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SKILLED LABOUR SHORTAGES IN CONSTRUCTION CONTRACTORS: A LITERATURE REVIEW

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ABSTRACT

Purpose/objectives:

The aim of this study is to determine the causes of technical skilled labour shortages in the construction sector. Furthermore the study seeks to identify current interventions; the impact of skills shortages and also the problems the construction companies are facing in addressing these shortages.

Problem investigated:

There is an extremely high rate of technical skilled labour shortage and seventy – five percent (75%) of the contractors and owners are experiencing this shortage which cost them time and money. An aging workforce, low pay, poor image and poor career paths for skilled labour have precipitated the current work shortage.

Design/ Methodology/Approach:

The research is mainly a literature review with a special focus on the skills development and management. A survey will then be conducted later.

Findings/ Implications:

The literature review identifies the problem of skilled labour shortages in all forms of trades. It identifies that there will still be a huge number of trades that will not have skilled people. The trades which were most likely to be affected by the shortages were electricians, bricklayers, plumbers, welders and roofers. It is therefore imperative to take careful cognisance to the shortages considering the industry do to well in the next decades.

Conclusion:

In order to alleviate the problem of skilled labour shortages in the construction sector, major change in construction education programmes, the training, recruitment and good incentives need to be presented in place. Thus without giving necessary attention to the above mentioned tools, the shortage precipitation of skilled labour will remain in force.

Keywords: Skills shortage, Construction labour; Construction Industry; Interventions; Apprenticeships.

INTRODUCTION

The problem of skilled labour shortage in the United States construction industry was predicted more than two decades ago. A report written by the Business Round Table (BRT 1983) describes a technical skilled labour shortage as one of the main challenges the United States construction sector would be facing the last decade of the past century. The report predicted shortages of construction labour in both the open-shop environment and the union environment due to contractor's lack of interest in training and owners ignorance.

According to Bennett, (2001), the shortfall is a result of demographic issues, normal attrition, and the construction industry's poor image. However, these factors, along with construction users' fixation on cost per hour rather than total cost, have also contributed to degraded skill levels in workers. Currently, there is an extraordinary struggle for a very ordinary workforce. A more recent study by the construction User Round Table (CURT 2001) showed that owner companies considered the shortage of technical skilled labour as the most critical problem today's construction industry is facing. Of the responding companies, 82 % experienced shortages of technical skilled workers on their projects. Within the sample, 78 % indicated that trend has worsened over the past few years. One of the three owners reported increased cost, schedule delays, and project cancellations owing to craft shortages and 73% called the impacts significant or moderate. The study found that all types of construction projects (i.e., all sizes, all areas, and in every craft) are affected by shortages, however, the most affected trades were electricians, plumbers, welders, bricklayers, carpenters and roofers.

Recent statistics published by the Bureau of Labour Statistics (BLS 2004) indicate that by 2010, there will be a need to replace 1 49 000 construction trade jobs. The recent Bureau of Labour Statistic data indicate the construction industry is projected to be the largest and fastest source of employment growth among goods producing industries. For example, demand for steel metal workers is expected to have the fastest growth among other trades, adding 43 400 new jobs. Another fast growing occupation is electricians, which will experience demand for 84 800 jobs. Finally, the demand for construction labourers is expected to increase by 106 480 by 2010. Given this projected growth in the need for technical skilled construction workers and the poor image of the industry, construction employers might face problems finding new entrants to fill these positions or finding entrants with all necessary skills. The construction industry in the United Kingdom for example is facing a technical skilled labour shortage. The United Kingdom construction industry must draw from all labour sources irrespective of construction related experience, age, ethnic or social background. A study of infrastructure in South Africa revealed a shortage of individuals to build and maintain infrastructure in undeveloped areas.

