

The Construction Management Skills and Competencies Development Challenges in Nigeria.

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Abstract - In Nigeria, the construction industry contributes over 3% of the annual gross domestic product and is the fourth highest employer of labour. Despite the contributions and huge potentials of the Nigerian construction industry, inadequate attention is paid to its ability to drive the Nigerian economy. Interestingly, development and embedment of managerial skills and competencies (SC) are vital for the industry to succeed and thrive. However, several factors are responsible for the slow pace of the development and embedment of the SC required in managing engineering and construction. This study identified and extensively discussed these challenges through a review of literature and data from the industry. Data was sourced from 155 completed and usable survey questionnaires and 30 semi-structured interviews with registered and licensed engineering and construction professionals practicing in both private and public sectors. Participants were drawn from the membership database of the Nigeria Society of Engineers. Knowledge-sharing, commitment, corruption, and sponsorship were among the identified and robustly discussed challenges. That employers with government incentives should be fully responsible for sponsoring skills and competencies development through a transparent, profiled, merit-based system were part of the recommendations to assuage these challenges

Key Words: Skills and Competencies; Nigerian Engineering; Nigerian Construction Industry; Engineering Management; Construction Management).

1. INTRODUCTION

Simply, construction is the development and delivery of infrastructures and services that support the environment and economy (Muya et al. 2006). Organised construction arguably began in the early 1940s in Nigeria and has been dominated largely by foreign companies with lots of imported resources as opposed to the use of local alternatives (Nigeria Bureau of Statistics, 2017). Reasonably, poor quality of materials and human resources were identified by Owolabi et al. (2014) as the main challenges in the industry. The human resource aspect includes knowledge, skills, and competencies of the practitioners. Incompetent construction professionals were a major cause of poor construction quality as alleged by the president of

the Building Collapse Prevention Guild (BCPG), Akinola George as published by (Premium Times, 2019).

From the BCPG survey, only 10% of construction sites in Nigeria are managed by well-trained professionals. Unfortunately, the other 90% are in the hands of quacks (Punch, 2019). Interestingly, the Council for the Regulation of Engineering in Nigeria (COREN) Act, 2018 as amended, defines quacks as everyone but practitioners of the engineering profession who are registered with COREN and who promote and update their SC through continuous certified professional education and trainings. Hence, COREN-registered engineers and managers who do not continuously update their SC are unprofessional and quacks. Muya et al. (2006) noted that the effectiveness of the industry highly depends on the quality of the workforce that it educates and develops. Consequently, as established by Wang et al. (2019), poor development and application of SC is one of the principal causes of unsatisfactory performance in quality and safety issues in the industry. Therefore, SC contribute to the performance of the engineering and construction industry and its expected success (Almatrooshi et al. 2016). So, there exists a strong connection between SC development and quality delivery in the management of engineering and construction. Interestingly, there are several approaches to developing and embedding SC, but Zhu et al. (2017) insist that effective development of SC is through “learning by doing” and “apprenticeship”. Subsequently, engineers’ and managers’ SC development and embedment can be acquired through experiential education aided by mentorship. Bessen (2015) emphasises this learning approach as technology leads industrial revolutions.

In the context of this study, SC development and embedment refers to continuous certified professional education, training and practices. Secondly, Onyia (2019) and Alexander (2020) identified and categorised decision making, team building, communication, programme design, motivation, programme maintenances, delegation of responsibilities, supervision of others, quality control and assurance, employee training, H&S in the top twenty SC in engineering and construction management. Although several factors resist the development and embedment of these SC around the world (DeBerry-Spence and Elliot, 2012), but attainment and reward, commitment and loyalty, education and knowledge-sharing, funding and sponsorship, ethics and

corruption, infrastructures and standards were identified as challenges that impede the developing and embedding SC in the NCI. Understanding their influences and peculiarities to the NCI is a prerequisite for addressing them.

2. LITERATURE REVIEW

2.1 Attainment and Reward

A significant challenge has been how to measure and demonstrate workers' skills and competencies attainment before engaging or assigning tasks to them (Noe et al. 2017). Most SC frameworks lack guidance on expected and basic standards of performance for these skills and behaviors in workers as they progress through different stages of their trainings and development (Riebe and Jackson, 2014). As for employability, SC typically comprises a significant proportion of worker selection criteria; workers themselves must not only appreciate the SC they have acquired but also communicate and demonstrate to employers how they meet expected levels of development required of them (Riebe and Jackson, 2014). It is most productive if employers can assess the level of workers' SC without going through the workers. More studies need to enable organisations to determine the exact level of workers' SC. It is productive to measure and monitor SC of management members through their commitment, the values they add, and the attitude they bring to the job (Noe et al. 2017). This is also how rewards are set everywhere.

