Question	Responses (Average)
1.	Work experience in the present job (in months)	22.25
2.	Average total monthly income from present job (in taka)	19416.67
The next few responses are on a scale of 1-10 where 1 is the best outcome and 10 is the worst		
3.	The average level of chances of automation replacing their job	5.00
4.	The average level of problems faced due to current education, experience, and skills (average)	2.67
5.	The average level of physical labour in the present job	8.75
6.	The average level of difficulty for the workers to find a better/ equivalent job want to leave their present job	5.91
The next few responses are on a scale of 1-10 where 1 is the worst outcome and 10 is the best		
7.	The average level of satisfaction of the workers at their present job	8.00
8.	The average level of skills of the workers	8.17
9.	The average level of help formal education has provided to the workers to be more skilled at their work	5.44

10.	The average level of help any off-the job-training has provided workers to become more skilled at their work	5.40
11.	The average level of help any on-the-job-training has provided workers to become more skilled at their work	5.67
12.	The average increase in the skill level of the workers by working at their respective firms	7.75
13.	Average evaluation of the market price of the workers' skill level in the industry they are working in	8.00
14.	Average evaluation of the market price of the workers' skill level in other industries	4.75

Future Training Needs

Sl. No.	**Types of Training**	**Percentage of workers willing to pay for the training**		
		Not willing to pay at all	**Partial Payment**	**Full Payment**
1.	Training on masonry	100	0	0
2.	Painting related training	100	0	0
3.	Machine operating training	100	0	0
4.	Safety training	0	100	0
5.	Thai glass-related training	100	0	0
6.	Driving	0	0	100
7.	Plaster related training	100	0	0
8.	Rod training	0	100	0

Future Job Aspiration

Sl. No.	Job Title	Percentage of Aspiring Respondents	The average level of physical labour in the job (on a scale of 1-10 where 1 is the least amount of physical labour and 10 is the highest)	Average expected monthly income of the future job (In taka)
1.	Contractor	55.55	5.20	36000
2.	Foreman	33.33	6.00	28333
3.	Sub-contractor	11.11	7.00	35000

Illness and Satisfaction Related Questions

Sl. No.	Questions	Response
1.	The average number of days (in the last 4 weeks) the workers couldn't work due to sudden illness or accident, chronic illness, or any other health issues (days)	1.58
2.	The average number of days in the last 4 weeks, the workers couldn't work due to this chronic illness (days)	1.00
3.	Workers who are suffering from any chronic illness (e.g., diabetics, asthma, cancer, cardiac disease, high blood pressure, hepatitis, etc.) (%)	33.33
4.	The average level of satisfaction of the workers with their life at present (on a scale of 1-10 where 1 is the worst outcome and 10 is the best)	7.92

Project Engineers

Sl. No.	Question	Responses (%)
1.	Workers who have previous training	20

2.	Types of Previous Training Received (%)	
2.1	Auto-cad	100
2.2	Computer	100
2.3	Photoshop	100
2.4	Hardware	100
3.	Workers who need training for the progression of career	80
4.	Workers who need the training to increase the current level of efficiency	80
5.	Workers who need the training to adapt to technological changes	80
6.	Workers whose jobs are permanent	75
7.	Workers who think they are being paid enough for their work	0
8.	Workers who are satisfied with the prospect/promotion/salary increment of the	20
9.	Workers who think their supervisor understands their work	100
10.	Workers who are satisfied with the work safety/work environment of their job	40
11.	Workers who think the benefits that they get are similar to other organizations (competitive salary package)	20
12.	Workers whose employers provide them with training	20
13.	Workers whose employers care about their career progression	40
14.	Workers whose works are well-instructed to them (work rules/job description)	100
15.	Workers who have a good relationship with their coworkers	100
16.	Workers whose employers reward them for their hard work	60

