Journal of Engineering, Project, and Production Management
2020, 10(1), 71-79

Project Manager's Skills Acquisition: A Comparative Study of Indigenous and Multinational Construction Firms

Irewolede Aina Ijaola[1], Olatunbosun Hezekiah Omolayo[2], and Kudirat Ibilola Zakariyyh[3]
[1]Lecturer II, Department of Building Technology, School of Environment Studies, Yaba College of Technology, Yaba, Lagos, Nigeria. Email: iredbuilder@gmail.com (corresponding author).
[2]Lecturer I, Department of Building Technology, School of Environment Studies, Yaba College of Technology, Yaba, Lagos, Nigeria. E-mail: bosunomolayo@yahoo.com.
Lecturer I, Department of Building, Faculty of Environmental Science, University of Lagos, Akoka, Lagos, Nigeria. E-mail: zakaryyki@gmail.com.

Project Management
Received August 17, 2019; revised December 14, 2019; accepted December 17, 2019
Available online December 21, 2019

Abstract: Project manager's skills which are the competencies required for successful completion of the project play an important role in the construction industry, therefore acquiring these skills is significant for project success. However, indigenous construction firms compete with their multinational counterparts for the available skilled workforce. The study, therefore, investigates the level of project managers' skills acquisition in indigenous and multinational construction firms in Lagos State, Nigeria. The study adopted cross-sectional survey research and data were collected using a structured questionnaire. One hundred and thirty-three questionnaires (106 indigenous and 27 multinational) were administered to project managers and 106 retrieved and valid for analysis representing 73% response rate. The techniques for analysing the data are mean score and t-test. The study revealed that the most important skill type as perceived by project managers is a technical skill and there is no significant difference in the level of skill acquisition by project managers in indigenous and multinational construction firms. Hence, the study concludes that the categorisation of construction firms has no effect on the level of skills acquisition by project managers; therefore, it plays no role in project managers' skills acquisition. Project managers should strive towards developing themselves through training for improved performance and for successful completion of construction projects.

Keywords: Project manager, indigenous construction firms, Lagos State, multinational construction firms, skills.

DOI 10.2478/jeppm-2020-0009

1. Introduction

Every construction project is unique and depends on human resources to drive it to successful completion. Therefore, the emphasis on the importance of human resources in construction projects is necessary. The project manager as one of the human resources in the construction project is responsible for the successful completion of a project (Devi, 2013). Thus, a construction project is said to be successful when it is completed within the stipulated time (Doloi et al., 2011), estimated cost (Doloi et al., 2011; Aje, 2012), quality (Doloi et al., 2011; Din et al., 2011), user's and client satisfaction (Langer et al., 2008; Zhang and Fan, 2013; Windapo et al., 2015) and safety (Babu and Sudhakar, 2015). However, the construction project in Nigeria has been marked with a series of cost overrun, time overrun and low quality of work (Aibinu and Jaboro, 2002; Dakas et al., 2004). Among the factors, affecting project success is the skill of project manager (Awan et al., 2015). Awan et al. (2015) noted that inadequate project manager's skill is one of the reasons for unsuccessful completion of projects.

Skills are abilities that directly affect the outcome of the project managers and are acquired by learning and gained by training (Papulová and Mokros, 2007). Indigenous and multinational construction firms engage project managers and according to Adams (1999), indigenous construction firms find it difficult competing with multinational construction firms for the available skilled workforce. This is because of the skill shortage or inadequate skills of construction workers. Prior studies focused on different aspects of project managers' skills; for example, Odusami (2002) focused on the important skills of project managers and concluded that decision making, communication and leadership, and motivation are the important skills of project managers. Ogunsanmi (2016) studied the essential skills required of the construction manager and concluded that procedural-industrial skills, quality assurance/ management skills, and listening skills

are among the essential skills of a construction manager. Ijaola and Ogunsanmi (2018) investigated the relationship between construction managers' skills and project performance. A significant relationship was found between construction managers' skills and project performance. However, these studies fail to consider the availability and level of acquisition of project managers' skills. It seems there is little attention to the level of project managers' skill acquisition in indigenous and multinational construction firms. The study, therefore, aims at comparing the level of project managers' skills acquisition in indigenous and multinational construction firms with the view to improving skills acquisition among project managers. In order to achieve the aim, the study specifically identifies important project managers' skills and further investigates the level of project managers' skills acquisition in indigenous and multinational construction firms. Furthermore, a hypothesis which states that 'there is no significant difference in project managers' skills acquisition in indigenous and multinational construction firms was postulated.

The result of the study will assist stakeholders in the construction industry to understand and know the level of project manager's skill acquisition in construction firms. This will assist in developing the curriculum and training programme for project managers.