Unfortunately, professionalism and best practices are rarely encouraged or rewarded in the NCI, and this discourages SC development. Untrained workers (quacks) are hired instead of experts on the altar of favoritism, cutting cost and avoiding the responsibility of training (Ogunyomi and Bruning, 2016).

2.2 Commitment and Loyalty

According to Martin and Nicholls (1987), an individual's commitment is the willingness to contribute much more to the organisation than the prescribed obligation. Similarly, Tagaza and Wilson (2004) found that the enthusiasm of managers or any other construction professionals is directly proportional to their results and performance. Therefore, motivation and commitment are critical to SC development (Okorie & Musonda, 2020). But then, Taofeeq and Adeleke (2019) revealed that resistance to change is expressed in the managers' reluctance to stick to new organisational routines and develop the required SC. Lack of commitment and loyalty were also found to be a problem because some managers suffered from work exhaustion (Freedy and Hobfoll, 2017). Engineers' and managers' exhaustion from mental fatigue, activity levels and motivations vary significantly at different times, which complicates systematic development of managerial and supervisory SC (Freedy and Hobfoll, 2017). Interest amongst engineers and managers in any form of training they are to undergo is very important

(Cheche et al. 2019). For instance, workers' resistance to upgrading their traditional practices has been the most critical challenge faced by trainers and organisations before and during trainings (Hwang and Ng, 2013). NCI also represents other African countries where market forces are very weak, adding to the challenge of employers not having intellectual rights over their human capital (Muya et al. 2006).

2.3 Education and Knowledge-sharing culture

It was Hwanga and Ng (2013) that discovered that managers with low levels of education feel less valued than their well-educated counterparts. And warned that if not well addressed, it could affect their learning and development. Moreover, low level of foundational education is the main challenge in learning and knowledge development (Viswanathan et al. 2010). Although the time it takes to finish a degree in engineering, construction or project management is discouraging, the shortest one is the masters programme, which takes at least two years in Nigerian academies. Secondary to this is the high cost of quality education in Nigeria, as there is no functional student loan structure (Ahmed, 2015). Although the Council of Registered Builders of Nigeria as cited by Jimoh et al. (2017) confirmed that a small construction site can be managed and supervised by a trade or foreman who does not have tertiary education. As a support strategy, organisations enrol their managers and supervisors in regular short-term courses annually (Dave et al. 2016), the lack of foundational education remains a challenge to their SC development and embedment.

Furthermore, Arif et al. (2017) identified lack of a knowledge-sharing orientation championed by visionary leadership at the top of the industry, as a huge challenge with the development of construction skills and competencies. The Continuous Knowledge Transfer of European Patent Office recommended that knowledge is a continuous development and should be built on (Schombacher et al. 2016). The loss for engineering and construction managers, organisations, and the entire NCI is immeasurable, as knowledge that could have been transferred or shared is lost to deaths and retirements. The Nigerian Building Collapse Prevention Guild President, Mr. George Akinola, agrees; he stated in his recommendations as published in Premium Times (2019) that there is urgent need for the promotion of SC sharing and transfers.

2.4 Funding and Sponsorship

Funding and sponsorship is another challenge associated with developing and embedding SC in the construction industry (Hong et al. 2018). Employers are reluctant to contribute to the sponsorship. Therefore, Muya et al. (2006) believe that government should finance and sponsor SC development in sub-Saharan Africa. They further revealed

that many governments in Africa have neither the capability nor the interest in financing or sponsoring the resources required to develop and improve their national SC base. This position is rather unpopular in the NCI, as discussed in section 4.4.

Largely, African countries struggle with SC development, hampered by paucity of funding and sponsorship. This is a major contributor to the reputation for poor performance, and responsible for damages to the NCI, where recent newsflashes of the incessant building collapses appear regularly across Nigeria (Thisday, 2019; Vanguard, 2019). Eventually, Gitau's (2018) study revealed two things: First, training affects the recruiting of skilled construction workers in Kenya. Second, the Kenyan government has started investing adequate resources for training construction professionals, hence construction firms have joined and are now also investing in building their employees' skills. A great collaboration has emerged between the Kenyan government, construction companies, and employees "...to anchor the learning environment to the working environment".

2.5 Ethics and Corruption

The Oxford Dictionary defines ethics as "Moral principles that govern a person's behaviour or the conducting of an activity". Ethics is the set of principles that directs an individual's behaviour and conduct. As simply put by Leigh (2013), ethics is an individual values application which begins where the law ends. Though there are diverse definitions of ethics, all are correct if linked to these three main factors: Morals – the principles of right and wrong behaviour; Principles – the beliefs governing our behaviour; and Behaviour – the acts or conduct of a person. This was why Paul Nash, past president of the Chartered Institute of Building CIOB (2019), emphasized that to be a professional in construction and the built environment is to be ethical. Ethics covers the following areas: corruption, bribery, procurement, workers' rights, conflict of interest, collusion, and corporate social responsibilities (CIOB, 2019). And since ethics is about individual behaviour, the CIOB (2019) identified childhood upbringing, beliefs, culture, values, later life experiences, and interaction with others as factors that influence ethics.

