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Mitigating Skills Shortage in the South African Construction Industry

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Abstract.
Constriction industry is multifaceted and multidisciplinary with the presence of diverse stakeholders including the skilled and unskilled workforce. Over the years, there has been a decrease in the number of skilled workforces in the South African industry due to such factors as emigration, poor education system, etc. This study examines different remedies to the skills shortage in the construction industry with a view to maintaining excellence and enhancing the performance of construction projects. Using closed-ended questionnaires as the research instruments, necessary factors from the literature were compiled and examined by distributing the questionnaires to the skilled workforces in the construction industry, which are professionals and artisans. Analysis of the collected data revealed that the major remedy to skills shortage in the industry is through the organization of training courses for a non-English speaking citizen from various regions of the country. There is also a need for training of the skilled workmen in the area of business skills, management skills, and job instruction. This study will be useful for construction education training agency (CETA), construction professional bodies, trade unions and other agencies that are tasked with the responsibilities of promoting, regulating and training of the skilled workforce in the construction industry in discharging their roles effectively and efficiently.

Keywords: Education, Incentive, Mentoring, Skill development, Training.

1 Introduction

Infrastructure development is an important contributor to the South African economy, it contributes enormously to the reduction of poverty and generation of employment in the country [1]. This implies that the performance of the construction industry has a major effect on the Gross Domestic Product of the country. The South African government has been setting targets for the growth of the economy ever since the beginning of democracy. According to Mukora [2], the government had planned to mitigate poverty and unemployment by half within 10 years from the year 2004 until 2014. The government also set out growth rates in percentages for the years that follow but in the case of the construction industry, there has been a critical decline in the demand for construction products [3]. This has affected the economy as the gross

domestic product has gone down to a percentage of 3%, which is far lower than 7% in the 1970s [4].

The fact that the demand for construction products has declined does not mean that the industry is no longer of importance to the South African economy. According to the Department of Public Works [5], the number of employees that have been hired under the industry increases significantly with each year, with the growth of 9.5% from September 2005 – 2006. The overall growth rate increased from 10% to an astounding 14% in just a year, from 2005 to 2006, hence the construction industry is of importance to the economy of the country as it provides employment. The Construction Industry Development Board [6] noted that since 2008, the construction industry has contributed around 9% to total formal and informal employment in South Africa. Lawless [7] and the South African Association of Consulting Engineers [8] examined skill availability in the construction industry, it was reported that there has been a shortage of staff especially the mid-career professionals in the industry. The major outcome of this challenge is poor productivity and workmanship level resulting in high demand for a workforce with experience and high critical skills. This study, therefore, investigates various factors necessary for the reduction of skill shortages in the construction industry with a view to enhancing the availability of necessary skills for the optimum performance of the construction industry.

2 Remedies to Skill Shortage

Mandate [9] opines that to be able to obtain and sustain at least 6% or more growth in the economy, the government needs to heavily invest in education and skills. Measures such as Skills Development Levy and the Skills Development Act needs to be prioritized to support job creation and economic growth. This will positively impact the job market and improve the number of future skilled worker [10]. Other necessary approaches are:

2.1 Apprenticeship

Allardyce and McNamara [11] defines apprenticeship as a combination of workers trained while already on the job and are given work instructions that teach them the work of a highly skilled occupation. Zou *et al.* [12] argued that apprenticeship training is a system of training in which the young worker coming into the industry is permitted to go through instruction and experience, both on and off the job, in the practical and theoretical areas of the work in a skilled trade. Makhene and Thwala [3] explain that it is protocol for the apprentices to take a whole year of training which can be an approximate of 2000 working hours and at least 144 hours of direct instructions. However, when it comes to the construction industry, it usually takes a minimum of 2 years and a maximum of 4 years depending on the kind of job activity, or occupation of the apprentices in consideration. Once the workers have completed their training, they receive certificates that award them as trained apprentices. It is believed that proper

apprenticeship within the construction industry is bound to increase the number of skilled technical workers needed for optimum performance of the industry [15].

2.2 Incentives

Making use of incentives seems to be a solution to many workers who lack motivation, not only in the construction industry but in other fields. Bilau *et al.* [13] mentioned that some of the known major issues that affect the growth of a skilled workforce and also the struggle of retaining them are poor remuneration. As a country, South Africa operates a set of standard constants for paying workforce, and if the salary is increased, there could be a better chance of people taking various job opportunities as a career choice. This will help the survival and aid the sustenance of available skilled workers, since skilled workers tend to migrate to countries for better pay [13]. Construction firms can also adopt various reward systems to motivate workers and improve performance [14].

2.3 Training on business and management skills

It is necessary for organizations in the construction industry to contribute to building personal skills and this can be achieved through increased training and development of both existing and potential employees. Thwala and Phaladi [15] stated that the cause of failure in emerging construction companies is majorly due to lack of training. The study further reiterated that for an emerging construction company to develop and remain sustainable, there is the need for business skills and financial skills to guide against various challenges such as bankruptcy. Therefore, the need to train construction workers in order to possess adequate skills for record keeping and effective cash flow management is of paramount importance. Construction firms could make use of different kinds of training mechanism to be able to achieve productivity in their organizations. Bokinni [16] concluded that achieving development in organizations depends on the process of imparting certain skills and ability to apply the skills to various forms of activities by the personnel. There are a number of strategies that are used to train the new and existing workforce, these include apprenticeship, job instruction training, conference and discussions, coaching and lecturing as well as classroom training among others. Some of these training methods are further explained [13; 14].