Sl. No.	Question	Responses
1.	Work experience in the present job (in months)	21.00
2.	Average Total monthly income from present job (in taka)	18375.00
The next few responses are on a scale of 1-10 where 1 is the best outcome and 10 is the worst		
3.	The average level of chances of automation replacing their job	1.40
4.	The average level of problems faced due to current education, experience, and skills	2.20
5.	The average level of physical labour in the present job	8.75
6.	The average level of difficulty for the workers to find a better/ equivalent job want to leave their present job	4.00
The next few responses are on a scale of 1-10 where 1 is the worst outcome and 10 is the best		
7.	The average level of satisfaction of the workers at their present job	5.20
8.	The average level of skills of the workers	8.20
9.	The average level of help formal education has provided to the workers to be more skilled at their work	7.80
10.	The average level of help any off-the job-training has provided workers to become more skilled at their work	7.33
11.	The average level of help any on-the-job-training has provided workers to become more skilled at their work	7.67
12.	The average increase in the skill level of the workers by working at their respective firms	7.80
13.	Average evaluation of the market price of the workers' skill level in the industry they are working in	8.40
14.	Average evaluation of the market price of the workers' skill level in other industries	3.60

Future Training Needs

Sl. No.	Types of Training	Percentage of number of people willing to pay for the training		
		Not willing to pay at all	Partial Payment	Full Payment
1.	Out-sourcing training	0	0	100
2.	New technology-related training	0	0	100
3.	Health-related training	100	0	0
4.	Computer training	0	100	0
5.	E-TAB design training	100	0	0
6.	Auto Cad (2D, 3D) training	100	0	0
7.	Estimate training	100	0	0

Future Job Aspiration

Sl. No.	Job Title	Percentage of Aspiring Respondents	The average level of physical labour in the job (on a scale of 1-10 where 1 is the least amount of physical labour and 10 is the highest)	Average expected monthly income of the future job (in taka)
1.	Chief Engineer	80	4	51250
2.	Structural Designer	20	10	100000

Illness and Satisfaction Related Questions

Sl. No.	Questions	Responses
1.	The average number of days (in the last 4 weeks) the workers couldn't work due to sudden illness or accident, chronic illness, or any other health issues (days)	0.6
2.	The average number of days in the last 4 weeks, the workers couldn't work due to this chronic illness (days)	0
3.	Workers who are suffering from any chronic illness (e.g., diabetics, asthma, cancer, cardiac disease, high blood pressure, hepatitis, etc.) (%)	20
4.	The average level of satisfaction of the workers with their life at present (on a scale of 1-10 where 1 is the worst outcome and 10 is the best)	6.6

Tiller and Aluminum Fitter

Sl. No.	Question	Responses
1.	Workers who have previous training	33.33
2.	Types of Previous Training Received (%)	
2.1	Tile cutting	33.33
2.2	Helper	33.33
2.3	Tiling and Aluminum Fitting	33.33
2.4	Foreman	33.33
3.	Workers who need training for the progression of career	88.88
4.	Workers who need the training to increase the current level of efficiency	77.77

Sl. No.	Question	Responses
5.	Workers who need the training to adapt to technological changes	100
6.	Workers whose jobs are permanent	66.66
7.	Workers who think they are being paid enough for their work	66.66
8.	Workers who are satisfied with the prospect/promotion/salary increment of the	77.77
9.	Workers who think their supervisor understands their work	88.88
10.	Workers who are satisfied with the work safety/work environment of their job	77.77
11.	Workers who think the benefits that they get are similar to other organizations (competitive salary package)	88.88
12.	Workers whose employers provide them with training	11.11
13.	Workers whose employers care about their career progression	66.66
14.	Workers whose works are well-instructed to them (work rules/job description)	88.88
15.	Workers who have a good relationship with their coworkers	88.88
16.	Workers whose employers reward them for their hard work	88.88