The respondent considered for the study includes professionals in the construction industry with a background in Architecture, Building, Quantity Surveying, Civil Engineering and Project Management, engaged by construction firms with the sole purpose of executing the task and duties of the project manager. The study area is restricted to Lagos State. This is because high construction activities take place in Lagos.

2. Literature Review

2.1. Project Manager's Skills

A project manager is a professional who is responsible for completing a project (Ma et al., 2014). Oyewobi et al. (2011) explain that many construction projects are getting larger and more technical; as a result, both private and public clients require high-quality professional services, specialized workforce and better control systems to offer satisfaction and value for money. With this, the role of the project manager in putting up a project that satisfies the taste and needs of clients and users is important. Zakaria et al. (2015) note that the effectiveness of project managers in managing finances, schedules and quality determines the success of a project.

It is therefore expedient that project managers have skills, knowledge and capabilities to execute projects, thus project managers' skills are very important in the construction project periods. The authors defined skills from different perspectives. Odusami (2002) defines skill as an ability developed through training which is evident in the performance. Furthermore, he describes skill as an ability to transform knowledge into action. Rigby and Sanchi (2006) describe skills as competencies in terms of knowledge, skills, and experience acquired before and during a career. Katz (1974) defines skills from the perspective of technical skills as competency in activities involving methods, processes, procedures or techniques. Osuala (2004) states that skill is the ability to put into use acquired competencies, attitude, and behavior after exposure to theories and practices inherent in a field of study. Therefore, the project manager's skills are his ability to plan, organize, monitor, and coordinate available resources to achieve project success. In other words, the project manager's skill is the ability required of the project manager and is acquired through training for improved performance.

The classes of skills are; technical skills, legal skills, managerial skills, people skills, construction industry, and business skills and financial skills (Edum-Fotwe and McCaffer, 2000; Farooqui et al., 2010; Jaafar and Khalatbari, 2013; Windapo et al., 2015, Ijaola and Ogunsanmi, 2018). Zakaria et al. (2015) categorize the leadership skills of a project manager into seven, which include, communication, problem-solving and decision making, team building, conflict resolution, planning and goal setting, sense of responsibility, and time management.

Project managers require diverse skills to function effectively and these skills are important for project success. Various authors identified important skills of project managers; Lei and Skirtmore (2004) found out that communication skills, meeting project objectives and decision making are the most important skills required of project managers. Odusami (2002) identified the three most important skills types of project leaders as decision making, communication and leadership, and motivation while Farooqui et al. (2008) most important skills are time management, decision making, communication, leadership, and motivation skills. Ma et al. (2014) important skills of a project manager include communication, decision making, leadership and motivation, listening, and time management. Of the seven project managers' skills identified for successful project management, Zakaria et al. (2015) note that planning and goal setting target skills are the most important skill required in a construction project. Fapohunda and Fatokun (2011) concluded that for a project manager to be efficient in project execution, he must acquire social skills, proficiency in decision-making, ability to handle any problem as it arises, ability to recognize and take advantage of available opportunities for efficiency, and ability to manage change.

Enshassi et al. (2009) concluded that contractors identified decision-making, problem-solving, and financial management skills as important skills while clients identified planning and goal setting, decision-making, and problem-solving as the important skills. Mouchi et al. (2011) important skills are planning and risk management, communication, people and leadership skills, technical skills, and experience. Zulch (2016) identifies important communication skills as leadership skills, decision-making and problem-solving skills, listening skills, motivation skills, and verbal skills. Thus, the most important skills identified by the various authors are decision-making and communication skills.

2.2. Indigenous and Multinational Construction Firms

Garmscheed and Brockman (2006) identify five market strategies in the construction industry as regional, national, international, multinational, global, and transnational. They explain the national market as involving many local networks within the home country while multinational market involves many local and many international networks. Based on this, Garmscheed and Brockman (2006) describe multinational firms as firms in which the activities of foreign countries contribute to a large share in the company's revenue. Furthermore, the indigenous

construction firms which were referred to as national construction companies are characterized by having concentration at headquarters and many local subsidiaries.

According to Ugochukwu and Onyekwena (2014), the introduction of the Nigerian Enterprises Promotion Decree of February 1972 brought about the concept of indigenous contractors in Nigeria. Idoro (2010) describes indigenous construction firms as private construction firms registered in Nigeria and wholly-owned and managed by Nigerians while multinational construction firms are private construction firms jointly owned by foreigners and Nigerians and managed by expatriates. In line with Idoro (2010), Oladimeji and Ojo (2012) identify indigenous construction firms as fully owned and managed by Nigerians and multinational construction firms as Nigeria branch of a foreign construction firm or Nigeria/ foreign joint venture. According to Adams (1999), indigenous construction firms are majorly small and medium-sized and their participation in major construction work is marginal. Hence, the major classification of construction firms is indigenous and multinational firms.