Construction is the most corrupt industry in the world according to Owusu et al. (2019). Corruption in construction is the misappropriation of delegated authority, which impedes performance of construction processes. It occurs when construction professionals execute negative decisions for ulterior interests. Though corruption has been classified in terms of demand and supply, Owusu et al. (2019) confirmed a third classification, which they referred to as "condoners". The condoners are professionals who neither demand nor supply but overlook and are reluctant to

discourage corruption. Corruption in construction occurs because of poor construction ethics. Shan et al. (2020) revealed that immorality is the most critical and influential factor of construction corruption, followed by opacity, unfairness, procedural violation, and contractual violation. The International Federation of Consulting Engineers (FIDIC, 2016) had opined that corruption occurs at different stages, such as recruitment, training, decision-making, supervision, tender evaluation, payment certificate issuance, etc.

2.6 Infrastructures and Standards

Almost two decades ago, Shalleya and Gilson (2004) singled out failure to modernize training as responsible for skill shortages, higher prices, and poorer quality output. There is a long-term trend in industrial change that relates closely to SC and training. Fluctuations in output and smaller size and specialization of projects make it difficult for individual firms to plan labour requirements (DeCenzo et al. 2016). Moreover, frequently short-term competitive pressures lead to poaching of skilled labour and act as a further disincentive to training (Section 4.2). For these reasons, few construction firms have SC development plans. However, Hou et al. (2017) stated that onsite trainings offered by some construction organisations and associations were very limited and training facilities that have been established are far from sufficient for the growing standard of construction professionals for industry expansion. According to Muya et al. (2006), the training infrastructures available in most African countries have suffered severe dilapidation and are not fit for modern training purposes. Thus, there is need for a supervised investment and creativeness in engineering and construction management SC development and embedment in the NCI.

There is a lack of solid government support to implement and enforce regulations according to Kaufmann (2017). No effective mechanism that compelled construction employers to fund the SC development of their workers in Africa. Zambia and Nigeria share similar policies with China on a certain percentage of project budgets being allocated for onsite SC before the start of construction projects (Sun et al. 2017). According to Bhattacharyya's (2010) report, most of the policies and regulations are neither effectively enforced nor updated. Understanding government policies and institutionalized standards related to engineering and construction management is vital (Hwanga and Ng, 2013). The same is stated in the COREN Act (2018), but implementation remains a problem in the NCI. But government political interference is unacceptable, because as put by Kaufmann (2017), it kills best practices.

3.METHODOLOGY

3.0 Database of Respondent

A thorough literature review identified these challenges, and the data gathered from professionals in the NCI enabled us to categorize these challenges in order of their similarities and occurrence in the NCI. These data were sourced from 155 completed and usable survey questionnaires and 30 semi-structured interviews with practitioners in the NCI. This mixed-method was adopted to reveal information and empirical size of the arguments. Similarly, as this study seeks to identify and address all the challenges with SC development, semi-structured interviews allowed the participants to respond to well-crafted and follow-up questions which drew out all the evidences. This remains the most suitable approach to data gathering. The participants are both private and public-sector practitioners duly registered and licensed by the Council for the Regulation of Engineering in Nigeria (COREN) and were randomly drawn from the membership database of the Nigerian Society of Engineers (NSE) Headquarters in Abuja, the capital of Nigeria and there are 56,327 registered engineering personnel in Nigeria (Odigire, 2020).

1	Nature of respondents' organization	Construction Specialist	82.6%
		General Contractor	17.4%
2	Respondents career structure and number of positions held	1	43.3%
		2	35.4%
		3	12.6%
		4	8.7%
3	Gender of respondents	Male	99.3%
		Female	0.7%