Sl. No.	Question	Responses
1.	Average work experience in the present job (months)	50.11
2.	Average total monthly income (in taka)	27444.44
The next few responses are on a scale of 1-10 where 1 is the best outcome and 10 is the worst		
3.	The average level of chances of automation replacing their job	36.66
4.	The average level of problems faced due to current education, experience, and skills	3.22
5.	The average level of physical labour in the present job	7.11
6.	The average level of difficulty for the workers to find a better/ equivalent job want to leave their present job	6.00
The next few responses are on a scale of 1-10 where 1 is the worst outcome and 10 is the best		
7.	The average level of satisfaction of the workers at their present job	7.77
8.	The average level of skills of the workers	62.88
9.	The average level of help formal education has provided to the workers to be more skilled at their work	4.66
10.	The average level of help any off-the job-training has provided workers to become more skilled at their work	3.88
11.	The average level of help any on-the-job-training has provided workers to become more skilled at their work	3.55
12.	The average increase in the skill level of the workers by working at their respective firms	7.22
13.	Average evaluation of the market price of the workers' skill level in the industry they are working in	6.55
14.	Average evaluation of the market price of the workers' skill level in other industries	5.77

Future Training Needs

Sl. No.	Types of Training	Percentage of workers willing to pay for the training		
		Not willing to pay at all	Partial Payment	Full Payment
1.	Mobile robot for automatic installation of floor tiles	0	100	0
2.	Flooring installers	100	0	0
3.	Mason Training	0	0	100
4.	Construction painters training	0	0	100
5.	Management	0	100	0
6.	New technology-related training	100	0	0
7.	Supervisor training	100	0	0
8.	Primary training	100	0	0
9.	Health safety issues training	100	0	0
10.	Primary health care training	100	0	0
11.	Foreman training	100	0	0
12.	Tiles cutting and fitting	100	0	0

Future Job Aspiration

Sl. No.	Job Title	Percentage of Aspiring Respondents	The average level of physical labour in the job (on a scale of 1-10 where 1 is the least amount of physical labour and 10 is the highest)	Average expected monthly income of the future job (In taka)
1.	Foreman	33.33	6	30000.00
2.	Tiles foreman	11.11	1	30000.00
3.	Contractor	33.33	1	83333.33

Illness and Satisfaction Related Questions

Sl. No.	Questions	Responses
1.	The average number of days (in the last 4 weeks) the workers couldn't work due to sudden illness or accident, chronic illness, or any other health issues (days)	1.80
2.	The average number of days in the last 4 weeks, the workers couldn't work due to this chronic illness (days)	1
3.	Workers who are suffering from any chronic illness (e.g., diabetics, asthma, cancer, cardiac disease, high blood pressure, hepatitis, etc.) (%)	22.22
4.	The average level of satisfaction of the workers with their life at present (on a scale of 1-10 where 1 is the worst outcome and 10 is the best)	7.60

Sanitary Worker and Plumber

Sl. No.	Question	Responses
1.	Workers who have previous training	70.00
2.	Types of Previous Training Received (%)	
2.1	Plumbing	28.57
2.2	Pipe fittings	28.57
2.3	Uses of new machineries	14.28
2.4	Sanitary related trainings	57.14
2.5	Main line bulb related training	14.28
3.	Workers who need training for the progression of career	70.00
4.	Workers who need the training to increase the current level of efficiency	80.00
5.	Workers who need the training to adapt to technological changes	70.00
6.	Workers whose jobs are permanent	10.00
7.	Workers who think they are being paid enough for their work	10.00
8.	Workers who are satisfied with the prospect/promotion/salary increment of the	10.00
9.	Workers who think their supervisor understands their work	70.00
10.	Workers who are satisfied with the work safety/work environment of their job	60.00
11.	Workers who think the benefits that they get are similar to other organizations (competitive salary package)	30.00
12.	Workers whose employers provide them with training	20.00

13.	Workers whose employers care about their career progression	40.00
14.	Workers whose works are well-instructed to them (work rules/job description)	40.00
15.	Workers who have a good relationship with their coworkers	80.00
16.	Workers whose employers reward them for their hard work	10.00