CONSTRUCTION INDUSTRY IN SOUTH AFRICA

In South Africa, the skills shortage has been acknowledged by Government and industry (Singh, 2007). The skills deficit appears to be on a path where demand will continue to outstrip supply as a result of the substantial growth in infrastructure investment. The step change in announced private sector projects in 2005 and 2006 resulted in additional skills requirements, the precise nature of which was beyond the scope of the study. Government-initiated projects also suggest a significant number of small (by value) municipal, provincial and national projects that will require more skills spread over several projects rather than a concentration of skills in fewer large projects.

Public corporations are expected to rollout a limited number of overlapping large projects, in addition to several other concurrent stadiums, Gautrain, airport, dam, housing and national roads projects. However, the skills requirement for each of these projects is expected to be in the order of 10's for

professionals and 100's for artisans, with only Eskom requiring about 2,000 artisans at peak levels of demand for each of its new power station projects.

Skills demand in the civil engineering industry has led to a rapid increase in employment to 107,000 employees in 2006 (13% higher than in 2005), further stimulated by strong optimism in the future outlook, the sector recorded a confidence index of 98/100 in December 2006. The industry has indicated that a skills crisis does exist to the extent that it takes longer to source skilled workers with the surge in skills demand resulting in a 30% premium to retain existing critical staff.

REVIEW OF INTERNATIONAL LITERATURE

One of the greatest challenges currently facing the construction industry is attracting and retaining skilled craftspeople Kashiwagi and Massner (2005). In Arizona, the skill levels continue to decline while owners squeeze contractors for lower costs and faster schedules through the low-bid or design-bid-build delivery process. In response, contractors have reduced training and use of less skilled craftspeople to be competitive. An aging workforce, low pay, poor image and poor career paths for skilled craftspeople have precipitated the current work shortage. Both owners and the contractors are encouraged to work together to address these issues. One of the methods to accomplish this is to minimise the use of the low-bid process and move to a system that will more incentive for contractors to have highly qualified craftspeople. Contractors and owners that find a way to attract and retain quality craftspeople will be considered to be the successful companies of the future.

A construction industry institute study shows that 75 % of the contractors are experiencing labour shortages and that these shortages are costing contractors and owners time and money. The business round tables construction committee found that 25 % of their members projects encountered cost overruns and or schedule delays caused by a labour shortfall Kashiwagi and Massner (2005). The Department of labour, estimates that the construction industry needs to attract 240 000 workers each year in order to replace the aging workforce that is retiring or leaving the industry. The Department of labour also reports that the current average age of construction worker is 47 years old and climbing.

NEGATIVE FACTORS AFFECTING CONSTRUCTION INDUSTRY

Quickly identifiable problems in the recruitment of skilled craftspeople include low wages, no clear cut career path, and a continuing diminishing craftsperson skilled training programme. Low wages is a major reason the construction industry is having problems retaining skilled labourers.

There seems to be a lack of image and well defined career path in the construction industry. In a recent survey of high school student by the national business employment weekly, 'Construction Worker' came in number 247 out of a possible 250 as an attractive career option. (Eickmann, 2001) Today's young people see construction work as uninteresting work and unattractive for variety of reasons, not limited to being dirty, physical challenging, moving around to work and often dangerous resulting in many young people opting to pursue other careers. Once a worker reaches journeyman status, which is normally around age 30, he has his salary set for life. For an example, a skilled welder with ten years of experience typically makes about \$ 17 to \$ 18 per hour. So, attrition from the industry usually begins around age 35. They drop out and do something different (Tucker, 2001).

There has also been a decrease in training by the unions. The unions have moved their efforts from improving their training programs and identifying the difference in performance to having owners specify labour agreements where craftspeople used by contractors are union trained. Job training has been traditionally handled by the trade unions in the construction industry.

Several solutions have been used to alleviate the problem of skilled labour shortages in construction industry. These include increased wages and other incentives such as guaranteed overtime, implementation of training incentives, employing foreign labour or even outsourcing construction work to foreign sources, and reduction of demand through automation and technology (Pappas 2004). However, such measures are difficult to sustain unless backed up by long – term strategy to support them. Other studies focused on the apprenticeships and new approach to learning that could address skills shortages and also transforming corporate performance or productivity.