Table -1: Demography of Respondents

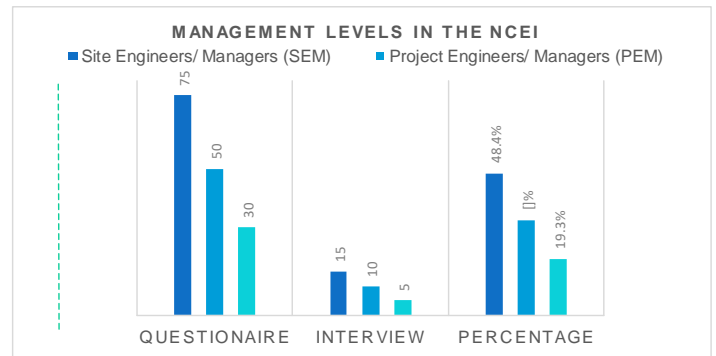


Chart -1: Participants stratification and management levels in the NCI

Stratification of the NSE membership database as shown in Chart 1 reveals that the realities in practice at the NCI concur with the Donaldson et al. (2013) study, which shows that at management level, most organizations and industries' structures are pyramidal. Figure 1 shows that 48.4% of participants in the survey were site engineers and managers (SEM: line managers), 32.3% of participants were reported as project engineers and managers (PEM: middle managers), while only 19.3% were project executive directors (PED: senior managers). The data generated from the questionnaires were analyzed using SPSS, while the participants' responses during interviews were presented and then analyzed in text. This is important to draw out and present the raw depth of sentiments and emotions that this topic generates.

4. RESULTS AND DISCUSSIONS

4.1 Attainment and Rewards

The evidence gathered from the interviews revealed some motivational challenges associated with SC development and embedment. Some interview participants identified "lack of reward (promotions) after being trained" as one of them. They argued that where there is no recognition, no responsibility, and no professional or career benefits for an upgrade, then what is the justification? Another participant linked this challenge to low adherence to the ethic in the NCI:

"Best practice is not encouraged; well trained personnel are not assigned responsibilities in areas of their expertise in the industry. Many seek and encourage the services of unskilled and untrained workers in the industry, so why would anyone bother to develop or improve their SC in an industry that does not patronize skilled and trained professionals?"

The revelation of this participant supports the Riebe and Jackson (2014) position that lack of established standards for measuring SC attainment is a huge challenge to development of engineers and managers. Best practice for the NCI is assigning tasks to measure and determined the SC attainment of engineers and document them in the SC profile. The NCI

prioritizes applicable SC to measure SC attainment (Noe et al. 2017). On the issue of reward, one participant stressed:

“...the reward system is weak; most construction engineers and managers are underpaid and under-motivated. Many employers subscribe to the use of contract staffing, which is cheaper, but then they deliver cheap and substandard practices as they lack expertise, structured rewards, and motivation. This orientation forces most of the young engineers to focus on financial benefits of construction instead of quality experience and development. The poor reward system makes engineers and managers’ compromise.”

It is evident that the current reward system in the NCI neither encourages nor motivates engineers and managers to develop their SC. As stated by Ogunyomi and Bruning (2016), this lacklustre attitude towards SC development and embedment has direct, negative impact on project outcomes.

4.2 Commitment and Loyalty

This qualitative data revealed the existing lack of interest in SC development as according to some interviewees: “Unwillingness on the part of the employer, they just want to make profits.” “Unwillingness on the part of the employees; they want to save money.” On the employees, another interviewee provided more insight. “Some engineers feel they are too busy to enroll in SC development courses.” These engineers are so busy with earning that they ignore opportunities to develop and improve the SC requirements of their roles and hence lack the ability to evolve with the industry. Cheche et al. (2019) see this as a genuine challenge, as interest is vital to SC development. And there is also the challenge and concern of losing staff to a competitor after training the engineers and managers. As highlighted by an interviewee, “There is the risk of losing a trained staff after funding the trainings.” After the organisations have made the investment, there is a high risk that their newly developed engineers and managers could be snatched by competitors with adequate financial power. This discourages employers from funding any significant SC development for their employees. One interviewee, who is an executive director with a private engineering and construction management firm, reacted with a question. “What guarantee do we have that after investing this huge amount in SC training and development, that they [employees] will not move to our competitors when offered higher pay?” This is a valid and widespread concern among employers. And the employment history of engineers and managers in the NCI validates this concern, as figure two revealed that 58% of the survey respondents have spent less than five years in their respective organisations. SEM constitute 100% and 76% of engineers with less than one year and less than five-year experiences respectively at their current positions. While PEM are 24% and 97% of engineers that are 6-10 years and 11-15 years experiences respectively. PED make up 3% of 6-10 years, 100% of 11-15 years and 100% of 20years and above respectively.