2.4 Improving the image of construction careers

One of the major causes of skills shortages in the construction sector is that current young graduates and individuals do not find any interest in the construction industry as a career. Several reasons have been attributed which include unattractive nature of construction-related career, the dirtiness of the job, physically challenging, stressful and perceived as a dangerous nature of the career. According to Makhene and Thwala [3], the construction career fell at number 247 out of 250 least attractive careers based on a study conducted in a high school by the national business employment weekly. More

so, Mbeki [4] argued that architecture, engineering, and construction industry has always had an image problem all around the globe especially among the youth. This challenge can be mitigated by improving the image of the industry through various forms of sensitization, incentives and other useful programmes.

2.5 Use of expanded public works programmes

Mantashe [9], as well as Tshele and Agumba [14], suggested that the government and construction contractors have been adopting the use of a labour-intensive approach for construction activities. The approach is defined as a method where the labour force is more dominant for performing work for the purpose of achieving the lower project, this implies that the higher the workforce in the project, the lower the cost and ability to safeguard quality procedure. The approach is more common in areas where there is a high supply of skills without opportunities to practice them. The labour-intensive approach creates projects that will offer employment to the residents living in the project area and this can guide against migration to other countries with work opportunities. This procedure could be handy in mitigating skills shortage in the South African construction industry because it has better effects on developing countries where most of the working-class youth lack necessary and basic skills for survival [4]. Such programmes as public works programmes that provide work opportunities for the unskilled youth workforce and the Expanded Public Works Programme (EPWP) which provides temporary work opportunities, as well as training of the unskilled population, can be adopted. Mbeki [4] noted that the EPWP has established a contractor leadership programme which will provide training to emerging contractors for managerial and technical skills.

2.6 Attracting and developing young talent

Due to the lack of collaboration between the town and gown, young people do not seem to have the knowledge and information about the basis and business of the construction industry. These have resulted in lack of interest and visible skills shortage in the industry, and in order to mitigate this challenge, there is a need to develop various means and activities that will aid youths and high school students to be more informed and gain interest in the industry.

Rasool *et al.* [17] opined that the construction industry has an image problem among young people internationally, and this is also a major concern for South Africa. In view of this, Mbeki [4] stated that concerted effort should be geared into getting the attention of young people to the activities of the construction industry as this will help to sustain an develop the future supply of indigenous skills in the country. This can be achieved through effective and efficient campaign directed towards the promotion of the image of the industry together with its trades, occupations, and careers. It was also asserted that some construction firms are currently addressing the problem by collaborating with schools, colleges, and universities, as well as through promotion and development of basic business skills. Medugu *et al.* [18] concluded that such firms are able to achieve

this by providing sponsorships and job experience for young people using various approaches.

3 Research Methodology

The quantitative research approach was adopted through an in-depth understanding of the existing literature in the area of skills and skills shortage. This allows for the formulation of a clear research question for the purpose of acquiring the necessary information for the study. Using survey method, questionnaires were administered on respondents with adequate knowledge of the skills shortage issue in the construction industry, these include engineers, architects, quantity surveyors, construction project managers and artisans in Gauteng region of South Africa. The main reason for the choice of these stakeholders is due to their experience of construction activities, it is believed that they would have a better insight and provide necessary information how skills shortages can be mitigated in the construction industry. A purposive sampling approach was adopted in the selection of respondents, this was achieved by ensuring that they possess a minimum of 5 years of experience in the construction industry for a proper understanding of the industry and issue of skill shortage.

The questionnaire designed for the study comprised of two sections: the first section contained demographic questions where respondents had to choose an answer from the alternatives provided while the second section contained possible solutions and remedies that could mitigate the issue of skills shortages in the construction industry. Majority of the questionnaires were distributed and collected directly from the respondents' workplaces, which were construction sites, consulting firms as well as construction firms within the study area. A 5-point Likert scale was adopted which ranged as follows; 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree (Neutral), 4 = Agree, 5= Strongly Agree. The 5- point scale was transformed to a Mean Item Score (MIS) and standard deviation (SD) for each of the factors and the indices were used to rank and determine the importance of each item. The internal level of consistency of the collected data was evaluated using Cronbach's alpha and the obtained value of 0.744 indicate that there is a correlation among the scores from the various respondents.

4 Findings and Discussions

4.1 Background information

Out of the 50 questionnaires that were distributed, 45 were returned and only 41 had all the questions correctly and completely answered by respondents. About 34% are female while the remaining 66% are male with a minimum of diploma or degree certificate. The average age and years of experience are about 34 and 11 years respectively. Their professional qualification and practice reveal that about 15%, 15%, 17%, 29% and 24%

of the respondents are engineers, artisans, architects, quantity surveyors, and construction project managers respectively.