APPRENTICESHIPS

By definition, an apprenticeship represents a combination of on-the-job training and related instruction in which workers learn the practical and theoretical aspects of a highly skilled occupation Allardyce and McNamara (2005). The Office of Apprenticeship Training, Employer and Labour Services (OATELS) set quality standards for all apprenticeship programs registered with the federal government. It requires that all registered apprenticeships include at least one year (2,000 work hours) of on-the-job training and at least 144 hours of formal instruction. Apprentices completing the apprenticeship programs registered with federal and/or state governments will receive a certificate upon the completion of training. A federally registered apprenticeship is recognized across the nation and can be used in getting a journeyman's card in any participating state.

Construction apprenticeships generally take two to five years to complete, depending on the occupation. The apprenticeship requires five years for electricians, four years for carpenters, sheet metal workers and millwright workers, and three years for painters, drywall tapers, and bricklayers. For a general construction labourer, the apprenticeships generally require only two years to fulfill the requirements. Furthermore, if the apprentice receives a certificate for completing the training, he or she can also receive a journeyman card from their respective national union organizations. With a journeyman's card, a worker can find work anywhere in the nation in that particular occupation. Though many apprenticeship programs have adopted a philosophy of 100 percent acceptance to the programs, they still must place some minimum requirements on eligible applicants to ensure people are truly interested in construction trades.

In general, the minimum requirement for acceptance into an apprenticeship requires that an applicant:

- be at least 17 or 18 years old,
- have a valid driver's license,
- have a high school diploma or GED certificate, and

- to be physically capable of performing the work of the trade to be learned.

Some training providers set stricter requirements by asking applicants to provide proof of eligibility of work or requiring applicants to take an entrance examination on their reading or math skills. Several providers enforce zero-tolerance drug policies by requiring applicants to pass a drug test and by conducting periodic drug testing to ensure the safety and health of apprentices for their member contractors.

For union-organized apprentice training, the policies can be slightly more stringent Allardyce and McNamara (2005). Often time applicants are brought into the apprenticeship program on "as needed" basis. The number of applicants brought in depends on the work available at the time. Some training providers adopt a policy of "pre - apprenticeship" to ensure that applicants are suitable for construction careers. Of course, workers enter many construction jobs with no formal classroom training after high school. Workers starting immediately after high school can enter the construction trades occupations as labourers, helpers or apprentices. For those who come with the background of technical or vocational schools, they typically progress at a somewhat faster pace than workers who have only a high school degree because the technical or vocational program graduates already have had some of the necessary courses in mathematics or mechanical drawing that help them succeed in higher skill trades occupations. Through the apprenticeship or employer-provided training, entry-level workers can enhance their skills by working with more experienced workers and moving on to perform more highly skilled occupations. These apprenticeships and other training also typically require classroom training in math and drafting. With additional education and training, skilled craft workers can also advance to supervisor or superintendent positions through more advanced training and apprenticeship programs. Participating in apprentice training allows young people who have no experiences in construction to learn the specific trade skills. The benefit to the firm, industry, and customers is that these workers have the credentials and capability to complete quality construction work.

Union" apprenticeship programs provide a wide range of construction trades and safety training for electrical work, carpentry, boiler making, general construction, drywall installation, bricklaying, painting, plumbing, pipefitting and refrigeration, sheet metal, and other trades. Apprentice participation in the union apprenticeship programs is limited to contractors who are union members.

The second type of apprentice training program is provided by non-union, or "non-bargain," "non-joint," or "open-shop" organizations. These non-union apprenticeship programs are governed unilaterally with individual employers or contractor associations controlling and administering the apprentice training.