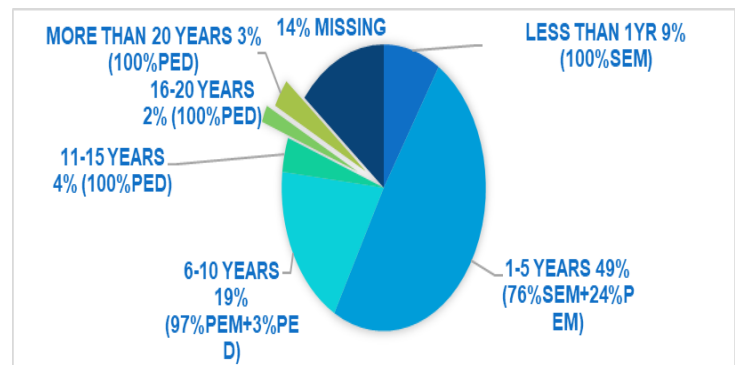


Chart -2: Managers time at current organization

Chart 2 establishes this risk, as the questionnaire results reveal that engineers are constantly seeking new and more rewarding opportunities outside their current organisations, confirming the resistant attitude to commitment as reported by Taofeeq and Adeleke (2019). The implication for engineers and managers is that employers will continue to shy away from committing to SC development until there is an established commitment and loyalty on the part of the employees. As COREN (2019) requires a professional to be registered and licensed and to commit to continuous professional development, Chart 3 shows that the NCI practitioners believe that the sponsorship of SC development and embedment should come from the employer, with support from government.

From quantitative result presented in Chart 3, just 7.7% of respondents want to self-sponsor their SC development, and sole government sponsorship is at the lowest part of the curve, 3.9%. Interestingly, Nigerian engineers considers themselves more effective sole sponsors than government. The curve made a significant rise to 12.3% when employers were brought in as part of “All”. 35.7% of the respondents preferred the employing “Company” as sole sponsor of SC development, while 40.2% wants the company, with the support of government, to be responsible for SC development and embedment. A sum of the views for both “company”, “government”, and both sponsors will hit a higher curve at 79.8%, which is obviously significant. The COREN Act (2018) detailed one of government roles in SC development thus: “The Minister shall, subject to the approval of the President, give necessary inducement to private industries providing adequate training facilities to engineers, engineering technologists, technicians and craftsmen in training.” The implication is that employers, government, HR managers, and training providers will need to focus on securing sponsorship of SC development from employers and government and not the employees. This is a contrast to Zambia, were Muya et al. (2006) reported that the government, not employers, directly sponsors trainings. Unfortunately, the engineering and construction employers in Nigeria are yet to consider SC development a worthy investment, as they are more interested in maximizing profits on every project. One interviewee noted:

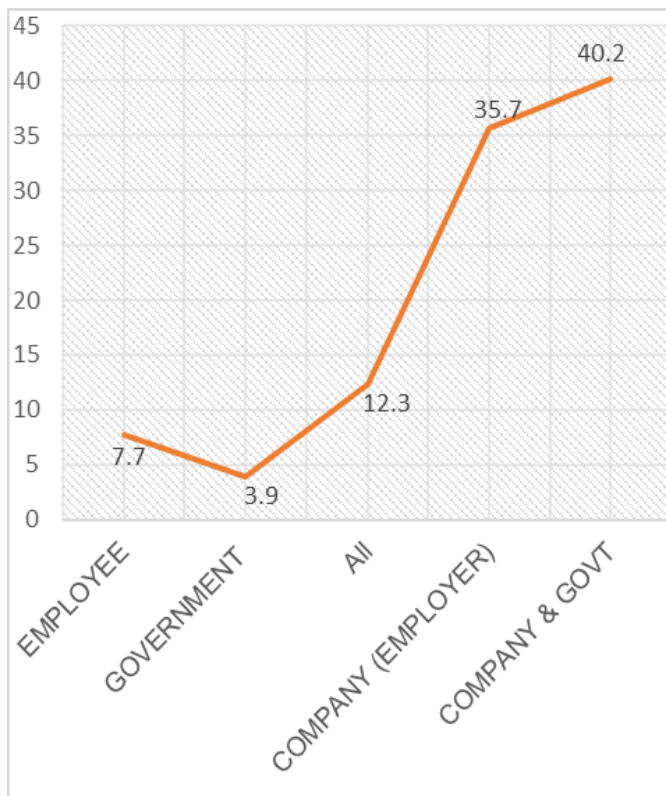


Chart -3: SC development sponsorship

“This lack of employers’ will to commit resources to SC development reflects concerns that when employees are trained, they tend to attract higher opportunities from competitive companies. And many employers are ignorant of the risk of working with under-trained engineers and managers in the NCI.”

The current culture of inadequate commitment and loyalty of both the employers and employees is unsustainable for developing and embedding SC in NCI. This means that “funding and sponsorship are a huge challenge for some engineers and managers willing to be trained,” as pointed by interviewee. Consequently, funding and sponsorship will remain a challenge to SC development and embedment until the “inducement” for employers to sponsor SC development as enshrined in the COREN Act (2018) is enforced and the risk of employers losing their developed professionals is significantly managed.