Sl. No.	**Question**	**Responses**
1.	Average work experience in the present job (months)	26.00
2.	Average total monthly income (in taka)	21700.00
The next few responses are on a scale of 1-10 where 1 is the best outcome and 10 is the worst		
3.	The average level of chances of automation replacing their job	39.80
4.	The average level of problems faced due to current education, experience, and skills	2.67
5.	The average level of physical labour in the present job	6.50
6.	The average level of difficulty for the workers to find a better/ equivalent job want to leave their present job	5.50
The next few responses are on a scale of 1-10 where 1 is the worst outcome and 10 is the best		
7.	The average level of satisfaction of the workers at their present job	5.70
8.	The average level of skills of the workers	7.30
9.	The average level of help formal education has provided to the workers to be more skilled at their work	4.50
10.	The average level of help any off-the job-training has provided workers to become more skilled at their work	4.90
11.	The average level of help any on-the-job-training has provided workers to become more skilled at their work	5.30

12.	The average increase in the skill level of the workers by working at their respective firms	7.10
13.	Average evaluation of the market price of the workers' skill level in the industry they are working in	7.40
14.	Average evaluation of the market price of the workers' skill level in other industries	6.20

Future Training Needs

Sl. No.	Types of Training	Percentage of workers willing to pay for the training		
		Not willing to pay at all	Partial Payment	Full Payment
1.	CPVC pipe fittings	100	0	0
2.	Diploma	50	0	50
3.	Modern piling machine training	0	0	100
4.	Power civil training	0	0	100
5.	New machinery training	100	0	0
6.	Supervising	100	0	0

Future Job Aspiration

Sl. No.	Job Title	Percentage of Aspiring Respondents	The average level of physical labour in the job (on a scale of 1-10 where 1 is the least amount of physical labour and 10 is the highest)	Average expected monthly income of the future job (In taka)
1.	Contractor	30	5	43,333.33
2.	Foreman	30	4	36,666.66

3.	Sanitary foreman	10	6	40,000.00
4.	Principal labourer	10	1	50,000.00

Illness and Satisfaction Related Questions

Sl. No.	Questions	Responses
1.	The average number of days (in the last 4 weeks) the workers couldn't work due to sudden illness or accident, chronic illness, or any other health issues (days)	0.3
2.	The average number of days in the last 4 weeks, the workers couldn't work due to this chronic illness (days)	0
3.	Workers who are suffering from any chronic illness (e.g., diabetics, asthma, cancer, cardiac disease, high blood pressure, hepatitis, etc.) (%)	60
4.	The average level of satisfaction of the workers with their life at present (on a scale of 1-10 where 1 is the worst outcome and 10 is the best)	6.2

Electrician

Sl. No.	Question	Responses
1.	Workers who have previous training	81.81
2.	Types of Previous Training Received (%)	
2.1	Circuit Box	11.11

2.2	DB Box	11.11
2.3	Electrical	88.88
3.	Workers who need training for the progression of career	90.9
4.	Workers who need the training to increase the current level of efficiency	100
5.	Workers who need the training to adapt to technological changes	100
6.	Workers whose jobs are permanent	20
7.	Workers who think they are being paid enough for their work	9.09
8.	Workers who are satisfied with the prospect/promotion/salary increment of the	9.09
9.	Workers who think their supervisor understands their work	72.73
10.	Workers who are satisfied with the work safety/work environment of their job	36.36
11.	Workers who think the benefits that they get are similar to other organizations (competitive salary package)	18.18
12.	Workers whose employers provide them with training	9.09
13.	Workers whose employers care about their career progression	27.27
14.	Workers whose works are well-instructed to them (work rules/job description)	27.27
15.	Workers who have a good relationship with their coworkers	90.91
16.	Workers whose employers reward them for their hard work	9.09