3. Methods

3.1. Sample and Data Collection

The study adopted a cross-sectional survey research design and a quantitative research approach. One hundred and thirty-three construction firms (106 indigenous and 27 multinational) registered under Lagos State government were randomly selected from a list of 200 (160 indigenous and 40 multinational) construction firms in Lagos State using Yamen's formula in Eq. (1). Furthermore, stratified random sampling was employed in order to classify the sample into indigenous (106) and multinational (27) construction firms using the formula in Eq. (2). The most senior project manager was selected from each of the construction firms in order to eliminate bias as construction firms may have more than one project manager. The respondents were architects, builders, quantity surveyor, and civil engineer working as a project manager in the selected construction firms. One hundred and six questionnaires (81 indigenous and 25 multinational) were retrieved and valid for analysis representing 73% response rate. The instruments for data collection were two structured questionnaires termed Project Managers' Questionnaire (PMQ) and Project Managers' Superior Questionnaire (PMSQ) respectively. PMQ was designed to elicit information on important project manager's skills while PMSQ was designed to elicit information on the level of skill type acquisition by project manager.

$$n = \frac{N}{1 + N(e)^2} \tag{1}$$

where:
n: sample size;
N: population size;
e: level of precision (5%).

$$\frac{Total\ indigenous/multinational\ sample\ frame}{Total\ sample\ frame} \times Total\ sample\ size \tag{2}$$

3.2. Measures

Eighty items measure the project manager's skills. See the Appendix for details. The skills are; technical skills, managerial skills, financial skills, construction industry and business skills, people skills, and legal skills. Project managers' superiors were asked to rate the level of project managers' skill acquisition by ticking either 'Yes' or 'No'. The skills types possessed by project managers were measured as ratios of the number of each skill variable that a project manager possessed to the total number of project managers' skills under the skill types variable. Thus, the maximum level of skill possession is 1.0. The level of importance of the project manager's skills was rated by the project manager on a Likert scale of 1 = not important, 2= less important, 3= moderately important, 4= important and 5= highly important. The Cronbach's Alpha for the project manager's skills variable was 0.982. The important project manager's skills were analysed using mean score, while the differences in the project manager's skills acquisition in indigenous and multinational construction firms were tested using the t-test. T-test was used because each project managers' skills were measured using latent variable and when there are series of Likert items that sum up to a composite variable, the variable can be referred to as interval scale (Boone and Boone, 2012; Warmbrod, 2014) and thus be analysed using the parametric method.

4. Result

4.1. Demographic Profile of Respondents

Table 1 shows the demographic profile of the respondents in the study. The number of years in the company described the project manager's years of experience in the company. Project managers within 5-10 years of experience accounted for 40.6% of the sample while those with less than 5 years' experience accounted for 24.5% of the sample. 19.8% of the sample has between 10-15 years' experience in the company while 11.3% and 3.8% of the sample have 15-20 years and above 20 years' experience in the company respectively. There were five categories of project managers' qualifications. The first category, which is the Ordinary National Diploma (OND), accounts for 0.9% of the sample. The second category, that is, Higher National Diploma (HND) and the fifth category Masters of Science (M.Sc.) account for 18.9 % of the sample respectively while the third category, which is Bachelor of Science (B.Sc.), accounts for 56.6% of the sample. The fourth category Post Graduate Diploma (PGD) accounts for 8% of the sample.

Table 1 also shows the profession of the respondents. 38.7% of the respondents are Builders, 34.9% are Civil Engineers, 15.1% are Quantity Surveyors, 9.4% are Architect, and 1.9% are Project Managers. Quite a large number of respondents (38.7%) have a professional affiliation with NIOB (Nigerian Institute of Building), followed by NSE (Nigeria Society of Engineers) with 34%. The remaining two consist of NIQS (Nigeria Institute of Quantity Surveyors) and NIA (Nigeria Institute of Architecture) with 16% and 9.4% respectively. Others refer to other professional affiliations with 1.9%. A large percentage of the respondent are Builders with NIOB membership, this may be due to the fact that Builders have background training in project planning, resource management and time management. Thus, it gives credence to the reliability of the answer since a large percentage of the respondents have background training in project management.

Table 1. Demographic profile of respondents

Respondents' Profile	Freq.	Percentage	Respondent's Profile	Freq.	Percentage
Years in Company			**Professional Background**		
Less than 5 years	26	24.5	Architecture	10	9.4
5-10 years	43	40.6	Building	41	38.7
10-15 years	21	19.8	Quantity Surveying	16	15.1
16-20 years	12	11.3	Civil Engineering	37	34.9
Above 20 years	4	3.8	Project Management	2	1.9
Total	**106**	**100**	**Total**	**106**	**100**
Highest Academic Qualification			**Professional Affiliation**		
OND	1	0.9	NIA	10	9.4
HND	20	18.9	NIOB	41	38.7
B.Sc.	60	56.6	NIQS	17	16
PGD	4	3.8	NSE	36	34
M.Sc.	20	18.9	Others	2	1.9
Total	**106**	**100**	**Total**	**106**	**100**

4.2. Important Project Manager's Skills

To investigate the important skills types required of a project manager, various statements indicating skill types were made and respondents were asked to indicate their level of importance. The mean score for each skill type was thus calculated and used for determining the important skills required of the project manager.