The electrical, plumbing and carpentry trades are the most common crafts offered through the non-union apprenticeship program providers. For some association apprenticeships, contractors must be members of that specific trade association. Apprentices who participate in this type of training are frequently limited because firms must first recruit a worker to participate and then sponsor their enrolment. The other type of non-union apprenticeship program is frequently offered through private individual employers in which the firms train their own employees by designating experienced workers to mentor those new employees with specialized skills to meet the company's needs.

Companies that provide their own apprenticeships are primarily large contractors that are in the business of building construction, highway and tunnel construction, and specialty trades in carpentry, plumbing and electrical work. In addition to apprentice training, local community colleges and vocational schools also provide other venues for people who are interested in entering construction or upgrading their skills by taking courses related to building and construction trades. Several community colleges within the state offer apprentice training, mostly working with union or non-union training providers to allow their students to gain on-the-job training to complement formal classroom instruction. In these cases, the community colleges provide classroom-related training, either on or off campus while the trade unions or contractor associations conduct on-the-job training as well as tracking the working hours completed by apprentices for certification.

PRODUCTIVITY

Construction is generally labour-intensive and this is particularly the case in countries such as South Africa (CIDB, 2004). Historically, the construction industry has largely relied on a core of highly skilled staff (generally white and often expatriate) to supervise a largely semi-skilled and unskilled workforce (generally black). The decline in demand for construction products over the past decades, and associated uncertainty, has seen a reduction in skills training since the 1980s, and the closing down of industry training institutions in the 1990s. It has been reported that only about 70 percent of the available training capacity is currently being utilized. A high standard of quality in major engineering and commercial projects is largely reliant on an ageing skills base. Much of the industry's activity however relies on a semi-skilled workforce, with increasingly less able supervision. This often manifests in slow delivery, significant rework to rectify defects, and associated materials waste that is built into the tendering and project costs.

According to Coulson –Thomas (2007), companies or firms should adopt new ways of developing key workgroups. "A change of direction is urgently required. New ways of harnessing human potential and enabling excellence can deliver both commercial success and personal fulfillment." Professor believes: "Skill challenges faced by companies or firms can be addressed. Critical success factors have been identified in key areas and winning ways of undertaking activities vital for corporate success. Pioneering companies build the critical success factors into how people work, make it easier for them to undertake complex tasks, and enable them to emulate the approaches of high performance." According to Professor, "The right support can build confidence, increase skills and transform performance. The implications for a wide range of organisations are profound.

If the winning ways of high performers can be captured and emulated by others developing and retaining superstars becomes hugely important." He argued for a switch of priorities that "Training and development is focused upon bringing poor performers up to speed in marginal areas. The emphasis should be upon encouraging people to build upon natural strengths and excel at what they do best and most enjoy. Educationalists are too often focused upon the disruptive and a social engineering agenda rather than the pursuit of excellence and the encouragement of superstars whose superior approaches and discoveries could benefit everyone."

INCENTIVES/ REWARDS

Wages provide a marginal measure of the productive ability of workers, which is the value placed on a workers ability to convert mental or physical effort into productive output. The relative wage rise provides an incentive for workers to enter or re – enter the occupation. If the relative wage differential is maintained, for longer term, it will provide encouragement for students to train in the area and enter the occupation. Incentives are usually defined as tangible rewards that are given to those who perform at a given level. Such rewards may be available to workers, supervisors, or to top managers. Whether the incentive is linked directly to such items as safety, quality, the reward follows successful performance. Many companies feel that pocket money is no longer a good motivator. Some companies' merely reward good workers with an extra day -off with pay. Others concerns reward top performers with better working conditions.

Companies must have an innovative retention and reward strategy that goes beyond the usual pay-based schemes. Good pay is important, but not the answer to itself. There is a new workplace currency that motivates people to stay and it involves everything but pay, (Harraway, 2007). Good retention strategies go much deeper into the human psyche and involve actions and attitudes that make employees feel successful, secure and appreciated. "Globally, the best companies to work for do not pay the best salaries," "It is little things that count." Values are changing and a balanced life is becoming just as important as a fat salary. People want to be challenged on daily basis and they want to learn and grow. Yet different things motivate individuals, depending on their age, status and career goals. So reward strategies must be tailored to the employee. Overall, the reward should address compensation, benefits, recognition and appreciation. A "total reward package" blends monetary rewards (such as base salary, short- and long-term incentives, cash and health, welfare and retirement benefits) with non-monetary rewards (such as non-monetary recognition, a good working environment, and training and development).