Sl No.	**Questions**	**Responses (Average)**
1.	Average work experience in the present job (months)	30.40

2.	Average monthly income from present job (in taka)	19200.00
The next few responses are on a scale of 1-10 where 1 is the best outcome and 10 is the worst		
3.	The average level of chances of automation replacing their job	4.27
4.	The average level of problems faced due to current education, experience, and skills	4.8
5.	The average level of physical labour in the present job	6
6.	The average level of difficulty for the workers to find a better/ equivalent job want to leave their present job	6.18
The next few responses are on a scale of 1-10 where 1 is the worst outcome and 10 is the best		
7.	The average level of satisfaction of the workers at their present job	5.18
8.	The average level of skills of the workers	6.09
9.	The average level of help formal education has provided to the workers to be more skilled at their work	5.36
10.	The average level of help any off-the job-training has provided workers to become more skilled at their work	6.3
11.	The average level of help any on-the-job-training has provided workers to become more skilled at their work	6.2
12.	The average increase in the skill level of the workers by working at their respective firms	6.45
13.	Average evaluation of the market price of the workers' skill level in the industry they are working in	7.09
14.	Average evaluation of the market price of the workers' skill level in other industries	6.36

Future Training Need

Sl. No.	Type of Training	Percentage of workers willing to pay for the training		
		Full Payment	Partial Payment	Not willing to Pay at all
1.	Diploma electric operator	16.67	33.33	50
2.	Substation	0	100	0
3.	Refrigerator	100	0	0
4.	A.C	100	0	0
5.	Training on new equipment	0	0	100
6.	Machine handling	0	0	100
7.	Cutting plug	0	100	0

Future Job Aspiration

Sl No.	Job Title	Percentage Of Aspiring Respondents	The average level of physical labour in the job (on a scale of 1-10 where 1 is the least amount of physical labour and 10 is the highest)	Average expected monthly income of the future job (In taka)
1.	Chief technician	9.09	7	35000.00
2.	Diploma Engineer	9.09	6	35000.00
3.	Operator	9.09	7	14000.00
4.	Head worker	18.18	4	45000.00
5.	Contractor	54.55	4.33	44166.67

Illness and Satisfaction Related Questions

Sl. No.	Questions	Responses
1.	The average number of days (in the last 4 weeks) the workers couldn't work due to sudden illness or accident, chronic illness, or any other health issues (days)	0.636
2.	The average number of days in the last 4 weeks, the workers couldn't work due to this chronic illness? (days)	0.27
3.	Workers who are suffering from any chronic illness (e.g., diabetics, asthma, cancer, cardiac disease, high blood pressure, hepatitis, etc.) (%)	18.18
4.	The average level of satisfaction of the workers with their life at present (on a scale of 1-10 where 1 is the worst outcome and 10 is the best)	5.09

Rod Binder

Sl. No.	Question	Responses
1.	Workers who have previous training	10
2.	Workers who need training for the progression of career	50
3.	Workers who need the training to increase the current level of efficiency	60
4.	Workers who need the training to adapt to technological changes	80
5.	Workers whose jobs are permanent	60
6.	Workers who think they are being paid enough for their work	50
7.	Workers who are satisfied with the prospect/promotion/salary increment of the	10
8.	Workers who think their supervisor understands their work	100

Sl. No.	Question	Responses
9.	Workers who are satisfied with the work safety/work environment of their job	50
10.	Workers who think the benefits that they get are similar to other organizations (competitive salary package)	60
11.	Workers whose employers provide them with training	10
12.	Workers whose employers care about their career progression	100
13.	Workers whose works are well-instructed to them (work rules/job description)	50
14.	Workers who have a good relationship with their coworkers	90
15.	Workers whose employers reward them for their hard work	60