4.3 Education and Knowledge-sharing culture

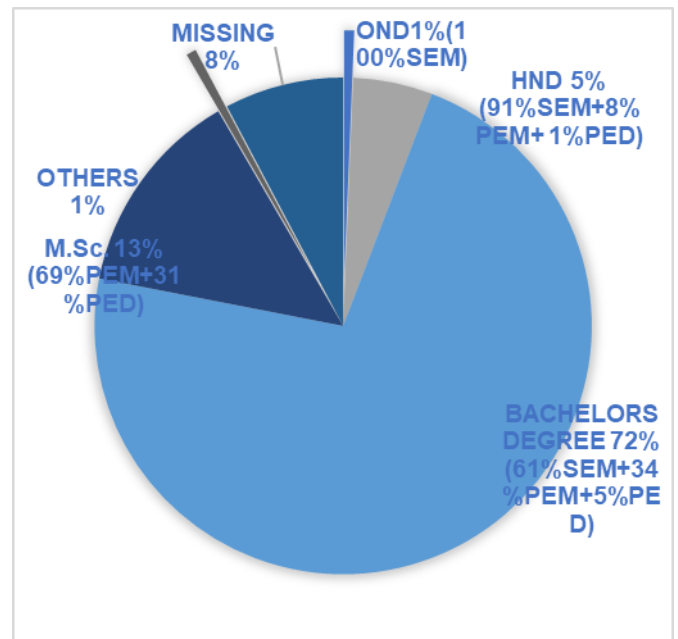


Chart -4: Educational Qualification of Practitioners in the NCI

The survey conducted for this study looked into the educational backgrounds of the construction engineers and managers in Nigeria, and it shows that on educational qualification, number of engineers with Higher National Diploma (HND) certification was 5% with SEM constituting 91%, PEM at 8% and PED 1%. The most common is bachelor degree at 72%, with SEM constituting 61%, PEM at 34% and PED at 5% respectively. Master’s degree was fairly popular at 13% second to bachelor degrees. With PEM constituting 69%, and PED 31% of the engineers in this category of education. Adding 1% of others and 1% of Ordinary National Diploma (OND) certification produces a total of 92% tertiary education graduates with the other 8% recorded as missing. This result implies that engineers and managers in the NCI are well educated; an overwhelming majority have obtained their first and foundational degrees. This result is only for engineers and does not represent the educational level for the entire NCI. Understandably, obtaining a tertiary degree is a prequalification for membership in the Nigeria Society of Engineers, whose database was used for this survey; using that of the National Association of Engineering Craftsmen (NAEC) will definitely reflect a different reality. This study supports the Abidoye and Chan (2016) and Inuwa et al. (2015) findings that NCI has well educated managers. This is significant progress and a notable difference from almost two decades ago, when Koivula and Paunonen-Ilmonen (2001) discovered that then, managers and supervisors had low levels of education, which hindered the development of SC. Arguably, this progress may be significant for professionals like engineers, architects, and surveyors, but it does not apply to all supervisors, foremen, and craftsmen (Kamaruddeen et

al. 2019). But the high educational level for engineers and managers implies that learning and development of management SC in the NCI will be effective (Griffioen et al. 2018), since there exists a link between learning and development, and the former depends on the latter.

Unfortunately, evidence from this study suggests that the level of educational qualifications of management professionals in the NCI does not meet the knowledge-sharing culture expected of the industry. According to an interview participant, "Transfer and retention of knowledge is very poor in engineering and construction. Employees retire or leave the organization without properly transferring and embedding their SC to active workers." A view shared by all the 30 interviewees. This demonstrates the opinion that there is lack of proper and structured knowledge transfer between experienced and competent and fresher engineers and managers. According to one of the interview participants, "The knowledge, skills and experiences of the senior managers retire with them, while the next generation starts from the avoidable struggling stages to build their own experiences." The implication of a weak knowledge-sharing culture is obvious and can be traced to the current poor performance of the NCI (Section 2.3). Errors are repeated, and time and resources that would have gone into innovation and creativity are spent learning old and, in some cases, obsolete lessons that should have been shared or mentored internally.

4.4 Funding and Sponsorship

Nigerian engineers fairly disagreed on their views of whether SC development is expensive or not. From figure five, and as stratified in Chart 1, out of the 66% that view it as expensive, 71% are SEM, 25% are PEM while 4% are PED. While out of the 33% of engineers that view it as not expensive, 51% are PED, 49% are PEM.

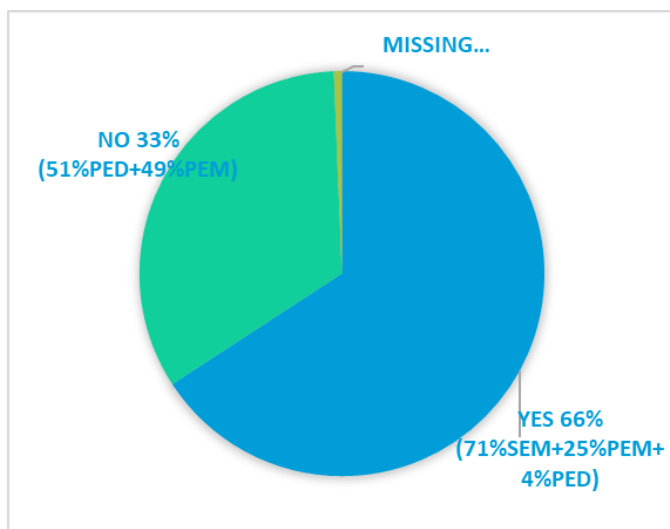


Chart -5: Is SC Development Expensive?