Remuneration and performance management are business issues, not only human resources issues. "Decision regarding remuneration and performance management will have a direct effect on business profitability, operational expenditure, company culture and employee behaviour."

An effective strategy incorporates:

- Clearly defined goals and a well defined link to business objectives;
- Well designed, consistent pay and reward programmes, tailored to the needs of the organisation and its people; and
- Effective, supportive reward processes.

Harraway (2007) warned that the communication of a rewards strategy is as important as its design. "A poor benefits plan communicated well is better than the best strategy communicated poorly." As a retention mechanism and a performance driver, long- term incentive schemes form a key component of executive pay. But share options are very poor motivators because of the unpredictable nature of the stock market, so staffs prefer shot-term incentives.

At executive level in particular, the balance between short- and long- term incentives must be well structured. Short-term incentives can instantly pep up performance and encourage people to develop more skills or change their behaviour. Those instant rewards can also encourage the desired behaviours, attract and retain the best talent, reward people for going the extra mile.

FINDINGS

The purpose of this section is to synthesize the information associated with skills shortages and identify the most important findings. Globally, research shows that shortages are the biggest constraint on construction growth with project and contract managers, tradesman and engineers cited as the scarcest of all skills. The study identified that the shortfall of skilled labour is a result of demographic issues, normal attrition (i.e. A skilled worker start to set a salary for life at a certain age and turn to drop – out for something different) and the construction industry's poor image. It has been reported that the skilled labour shortages resulted in increased cost, schedule delays and project cancellations and that the impact has been significant (CURT 2001). The construction industry is unattractive for variety of reasons, not limited to being dirty, physical challenging, and often dangerous resulting in many people opting to pursue other careers. Low wages is also a major reason the construction industry is having problems retaining skilled labourers.

CONCLUSION AND RECOMMENDATIONS

The skilled labour shortage is one of the most factors affecting the construction industry currently. Most of the contractors are experiencing this shortage which cost them tremendous time and money. The quick identifiable problem is that the workforce that joined the industry in 1950s and 1960s is now quickly retiring and not that it's leaving the industry but result the industry with no skilled workforce. In addition, a lot of projects tend to close out due to this impact. Furthermore, young people tend not to show any interest in working in the construction industry, simply because of its conditions of work, the hours of work, and the flexibility of travelling around. Following are several recommendations that will address some of the fundamental issues facing the industry:

Government and the Private Sectors Intervention

It is important that the Government and the private sector maintain accurate and reliable data on supply and demand for ongoing planning, monitoring and evaluations. They need to improve and diversify funding to contribute to improve skills development through training, mentoring and internships.

Improving the image and awareness of careers in construction trades

This requires ongoing intervention by the construction firms and the industry. Specifically, initiatives such as Construction Week and open – day at colleges needs to be maintained and strengthened including enhanced support by industry.

Improving curriculum developments

There should be a growing acceptance that education and skills training should encompass a careful mix of theoretical as well as industry – based training.

Long term investments for Apprenticeships by worker and firm

Whilst Colleges offer theoretical components, firms need to get into an agreement with the trainees to host their practical training. The apprentice would then practice his/ her trade under the supervision of qualified artisan. Upon completion of such training, the trainee would write a trade test and receive a certificate of competence.

Incorporating incentives/ rewarding strategies to encourage and to retain

An innovative retention and rewards strategies need to be contemplated to attract and retain the best talent for workers to go an extra mile. If the relative wage differential is maintained for longer term, it will provide encouragement for learners to train in the area and enter the occupation.

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