Sl No.	Questions	Responses (Average)
1.	Work experience in present job (average months)	31.2
2.	Average monthly income from present job (in taka)	17850.0
The next few responses are on a scale of 1-10 where 1 is the best outcome and 10 is the worst		
3.	The average level of chances of automation replacing their job	4.6
4.	The average level of problems faced due to current education, experience, and skills (average)	3.1
5.	The average level of physical labour in the present job	6.0
6.	The average level of difficulty for the workers to find a better/ equivalent job want to leave their present job	6.0
The next few responses are on a scale of 1-10 where 1 is the worst outcome and 10 is the best		

Sl No.	Questions	Responses (Average)
7.	The average level of satisfaction of the workers at their present job	6.8
8.	The average level of skills of the workers	7.8
9.	The average level of help formal education has provided to the workers to be more skilled at their work	3.7
10.	The average level of help any off-the job-training has provided workers to become more skilled at their work	3.2
11.	The average level of help any on-the-job-training has provided workers to become more skilled at their work	3.4
12.	The average increase in the skill level of the workers by working at their respective firms	7.3
13.	Average evaluation of the market price of the workers' skill level in the industry they are working in	7.0
14.	Average evaluation of the market price of the workers' skill level in other industries	4.1

Future Training Need

Sl. No.	Type of Training	Percentage of workers willing to pay for the training		
		Full Payment	Partial Payment	Not willing to pay at all
1.	Rod binding training	0	0	100
2.	Shuttering carpenter training	0	0	100
3.	Rod cutting training	0	0	100

Future Job Aspiration

Sl No.	Job Title	Percentage of Aspiring Respondents	The average level of physical labour in the job (on a scale of 1-10 where 1 is the least amount of physical labour and 10 is the highest)	Average expected monthly income of the future job (In taka)
1.	Foreman	40	4.50	30500
2.	Contractor	60	2.66	38333

Illness and Satisfaction Related Questions

Sl. No.	Questions	Responses
1.	The average number of days (in the last 4 weeks) the workers couldn't work due to sudden illness or accident, chronic illness, or any other health issues (days)	3.2
2.	The average number of days in the last 4 weeks, the workers couldn't work due to this chronic illness? (days)	3.0
3.	Workers who are suffering from any chronic illness (e.g., diabetics, asthma, cancer, cardiac disease, high blood pressure, hepatitis, etc.) (%)	0
4.	The average level of satisfaction of the workers with their life at present (on a scale of 1-10 where 1 is the worst outcome and 10 is the best)	6.2

ANNEX TABLES: CHAPTER VIII

Is labour retention a problem in the construction sector? How do the construction companies ensure a steady labour supply in their project?

Ways real estate companies ensure steady labour supply	% in terms of respondents	% in terms of responses
Increasing salary	48.39	20.27
Giving incentive package	25.81	10.81
Increasing health care security	25.81	10.81
Giving salary in accordance to the productivity of a worker	22.58	9.46
Increasing benefits like life insurance	19.35	8.11
Influencing/Counselling	12.90	5.41
Giving timely salary	12.90	5.41
Ensuring work safety	12.90	5.41
Following proper rules and regulations of salary	12.90	5.41
Good behavior with worker	9.68	4.05
Improving working environment	9.68	4.05
Solving the worker issues firsthand	6.45	2.70
Giving promotion	3.23	1.35
Recruiting more workers than needed	3.23	1.35
Reducing workhour	3.23	1.35
Proper sanitation	3.23	1.35
Improving worker-owner relation	3.23	1.35
Ensuring food and housing	3.23	1.35

Some people argued that building Real Estate is relatively slow in Bangladesh (compared to other East Asian countries, for example, China). Do you agree? If yes, why?