For the purpose of interpretation, 1.00-1.49 means not important, 1.50-2.49 means less important, 2.50-3.49 means moderately important, 3.50-4.49 means important, and 4.50-5.00 means highly important. Table 2 shows that the project manager perceived all skill types identified in the study as important with an overall mean value of 4.08. This implies that technical skills, managerial skills, financial skills, construction industry and business skills, people skills and legal skills are all important for project managers to perform their tasks.

The most ranked skill is technical skills with the highest mean of 4.27. This is an indication that project managers placed more importance on technical skills as this is important for their day-to-day construction activities on site. The least skill 'construction industry and business skills' has a mean value of 3.98. The implication is that attention to business activities in construction is limited compare to technical skills.

Table 2. Important project manager skills

Project Manager Skills	1	2	3	4	5	Total	Mean Score	Rank	Remark
Technical Skills	0	2	19	31	53	106	4.27	1	Important
Legal Skills	1	5	25	42	43	106	4.05	2	Important
Financial skills	1	4	22	42	37	106	4.05	2	Important
Managerial Skills	1	3	25	39	37	106	4.04	4	Important
People Skills	1	3	26	41	36	106	4.03	5	Important
CIB	1	3	27	38	36	106	3.99	6	Important
Overall Skills	1	3	24	39	40	106	4.07		Important

4.3. Level of Project Manager's Skill Acquisition

To determine the level of project manager's skill acquisition, the skills types possessed by project manager were measured as ratios of the number of each skill variable that a project manager possessed to the total number of project managers' skills under the skill types variable. Thus, the maximum level of skill possession is 1.0 and the values were further interpreted as 0.10-0.29 '*very low'*, 0.30-0.49 '*low*', 0.50-0.69 '*average*', 0.70-0.89 '*high*' and 0.90-1.0 *'very high*'. The result is presented in Table 3.

In combining all the skills types, there was a difference in the level of skills acquisition by project managers in indigenous and multinational construction firms. The overall mean in Table 3 for the level of skills acquisition by project managers in multinational construction firms is 0.92 while that of the indigenous counterpart is 0.89. This implies that the level of skills acquisition in multinational construction firms is very high compared to indigenous construction firms, which is within the range of high. Individually, project managers in indigenous and construction firms recorded a very high level of skill acquisition for technical skills, managerial skills and legal skills. However, when comparing the level of skills acquisition, project managers in multinational construction firms recorded a higher level of skills acquisition except for finance skills in which the indigenous counterpart recorded a higher mean value. The result indicates that project managers in multinational construction firms have a higher level of skill acquisition compare to the indigenous counterpart.

4.4. Testing of Hypothesis

To further test if the differences between the skill types acquisition in indigenous and multination firms were significant, the hypothesis which states that there is no significant difference in skills acquisition between project manager in indigenous and multinational construction firms was tested using the t-test. The p-value for acceptance or rejection of the hypothesis was set at 0.05, thus when the p-value is less than or equal to 0.05, it is significant; the hypothesis is thus rejected and when greater than 0.05, then it non-significant, the hypothesis is accepted. Table 4 presents the test of differences for the project manager's skills acquisition in indigenous and multinational construction firms.

Table 3. Level of skills acquisition in indigenous and multinational firms

Total Skill Types	N	Level of Skill Acquisition	Indigenous			Multinational			Rank
			N	Level of Skill Acquisition	Rank	N	Level of Skill Acquisition		
Technical Skills	106	0.94	81	0.93	2	25	0.96		1
Managerial Skills	106	0.91	81	0.90	2	25	0.94		1
Legal Skills	106	0.91	81	0.90	2	25	0.94		1
People Skills	106	0.89	81	0.87	2	25	0.96		1
CIB Skills	106	0.86	81	0.85	2	25	0.91		1
Finance Skills	106	0.81	81	0.84	1	25	0.74		2
Overall Skills	106	0.90	81	0.89	2	25	0.92		1

Table 4. T-test for difference in project manager's skills acquisition between indigenous and multinational construction firms