4.2 Remedies to skills shortage in the construction industry

Based on the relevant literature materials, fourteen factors for mitigating skills shortages in the construction industry were examined and presented to respondents as explained under research methodology. Table 1 indicates the results of their opinions and it could be observed that training courses for non-English speakers are the most important remedy to the issue of skills shortages (MIS of 4.78 and SD of 0.475). Also, of high importance are training for business and management skills with MIS of 4.63 and SD 0.581, attracting and developing young talent with MIS of 4.59 and SD of 0.547 as well as job instruction training with MIS of 4.54 and SD of 0.505.

Table 1. Mitigating skills shortage in the construction industry

Variables	Mean	SD	Rank
Training courses for non-English speakers	4.78	0.475	1
Training for business and management skills	4.63	0.581	2
Attracting and developing young talent	4.59	0.547	3
Job instruction training	4.54	0.505	4
Structured curriculum-based training	4.44	0.543	5
Classroom training	4.44	0.550	6
Make use of apprenticeship	4.44	0.617	7
Trade group training	4.41	0.591	8
Utilize Expanded Public Works Programmes	4.29	0.602	9
The value of graduates should not be underestimated	4.27	0.672	10
Conference and discussion methods	4.07	0.721	11
Dedicated research and development departments	4.05	0.622	12
Improve the image of construction careers	4.05	0.705	13
Make use of incentives	4.00	0.775	14

Other necessary factors include structured curriculum based training (MIS of 4.44 and SD of 0.543), classroom training (MIS of 4.44 and SD of 0.550), making use of apprenticeship (MIS of 4.44 and SD of 0.617), trade group training (MIS of 4.41 and SD of 0.591), the use of expanded public work programs (MIS of 4.29 and SD of 0.602),valuing of graduates without underestimating them (MIS of 4.27 and SD of 0.672), conference and discussion methods (MIS of 4.07 and SD 0.721), dedicated research and development departments (MIS of 4.05 and SD of 0.622) and improving the image of construction careers (MIS of 4.05 and SD of 0.705). The least important mitigating factor for skills shortage is the adoption of financial and non-financial incentives for a workforce with MIS of 4.00 and SD of 0.775. It could further be observed that the least MIS values of 4.00 indicate that all the identified remedies to skill shortage are deemed important by respondents.

The most important remedy to skill shortage was training for non-English speakers. However, there was no sufficient information in reviewed literature materials that could support this factor. Rasool and Bothat [17] noted that the non-English speakers training

was only for induction in construction projects. Thwala and Phaladi [15] stated that the cause of failure in emerging construction companies is the lack of training, therefore emerging construction companies need to practice business and other necessary skills in order to remain in business. Making use of incentives has seemed to be a solution to many workers who lacked motivation, not only in the construction industry but in many other fields. Bilau *et al.* [13] concluded that some of the issues that affect the growth of the skilled workforce and the struggle of retaining them are poor remuneration, this implies that providing necessary and acceptable remunerations in the construction industry can be a solution to skills shortages issue.

In agreement with the findings of this study, previous studies have shown that making use of classroom training, trade group training, job instruction training as well as conference and discussion methods are important mitigating factors to skills shortage problem in the construction industry. Attracting young people's attention towards the construction industry has been identified in this study as a key solution to the skills shortage issue [13; 14; 17]. In support of this finding, Mbeki [4] noted that architecture, engineering, and construction (AEC) industry has always had an image problem among the young people, including graduates, and it is said to be a global concern.

5 Conclusion and Recommendation

Information from reviewed literature materials indicated that there are a number of resources that could be adopted by governments, consulting firms, construction firms and other stakeholders in the construction industry for the mitigation of skills shortages in the South African construction industry. These include the use of apprenticeship, utilizing incentives, training for business and management skills, trade group training, classroom training, conference and discussion methods, attracting and developing young talent, making use of expanded public works programmes as well as improving the image of construction careers.

Findings from the analyzed data supported the views of various authors of reviewed literature materials. To mitigate skills shortages in the South African construction, there is a need for training courses for non-English speakers, training for business and management skills, attracting and developing young talent, job instruction training, structured curriculum based training, classroom training, making use of apprenticeship, trade group training, utilising expanded public works programmes, valuing graduates and not underestimating them, utilising conference and discussion methods, dedicated research and development departments, improving the image of construction careers, as well as making use of incentives. It is therefore recommended that construction firms invest in training and developing their employees in each and every department of their organizations. There is also a need for better investment in technical schools for effective training of individuals in relevant skills. More so, there is a need for graduate programmes in construction-related firms for the purpose of providing in-job training as this help the graduates to gain the necessary experience and enhance the improvement of the industry.

This study has provided necessary factors that are necessary for mitigating skill shortages in the South African construction industry. It will be useful for the construction education training agency (CETA), Construction Industry Development Board (CIBD), construction professional bodies, trade unions and other agencies that are tasked with the responsibilities of promoting, regulating, managing, developing and training of skilled workforce in the construction industry in discharging their roles effectively and efficiently.

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