Reasons why building Real Estate is relatively slow in Bangladesh (compared to other East Asian countries)	**% in terms of respondents**	**% in terms of responses**
Technological backwardness	74.19	27.38
Shortage of skilled worker	54.84	20.24
Financial crisis	25.81	9.52
Shortage of raw material	16.13	5.95
Untimely bill passing	12.90	4.76
Low salary	12.90	4.76
RAJUK and PWD work pace is too slow	6.45	2.38
Lack of positive attitude	6.45	2.38
Not beginning and ending work in time	6.45	2.38
Administrative and planning problems	6.45	2.38
Health risk	6.45	2.38
Intentional delay to gain more profit	6.45	2.38
Unavailability of bank loan	6.45	2.38
Irregular salary	6.45	2.38
Bangladesh's climate/weather isn't construction friendly	3.23	1.19
The Bank interest rate is too high	3.23	1.19
Scarcity of healthcare	3.23	1.19
Lack of training	3.23	1.19

Reasons why building Real Estate is relatively slow in Bangladesh (compared to other East Asian countries)	% in terms of respondents	% in terms of responses
Lack of productivity	3.23	1.19
Transportation problem	3.23	1.19
Workers try to shirk	3.23	1.19

List 5 trades/occupations (for example, plumbing, electricians, etc.) in the construction sector for which technological change will create a rising demand during 2021-2026.

Trades in the Real Estate sector for which technological change will create a rising demand during 2021-2026	% in terms of respondents	% in terms of responses
Electrician	67.74	15.00
Plumber	51.61	11.43
Rod binder	51.61	11.43
Advanced Machine operator	35.48	7.86
Tiles setting operator	32.26	7.14
Mason	29.03	6.43
Engineer (Civil, electrical, hydro-mechanical)	25.81	5.71
Painting using machine	19.35	4.29
Piling machine	12.90	2.86
Tower crane operator	9.68	2.14
Rig operator	9.68	2.14
Hydraulic hammer operator	9.68	2.14
Sanitary	9.68	2.14
Drywall installer	9.68	2.14
Ready mix operator	9.68	2.14

Trades in the Real Estate sector for which technological change will create a rising demand during 2021-2026	% in terms of respondents	% in terms of responses
Plastering using the electric machine	9.68	2.14
The woodworker who is skilled at machine operation	9.68	2.14
Ready mix	9.68	2.14
Diploma engineer	6.45	1.43
Pipefitter	6.45	1.43
Architect	3.23	0.71
Flooring installer	3.23	0.71
Wheel loader	3.23	0.71
Pay loader driver	3.23	0.71
Excavator driver	3.23	0.71
Cutting machine	3.23	0.71
Ceramics worker	3.23	0.71
Grinding machine	3.23	0.71

Are you anticipating new production processes/technological changes to be introduced in the construction sector of Bangladesh in the next 5-10 years that will require more skilled workers? If YES, in which areas?

Trades that will require more skilled workers due to technological changes in the next 5-10 years	% in terms of respondents	% in terms of responses
Rod binder	54.84	13.49
Electrician	48.39	11.90
Plumbing	35.48	8.73
Mason	25.81	6.35

Trades that will require more skilled workers due to technological changes in the next 5-10 years	% in terms of respondents	% in terms of responses
Machine operator	25.81	6.35
Tiling worker	19.35	4.76
Pipefitter	19.35	4.76
Crane operator	16.13	3.97
Piling machine operator	16.13	3.97
Painter	12.90	3.17
Plastering using the electric machine	12.90	3.17
Painting using machine	12.90	3.17
Tower crane operator	9.68	2.38
Hydraulic hammer	9.68	2.38
Shuttering	9.68	2.38
Ready mix	9.68	2.38
Woodworker	9.68	2.38
Engineer	6.45	1.59
Sanitary	6.45	1.59
Precast	3.23	0.79
RCC concrete precast	3.23	0.79
Steel structure	3.23	0.79
Equipment operator	3.23	0.79
Underline electrical worker	3.23	0.79
False ceiling set up worker	3.23	0.79
Central AC equipment set up worker	3.23	0.79
Payload machine operator	3.23	0.79

Trades that will require more skilled workers due to technological changes in the next 5-10 years	% in terms of respondents	% in terms of responses
Brick worker	3.23	0.79
Ceramics machine	3.23	0.79
Vibrator machine	3.23	0.79
Mixer machine	3.23	0.79
Equipment operator	3.23	0.79
IT specialist	3.23	0.79

How do you think the government can contribute more to the vocational training for construction workers?