Parameters Paired	N	Mean	SD	t_{value}	df	p-value	Decision
Technical Skills				-0.821	104	0.414	Accept
Indigenous	81	0.93	0.17				
Multinational	25	0.96	0.09				
Managerial Skills				-1.004	104	0.318	Accept
Indigenous	81	0.90	0.16				
Multinational	25	0.94	0.08				
Finance Skills				1.48	104	0.142	Accept
Indigenous	81	0.84	0.28				
Multinational	25	0.74	0.27				
CIB Skills				-1.222	104	0.225	Accept
Indigenous	81	0.85	0.24				
Multinational	25	0.91	0.17				
People Skills				-2.818	104	0.063	Accept
Indigenous	81	0.87	0.22				
Multinational	25	0.96	0.09				
Legal Skills				-0.91	104	0.214	Accept
Indigenous	81	0.90	0.21				
Multinational	25	0.94	0.11				
Overall Skills				-0.999	104	0.320	Accept
Indigenous	81	0.89	0.16				
Multinational	25	0.92	0.09				

The t-test in Table 4 shows that there was no significant difference in the level of skill acquisition by project managers in indigenous and multinational construction firms. Therefore, the acceptance of the hypothesis is at p-value > 0.05. Table 4 presents the p-value for each level of skill type acquisition. On average, project managers in multinational construction firms have more technical skills (M = 0.96, standard deviation (SD) = 0.09) compare to project managers in indigenous construction firms (M = 0.93, SD = 0.17). The difference was not significant t (104) = -0.821, p = 0.414. However, it did represent a small size effect r = 0.0008 based on Field (2009) classification of effect size. Furthermore, project managers in multinational construction firms possess more skills (M = 0.94, SD = 0.09) than project managers in indigenous construction firms (M = 0.89, SD = 0.16). The difference was not significant t (104)

= -0.999. p = 0.320. However, it did represent a small effect size of 0.009, since it is below the 0.3 criteria for medium-size effect (Field, 2009). The result indicates that the level of technical, financial, managerial skills, CIB, people and legal skills acquisition are the same for project managers.

5. Discussion

Project managers generally agreed that all the identified skills types are important. Notable among the skills types are technical skills. Technical skill is a skill type that entails understanding and proficiency in specific kinds of activity, which majorly involves methods, processes, procedures or techniques (Katz, 1974). The result further proofs the statement of Goodwin (1993) of technical skills representing the element of a project that integrates all other elements. Jaafar and Khalatbari (2013) emphasised the importance of technical skills when they concluded that it has an impact on time performance. Edum-Fotwe and McCaffer (2000) also found out that the most important mechanisms for delivering project management competency are technical skills. This emphasises the importance of technical skills in construction project management.

Project managers rated legal skills as the second most important skill. This may be because every project handled by a project manager is a contract and entails contract documents. Knowledge of interpreting contract documents, preparing claims, resolving or avoiding disputes and construction law of the environment is very crucial to the success of the project. This is in contrast to Lei and Skirtmore (2008) findings, in that project managers' perceived ability to manage legal issues as the least important skills. The differences may be due to the study area. The implication is that the importance of legal skills differs in the two-study area.

Project managers also perceived financial skills as the third most important skill. This could be because financial skills entail reporting financial systems, project finance arrangement, cash flow and budget. There is, therefore, a great need for project managers to have these skills, as it is very important for project success in terms of working within cost. This is quite different from Farooqui et al. (2010) findings of project managers perceiving financial management skills as the least important skills. The differences may be due to the area in which the study took place. Project managers also perceive managerial skills as important skills require for making decisions and leading subordinates on the construction site, thus they are important.

People skills are very crucial in the construction world. According to Farooqui et al. (2010), people skills include written communication, verbal communication, ability to speak different languages, etc. This skill is very important as it encompasses some skills needed for the progress of the construction projects. This supports the assertion of Atout (2008) in which he emphasised that managing people skills is essential for the success of the projects.

CIB skill is the least ranked skill though perceived as important by project managers. This type of skill is important because it encompasses knowledge of the construction industry such as health and safety regulation, building codes and regulation and knowledge on the permitting process.

Although there was a difference in the level of skills acquisition by project managers in indigenous and multinational construction firms, the difference was not significant. The result of the test of difference in the level of skill acquisition of the two categories of firms implies that the level of skills acquisition by the project manager in multinational firms is not better than that of the project manager in indigenous firms. Thus, the level of skills acquisition in indigenous and multinational construction firms is the same; therefore, the categorisation of construction firms does not affect the level of skills acquisition.

6. Conclusion

The study investigated the skills types that are important for project managers in the execution of their tasks. Although the result shows that all the skills types are important skills needed by the project manager, the most important skill type is the technical skill. Technical skill is important on construction sites because it is a hard skill required for project delivery. Thus, the study concludes that technical skill is the most important skill type required of the project manager. Furthermore, there is no significant difference in the level of project managers' skills acquisition in indigenous and multinational construction firms. Based on this finding, the study concludes that the categorization of construction firms into indigenous and multinational firms have no influence on the level of project managers' skills acquisition. Therefore, the categorization of construction firms plays no role in project managers' skills acquisition.