This quantitative result was supported by the opinions of the interviewees who identified the high cost of training as one of the major challenges to SC development and embedment: "Cost of training and upgrading of SC is expensive." "Trainings are expensive and lack the required funding."

This implies that insisting that employees sponsor their SC development and embedment will likely yield no desired result, as many of them regard it as prohibitively expensive and difficult. As Calderon (2017) stated, when something is expensive, it is difficult. The research participants strengthened their position by further exonerating themselves from funding their SC development: "As training is cost-intensive, getting engineers to focus on capacity-building instead of monetary values is the challenge." Compounding the challenges, there also exists "lack of appetite and interest from the employers" as reported by another participant. To explore the role of the employers, more opinions were added: "Employers should fund SC development, but then, most employers do not train because of the costs associated with training." Another interviewee, while explaining the seriousness of this challenge, added, "Most Nigerian companies shy away from spending money on SC development; also, some employers won't even allow you to take time off to do the training." As is evident from these responses, employers and employees' value other priorities ahead of SC development and embedment.

Notably, the responsibility of funding and sponsoring SC development and embedment has been significantly shifted to the employers with some government support as shown in Chart 1, where a total of 79.8% respondents from the survey validated this view. One of the interviewees added to the government role discussed in Section 4.3 thus: "Government should subsidize and regulate cost of trainings to enable the companies to train their staff." When the interviewees were asked if the cost of training was within their company's budget, one replied, "Yes. Yes. Trainings that are not part of NSE trainings are being paid by our company." This position was shared by all 30 interview participants. Unfortunately, the existing lack of strategy on how to make employers sponsor the SC development of their engineers and managers means lower numbers of skilled and competent engineers and managers in the NCI. Nonetheless, 100% of the participants of this study supported the Wang et al. (2019) findings that SC development directly influences project outcomes.

4.5 Corruption and Ethics

Concerning ethics, an interviewee averred, "Unethical contractors mean no room for training of engineers, managers, and supervisors working on the project." Another interviewee revealed, "Greedy contractors do not want to spend the approved percentage on training for the engineers and managers engaged on public projects." This means that unethical practice and corruption directly undercut training budgets of public construction projects in Nigeria. Another

participant upheld the view that “corruption is a big challenge; take a look at the UK, [where] there are trainings to prepare the worker for every assigned task or project, unlike in Nigeria, where training is a jamboree.”

Where training exists, the process of selecting trainees is usually mired in corruption. An interviewee pointed out the challenge as “lack of accurate prioritizing of personnel to be trained by employers”. Another participant described the lack of meritocracy: “Lack of integrity is a problem. Qualified personnel are jettisoned for associates of decision-makers because of personal interests and corruption.” These ulterior interests were defined by an interviewee, who is a deputy director in the federal ministry in charge of construction-related developments in Nigeria:

“Corruption is one of the major challenges that hinders the development of SC. The right (qualified) people are not given the right opportunities; rather, there are constant cases of tribalism, nepotism, favoritism, and unethical practices. Budgets for trainings are carted away for personal aggrandizement. Recruitment and nomination for jobs and training are based on strong family and social ties not on professional qualifications. In most cases, your state, local council of origin, religious and political affiliation play far more important roles than your professional qualification, skills, or competencies.”

The implication for the NCI is that the training selection process lacks the required quality, and thus, the training outcomes lack the desired quality required to positively impact the industry. Also, a participant recounted, “Corruption in the disbursement of the funds allocated for trainings in government agencies leads to embezzlement, while private organisations divert budget for trainings into other priorities.” The participants went further to reveal how the code of conduct for public and private employees has been shoved aside for more selfish financial rewards. This was the exact situation Shan et al. (2020) described and warned against. It implies that the selection process for SC development in the NCI is neither transparent nor based on merit, and thereby verifying the corruption label identified by Owusu et al. (2019). And then, some organisations outsource tasks to avoid their responsibilities (Ikediashi and Aigbavboa, 2019).

4.6 Infrastructures and Standards

The contributions from interview participants revealed that “Nigerians are unable to fund better training equipment and tools like advanced countries. The trainings available are inadequate, not comprehensive in Nigeria.” This points to the quality of trainings delivered in the NCI. A participant provided more insight, “There is also lack of framework, guidelines, specialized professionals, resourceful trainers, reliable internet and conducive training facilities. The existing few are very expensive.” In addition, an interviewee highlighted the lack of qualified trainers. “There are no specialized and recognized professional trainers who are

researching to gain current and future local insight and understanding of the needs of the industry.”