Ways the government can contribute to the vocational training for construction workers	% in terms of respondents	% in terms of responses
Increasing government training centres	32.26	16.95
Increasing incentive package	25.81	13.56
Providing Free or low-cost training facility	25.81	13.56
Introducing vocational training to workers	16.13	8.47
Increasing salary	12.90	6.78
Using advanced technology in govt. training institutes	12.90	6.78
Easier bank loans	12.90	6.78
Introducing training stipends	12.90	6.78
Increasing monitoring according to government law	6.45	3.39
Giving training certificates	6.45	3.39
Reducing red tape in RAJUK, TITAS, etc.	6.45	3.39

Ways the government can contribute to the vocational training for construction workers	% in terms of respondents	% in terms of responses
Reducing political problems	6.45	3.39
Introducing technical and practical knowledge in the educational curriculum	3.23	1.69
Reducing health risk	3.23	1.69
Higher training home or abroad	3.23	1.69
Introducing insurance	3.23	1.69

Defining a skilled worker in the construction sector

Criteria	Percentage in terms of Respondents	Percentage in terms of Responses	Average Years Required
Who has on-the-job training	100	35.22	2.91
Who has experience gathered from working	93.35	32.95	3.00
Who has formal training from any TVET institutes	83.87	29.54	-
Other approaches to test their skills	51.61	18.18	-
Who displays efficiency while performing the work	38.70	13.63	-

Do you think on-the-job training and working experience define the skill of a worker? If yes, how many years of on-the-job training and working experience does a worker need to be considered a skilled worker?

Criteria	Less than 1 year	1-2 years	3-5 years	More than 5 years
Years of in-the-job training	19.35%	35.50%	32.25%	12.90%
Years of experience gathered from working	03.44%	55.17%	31.05%	10.34%

If skill composition changes, how would you get the required skilled workers?

Ways to Acquire Skilled Workers	Percentage in terms of Respondents	Percentage in terms of Responses
From TVET graduates	87.09	27.55
From the labour market	77.41	24.48
Attracting labour from other organizations	70.96	22.44
By providing refreshers training to the existing workers	58.06	18.36
By recruiting immigrant workers	54.83	17.34
By recruiting unskilled workers and providing them with on-the-job training	38.70	12.24

What is the recruitment process of your firm?

Recruitment Process	Percentage in terms of Respondents	Percentage in terms of Responses
By subcontracting	83.87	19.11
Upon recommendation of the existing employees	80.64	18.38
Walk-in interviews	70.96	16.17
From your own village	67.74	15.44
By contacting TVET institutes	45.16	10.29
Through advertisement	41.93	09.55
By recruiting unskilled workers	38.70	08.82
Other ways	09.67	02.20

What is the minimum education requirement for the workers?

Level of Formal Education	Percentage
No formal education required	00.00
Primary education	32.25
Secondary education	64.51
Higher secondary education	03.22

Have any of your workers left their job for migrating abroad? If yes, then how many have left in the past 3 years?

Year	Number
2019	2.77
2020	0.22
2021	1.25

To what extent education and training is valued in the sector

Questions	Percentage in terms of Respondents	Percentage in terms of Responses
Is literacy considered important while employing new workers in your firm?	80.64	20.16
Do you prefer hiring real estate workers with formal training?	74.19	18.54
Does it cost more to hire workers with formal training compared to workers with no such training?	74.19	18.54
Is worker retention a problem for your firm?	58.06	14.51
Does a shortage of skilled labour presently constrain your production targets/activities?	54.83	13.70
Have your organization incurred any losses for hiring unskilled workers?	54.83	13.70
Are there any foreign employees working in your organization?	03.22	00.80