In addition to this study establishing technical skills as the most important skill type required by a project manager, the major contribution of this study is that there is no difference in the level of skills acquisition in indigenous and multinational construction firms. Although it was reported that indigenous construction firms in Nigeria find it difficult to compete with their multinational counterparts for available skilled workforce due to inadequate skills, this is not the case. Since there is no difference in the rating of the level of skill's acquisition of project managers in both indigenous and multinational construction firms in Nigeria. Another contribution of this work is that the survey measured the availability of project manager's skills and established the availability of the skills among project managers in indigenous and multinational construction firms. This is important, as it will help to change the perception of stakeholders in the construction industry especially in developing countries of the non-availability of essential skill types among project managers in the indigenous firms. Furthermore, the image of indigenous construction firms will be improved and so they can compete for construction projects like their multinational counterparts. The low patronage of indigenous construction firms due to the perception of the non-availability of the skilled workforce is addressed in this study. Therefore, the construction industry's stakeholders in developing countries should patronise the indigenous construction firms, since there is no difference in the level of skills acquisition in the two categories of construction firms. Other factors such as incentive schemes could contribute to the difficulty in competing for the skilled workforce.

Project managers should focus on acquiring skills for effective performance in construction project delivery irrespective of the categorisation of construction firms. They should gear towards improving their skills, as the

categorisation of construction firms does not determine their level of skills acquisition. They should also take into cognizance the factors affecting their skills acquisition as this will assist to eliminate the challenges of skills acquisition. Furthermore, construction firms should make the training of project managers a policy in their firms and adopt the culture of skill acquisition for their project managers. This will increase the rate of skill acquisition by the project manager and further increase project performance. The study is limited in that it considered only Lagos State as a study area. Future studies can examine other study areas and investigate the factors responsible for the difficulty in competing for the skilled workforce in construction projects in Nigeria and other developing countries.

References

Adams, O. A. (1995). Indigenous contractors' perceptions of the constraints on contractors' performance and development programmes required in Nigeria. *Habitat International*, 19(4), 599-613.

Aibinu, A. A. and Jagboro, G. O. (2002). The effect of construction delays on project delivery in Nigerian construction industry. *International Journal of Project Management*, 20, 593-599.

Aje, I. (2012). The impact of contractors' prequalification on construction project delivery in Nigeria. *Engineering, Construction and Architectural Management*, 19(2), 159-172.

Atout, M. (2008). The obligations of the contractor's Project Manager in construction projects. *World of Engineering*, UAEOE. Retrieved from http://fidic.org/sites/default/files/The%20Design-Build-Operate%20Form%20of%20Contract%20%28DBO%29_0.pdf

Awan, M. H., Ahmed, K., and Zulqarnain, W. (2015). Impact of Project Manager's soft leadership skills on project success. *Journal of Poverty, Investment and Development*, 8, 27-46.

Azodo, A. P. (2014). Attitude influence on performance in technical skill acquisition among formal technical trainees. *International Journal of Research Studies in Education*, 3(5), 103-112.

Babu, S. S. and Sudhakar, S. (2015). Critical success factors influencing performance of construction projects. *International Journal of Innovative Research in Science, Engineering and Technology*, 4(5), 3285-3292.

Boone, H. N. and Boone, D. A. (2012). Analyzing Likert data. *Journal of Extension*, 50(2), 1-5.

Dakas, A. I. I., Achenu, E., and Datok, E.P. (2004). A study of time and cost overruns for selected projects in Plateau state Nigeria. *Journal of Environmental Sciences*, 8(1), 158-161.

Devi, T. R. (2013). The role of Project Manager in improving the projects performance. *International Journal of Engineering Research and Development*, 5(8), 27-29.

Din, S., Abd-Hamid, Z., and Bryde, D. J. (2011). ISO 9000 certification and construction project performance: The Malaysian experience. *International Journal of Project Management,* 29(8), 1044–1056.

Doloi, H., Iyer, K. C., and Sawhney, A. (2011). Structural equation model for assessing impacts of contractor's performance on project success. *International Journal of Project Management*, 29(6),687-695.

Dzasu W. E. and Ayegba C. (2010). An appraisal of the factor militating against the practice of systematic training by construction firms in Nigeria construction. *Journal of sustainable development*, 1, 1-9.

Edum-Fotwe, F. T. and McCaffer, R. (2000). Developing project management competency: perspectives from the construction industry. *International Journal of Project Management*, 18(2), 111-124.

Egunyomi, D. A. and Ekom, O. O. (2010). Comparative analysis of influence of some socio-economic variables on vocational skills acquisition programmes for adult learners in South-South, Nigeria. *Journal of Economic*, 1(1), 33-44.