By “specialized” and “recognized”, the interviewee meant no experts who are recognized, licensed, and monitored by COREN or other professional institutions. This breeds substandard trainers as pointed out by another interviewee: “The resource personnel are usually not well-versed in the subject. The trainers sometimes are engaged for reasons other than their competencies.” For this reason, most organisations sort and develop their own internal training guidelines, which rarely meets the needs of the engineers and managers and the uniqueness of the NCI. Emphasizing the need to tailor training to individuals and industries, an interviewee explained, “Human intelligence doesn’t function at the same level, so trainings in the NCI should be practical [outcome-based], as people don’t easily forget experiences.” The lack of comprehensive guidelines for SC development in the NCI means no standard for SC management.

“Poor legal framework, policies failure, and weak implementations of policies” were also identified by an interviewee as challenges to SC development. The internal policies toward SC development are obsolete and need to be reviewed. A participant noted the practice of “selecting staff through nepotism rather than meritocracy, thereby making others feel they will neither be recognized nor apply their SC post development.” Throughout the interview, participants constantly highlighted the corruption in recruitment and selection policies in the NCI (Section 4.5). Corrupt cultures are excusable in some organisations because there are no robust government regulations nor enforcement (Kaufmann, 2017). The concerns with unethical selection of personnel for training suggest the selection of the wrong cadre of workers, and there are consequences to training unqualified engineers.

According to an interviewee, SC development in the NCI illustrates “lack of government regulations and enforcement of standards”. Another participant warned against this: “There should be strong implementation policy—not just policies on paper but on the ground.” They imply that professional organisations like NSE and COREN should lead the NCI in forming and enforcing policies and standards that affect the engineering and construction industry in Nigeria. The COREN Act (2018) as amended, which received presidential approval in March 2019, empowers COREN to enforce engineering and construction-related policies in Nigeria (COREN, 2019). This new law, if well applied, could reduce poor practice in the NCI. Twenty-seven of the thirty interviewed engineers and managers emphasized the inadequate awareness around SC development. Awareness significantly helps to demonstrate the importance of SC development and embedment.

5. CONCLUSIONS

The introductory section of this paper established the strong connection between SC development, quackery and quality delivery in the management of engineering and construction. Practitioners in the NCI engage in tasks and responsibilities outside their specialization. Yet, strong advocacy and law exist in the NCI to discourage quackery. This study identified and presented the challenges associated with the development and embedment of SC for engineering and construction management in Nigeria, which are: attainment and reward, commitment and loyalty, education and knowledge-sharing culture, funding and sponsorship, ethics and corruption, infrastructures and standards.

Not enough has been written about dealing with these current challenges in Nigeria. And there is lack of appropriate reward and proper measurement of SC attainment. Also, transparency and a merit-based assessment model should be encouraged in the NCI. Professionals who have attained any relevant SC development should be recognized and rewarded through promotions. Promotions and further development should be based on qualifications. In addition, SC profile should be developed and maintained by employers and professional institutions. Then, COREN registry and annual practicing licences should reflect the annual SC updates of all professionals by recognized trainers to enable SC measurement in the NCI. Additionally, COREN needs to develop training standards with the globally recognized, outcome-based education model and all trainers should be registered and monitored by COREN.

As SC development in the NCI is expensive, all stakeholders' commitment and loyalty are vital. This means that engineers and managers should always demonstrate strong desire for learning. As no professional is too engaged to learn, since learning is at the core of professionalism in the NCI. Also, enabled by government through tangible incentives, employers should be responsible for funding and sponsoring SC development and embedment in the NCI. Importantly, engineers and managers should show understanding and be willing to ensure that their employers benefit from sponsoring their SC development. COREN and NSE will need to stipulate the minimum number of months an engineer will commit to an employer when the latter sponsors the SC development of the former. Also, there should be criteria for reimbursement and settlement.

The developed SC must be shared to be truly embedded. The good news is that engineers and managers of engineering and construction are well educated, and foundational education is vital for additional learning. Consequently, it is easier today to further train engineers than it ever was before, as most engineers have developed solid learning ability from their foundational education. COREN, NSE, and employers must now advocate, initiate, and entrench a robust mentorship and knowledge-sharing culture in the industry. This can be done by first incorporating this culture

in their respective codes of ethics and engineering. More efforts should be made to check all forms of corruption in the practice, as it endangers the development of the engineering profession. Finally, government should seek the validation of the NCI before adopting policy for the industry. Awareness campaigns are needed in the NCI to embed the culture of continuous professional development in managers of engineering and construction projects in Nigeria.

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