Enshassi, A., Mohamed, S., and Abushaban, S. (2009). Factors affecting the performance of construction projects in the Gaza strip. *Journal of Civil Engineering and Management*, 15(3), 269-280.

Fapohunda, J. A. and Fatokun, A. O. (2011). Site managers' attributes and constraints towards optimal utilization of construction resources. *The Journal of Building and Construction Management*, 1(3), 1-15.

Farooqui, R. U., Saqib, M., and Ahmed, S. M. (2008). Assessment of critical skills for Project Managers in Pakistani construction industry. *Proceedings of the First International Conference on Construction in Developing Countries (*ICCIDC-I), Karachi, Pakistan, 221-234.

Farooqui, R. U., Ahmed, S. M., and Saqib, M. (2010). Desirable attributes and skills for graduating construction management students. *International Proceeding of the 46th Annual Conference, Wentworth Institute of Technology*, Boston, MA, 1-10.

Field, A. (2009). *Discovering statistics using SPSS*. London: SAGE.

Flannes, S. (2004). Effective people skills for the Project Manager: A requirement for project success and career advancement. *In Proceedings of SUGI,* 29,131-29.

Girmscheid, G. and Brockmann, C. (2006). Global players in the world's construction market. *Proceedings of International CIB Symposium, Construction in the XXI century: Local and global challenges*, Roma, 1-13.

Goodwin, R. S. (1993). Skills required of effective Project Managers. *Journal of Management in Engineering*, 9(3), 217-226.

Idoro, G. I. (2010). Influence of quality performance on clients' patronage of indigenous and expatriate construction contractors in Nigeria. *Journal of Civil Engineering and Management,* 16(1), 65-73.

Ijaola, I. and Ogunsanmi, O. (2018). Construction Managers' skills and project performance. *Built Environment Journal*, 15(1), 1-12.

Ithaca Group (2012). *Core skills for work. Draft framework for use in working sessions.* Retrieved on from www.ithacagroup.com.au/.../draft-core-skills-for-work-framework-for-working-session

Jaafar, M. and Khalatbari, B. (2013). Knowledge and technical skills of Project Managers and time performance of power plant construction projects in Iran. *Middle-East Journal of Scientific Research*, 16(8),1141-1151.

Katz, R. L. (1974). Skills of an effective administrator. *Harvard Business Review*, 52(5), 90–102.

Kumazhege, S. Z. and Egunsola, A. O. E. (2014). Technical teachers' perception of factors affecting practical skill acquisition among technical college graduates in Adamawa state Nigeria. *Educational Research International*, 3(3), 95-101.

Langer, N., Slaughter, S. A., and Mukhopadhyay, T. (2008). Project Managers' skills and project success in IT outsourcing. *Proceedings of 29th International Conference on Information Systems*, Paris, 1-17.

Lei, W. W. and Skitmore, M. (2004). Project management competencies: a survey of perspectives from Project Managers in South East Queensland. *Journal of Building and Construction Management*, 9(1), 1-12.

Ma, T., Luong, C., and Zuo, J. (2014). A study of the skills of construction project managers in Australia and their needs for training and certification. *Proceedings of International Conference on Engineering, Project and Production Management, Port Elizabeth, South Africa,* 55-63.

Mouchi, G., Olabode, R. J., and Ramachandra, T. (2011). The skill sets required for managing complex construction projects. *Business Education & Administration*, 3(1), 89-100.

Odusami, K. T. (2002). Perceptions of construction professionals concerning important skills of effective project leaders. *Journal of Management in Engineering*, 18(2), 61-67.

Ogunsanmi, O. E. (2016). Determining the essential skill requirements for construction managers' practice in Nigeria. *International Journal of Construction Supply Chain Management,* 6(2), 48-63.

Oladimeji, O. and Ojo, G. K. (2012). An appraisal of indigenous limited liability construction company in South-Western Nigeria. *In Proceedings of the 4th WABER Conference*, Abuja, Nigeria, 1095-1109.

Osuala, E. C. (2004). *Teach yourself business management*. Onitsha: Africana-First Publishers Limited.

Oyewobi, L. O., Ibironke, O. T., Ganiyu, B. O., and Ola-Awo, A. W. (2011). Evaluating rework cost-A study of selected building projects in Niger State, Nigeria. *Journal of Geography and Regional Planning*, 4 (3), 147-151.

Papulová, Z. and Mokros, M. (2007). Importance of managerial skills and knowledge in management for small entrepreneurs. *E-Leader, Prague*, 1-8.

Rigby, M., and Sanchis, E. (2006). The concept of skill and its social construction. *European Journal of Vocational Training*, 37(1), 22-33.

Toner, P. (2011), Workforce Skills and Innovation: An Overview of Major Themes in the Literature. *OECD Science, Technology and Industry Working Papers*, No. 2011/01, OECD Publishing, Paris.

Ugochukwu, S. C. and Onyekwena, T. (2014). Participation of indigenous contractors in Nigerian public sector construction projects and their challenges in managing working capital. *International Journal and Civil Engineering, Construction and Estate Management*, 1(1), 1-21.

Windapo, A., Odediran, S., and Akintona, R. (2015). Establishing the relationship between construction Project Managers' skills and project performance. *In Proceedings of 51st International Conference of Associated School of construction,* 1-8.

Zakaria, I. B., Mohamed, M. R. B., Ahzahar, N., and Hashim, S. Z. (2015). A Study on Leadership Skills of Project Manager for a Successful Construction Project. *International Academic Journal of Social Sciences*, 1(2), 89-94.

Zhang, L. and Fan, W. (2013). Improving performance of construction projects: A Project Manager's emotional intelligence approach. *Engineering, Construction and Architectural Management*, 20(2), 195-207.

Zulch, B. (2016). A proposed model for construction project management communication in the South African construction industry. *Acta Structilia*, 23(1), 1-3.

Irewolede Ijaola is a Lecturer II in the Department of Building, School of Environment Studies, Yaba College of Technology, Yaba, Lagos, Nigeria. She has her Ph.D. in Building with specialisation in Construction Management. She is currently a corporate member of the Nigerian Institute of Building (MNIOB) and a registered member of the Council of Registered Builders of Nigeria (CORBON). Her research interest is in construction management, project management, and human resource development.

Olatunbosun Hezekiah Omolayo is a Lecturer 1 in the Department of Building Technology, School of Environmental Studies, Yaba College of Technology, Yaba, Lagos State, Nigeria. He holds a Diploma in Quantity Surveying, B.Sc (Hons) in Building and M. Sc. in Construction Management. He is a corporate member of the Nigerian Institute of Building (MNIOB) and a registered member of Council of Registered Builder of Nigeria (CORBON). His research interests are Construction Management, Maintenance and Procurements.

Kudirat Ibilola Zakariyyah is a Lecturer I in the Department of Building Faculty of Environmental Sciences, University of Lagos, Akoka, Lagos State, Nigeria. She has Ph.D. in Building with specialisation in Construction Management from University of Lagos, Nigeria. Zakariyyah is a corporate member of the Nigerian Institute of Building (MNIOB), a registered member of Council of Registered Builders of Nigeria (CORBON). Her research focus is on organisational culture, indigenous construction firms' performance, occupational health and safety and transformation of the construction industry.

Appendix. Project managers' skills

Skill types of project manager	
Technical Skills	Investment appraisal skills
Basic knowledge in construction field	VAT and Taxation skills
Forecasting techniques skills	Stock control and evaluation skills
Site layout and mobilization skills	Cash flows skills
Material procurement skills	Budgets skills
Operation research skills	**Construction Industry and business skills**
Technical writing skills	Knowledge of health and safety regulations
Design activities and background skills	Knowledge of building codes and regulations
Reading and understanding drawings	Knowledge of environmental impact assessments
Construction management activities	Marketing with clients/ Developing clients relations skills
Planning and scheduling skills	Knowledge of the permitting process skills
Estimating and tendering skills	Construction trade knowledge skills
Productivity and cost control skills	Understanding procedural issues skills
Work study skills	Understanding cultural issues skills
Plant hire and management skills	Awareness of industry trends skills
Quality control skills	Understanding complimentary fields/ disciplines skills
Knowledge of construction materials	Skills for appreciation of construction industry supply chain
Knowledge of construction equipment	Skills for understanding geographical issues
Managerial Skills	Entrepreneurship skills
Leadership skills	Skills for understanding global construction environment
Time management skills	Skills for understanding lean culture
Decision-making skills	**People Skills**
Negotiation skills	Written communication skills
Delegation skills	Verbal communication skills
Strategic planning skills	Diversity skills
Human behaviour skills	Ability to speak different languages/ Multilingual
Motivation and promotion skills	Meetings skills
Recruitment skills	Managing relationship/Networking/collaboration skills
Team working skills	Coaching skills
Top management relations skills	Mentoring skills
Health and safety management skills	**Legal Skills**
Quality assurance/total quality management skills	Negotiations/Conflict resolution skills
Inspection/Quality control skills	Interpreting contract documents skills
Organisational skills	Knowledge of construction law and legal environment
Document control skills	Contract administration skills
Project management/administration skills	Knowledge of bidding procedures
Site planning and management skills	Change management skills
Personnel/Resource management skills	Disputes avoidance and resolution skills
Productivity management skills	Knowledge of project delivery and contracting strategies
Skills for managing labour issues	Skills for understanding labour law
Knowledge and information management skills	Claims preparation and presentation skills
Financial skills	Claims defense skills
Finance reporting skills	Verbal communication skills
Project finance arrangement skills	