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Influence of construction project team effectiveness on cost performance in higher institutions' building projects in Bauchi state

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Abstract
Cost performance is one of the fundamental criteria for success of any project. Numerous factors were reported by researchers to be responsible for contributing to poor cost performance, among which is inability of project participants (team) to work collaboratively and lack of co-ordination among construction parties. Preceding researches focused largely on: team composition, leadership, communication and identifying factors responsible for effective and ineffective teams in Nigerian construction industry. It is therefore necessary to determine the level of influence of construction projects team effectiveness on cost performance of public building project in order to augment the effectiveness of cost performance in Bauchi state North Eastern Nigeria. Quantitative survey research design was employed where 150 questionnaires were administered to construction projects team members of an ongoing projects in four higher institutions in Bauchi state whom were conveniently randomly selected. 139 questionnaires were returned, 5 discarded due to severe issues of outliers and missing values, leaving 134 valid which represent 89 percent. The results indicated that about 56.5 percent in the changes in cost performance can be explained by changes in the construction projects team effectiveness. It should serve as a wake-up call to stakeholders in Nigerian construction industry on the consequences of team effectiveness for enhancing effective cost performance for national economic development. The study is therefore recommended the improvement of team effectiveness factors of the industry

Keywords: Cost performance, projects team, projects team effectiveness

Introduction

Construction cost performance is one of the major criteria by which success of building projects are measured (Abusafiya & Suliman, 2017 [2]; Gligorea, 2014) [22]. Ikechukwu, Emoh, Fidelis, and Kelvin (2017) [38] as well as Prajapati, Gupta, and Pandey (2016) opined that effectiveness of cost performance of construction projects rises property and service production for the nation and reduces adversarial relationship among projects stakeholders. However, researchers like AbdulAzis, Memon, Rahman, and Karim, (2013) [1]; Ali and Kamaruzzaman (2010) [4]; as well as Offei-Nyako, Tham, Bediako, Adobor, and Asamoah (2016) have reported poor construction cost performance across the globe, which is severe in developing nations (including Nigeria) where it goes over 100% of the predictable cost of construction projects. These results to project abandonment, decrease in building activities, budget shortfall of project owners, loss of profit for the contractors, tarnishing of the reputation of the professionals, decrease in rate of national growth, rework, frustration on stakeholders, delay, and higher price to the end user among others (Abusafiya & Suliman, 2017 [2]; Dosumu & Adenuga, 2013 [21]; Ikechukwu *et al*., 2017 [36]; Prajapati *et al*., 2016).

Numerous factors as reported by many researchers were responsible for cost overrun which basically result to poor cost performance of building construction projects. Among the causes of poor performance of projects as reported by many researchers among others include; inability of project participants (team) to work collaboratively (Bubshait & Al-Juwairah, 2002 [13]; Assaf & Al-Hejji, 2006 [8]; Al-Dosary, Assaf and Aldakhil, 2009 [5]; Assaf, Srour and Hassanain, 2013. They also examined among others the main causes of poor performance of a project to poor management exercises, adversarial relationships, untrained manpower, inexperienced contractors, lack of scheduling and planning effectiveness. Homthong and Moungnoi (2016) [34] also revealed that the causes of poor performance of construction projects to include incompetence of project participants, poor relationship among project participants, poor interrelation between the employee and supervisor, poor regular maintenance of equipment for the project, incompetent supervisors, poor quality of works to match standards and lack of good positive attitude of employees. However, cost performance is one of the fundamental criteria for success of any project (Rahman *et al*., 2012). In their research, Wanjari and Dobariya (2016) reported that price escalation of raw material, delay in planning activity and lack of co-ordination among construction parties are the top three (3) factors causing poor cost performance. Hence, effective construction project team is very critical in improving construction cost performance.

Effective building construction project team should improve construction project cost performance (Kerzner, and Saladis, 2013; Dalal, 2011 [19]. According to Cantu (2007) [15], some of the reasons for an effective measurement in teams are based on the probability that the more effectively a team functions, the more benefits they are likely to realize from the work team structure. The success rate or otherwise of a construction projects is a function of the team saddled with the responsibility of executing such projects and this is subject to the effectiveness or dysfunction of such team (Santosh, 2016; Oke & Ekaeke, 2013; Assaf *et al*., 2013 [10]; Azmy, 2012 [11] and Omid & Adeli 2016.

Construction project team effectiveness were investigated by many researchers across the globe. Study conducted in Pune, India by Santosh (2016), addresses factors responsible for effective and ineffective team in construction projects. Santosh (2016) found that for an effective and ineffective team, healthy conflict amongst team members are determinants of the time performance of the construction work while cost performance of a construction work is determined mainly by accountability and avoidance of accountability in the team. Study by Assaf *et al*. (2014) [9], on 'effectiveness of project teams and their impact on the performance of Saudi construction projects, the research showed a positive and high correlation between team effectiveness and project success. Analysis of the obtained data indicated that three factors of teamwork are strongly associated with project success. These factors are team roles and responsibilities, team goals and objectives and team leadership. Similarly, Omid and Adeli (2016), on 'the relationship between team effectiveness factors and project performance aspects in Iran found that team leadership, team roles and responsibilities, trust and values, and team relationship are the most important factors in project change management. Moreover, study by Azmy (2012) [11], on 'The Role of Team Effectiveness in Construction Project Teams and Project performance' and found that team leadership is the most important factor in Project Change Management. Hence, there exist a significant difference in contextual characteristics between developed and developing countries (Kurnia, Karnali, and Rahim, 2015).

A study in Nigeria by Odusami, Iyagba, Omirin, (2013); Ameh, and Odusami (2014) [6] and Olatunde, Ogunsemi, and Oke (2017) all concentrated on team composition and leadership within the project team. Furthermore, Ekung and Olubajo (2015) [25], focused on leadership traits on team performance of construction project. Moreover, the most closely related study by Oke and Ekaeke, (2013) considered factors responsible for effective and ineffective teams in Nigerian construction industry. Oke and Ekaeke (2013), found that, healthy conflict among team members, attention to result by the team members, accountability, strong commitment and trust are considered an effective construction project team while avoiding accountability, absence of trust, failure to commit, inattention to result and fear of conflict are considered as an ineffective construction projects team. However, they fall short of relating it with cost performance.

Despite attempts by many researchers to address the issue of team effectiveness in construction projects, yet there exists scarcity of literature that investigated the influence of construction projects team effectiveness on cost performance. Hence, it becomes necessary to determine the level of influence of team effectiveness on cost performance of public building project in order to augment the effectiveness of cost performance in North Eastern Nigeria for national economic development.

Theoretical background/Literature Review

The benefit that can be derived from effective cost performance of construction projects among others include; improve technology of the nation, extension of infrastructures, lessen adversarial relationship among project participant, increase employment opportunities, and government expenditure and trade diversification (Olusola *et al*., 2016). According to Egan (2002) [23], process and team integration are the key drivers of changes necessary for the construction industry to become more successful. However, simply bringing people together does not necessarily ensure they will function effectively as a team. Effective teamwork does not occur automatically. It may be challenged by various issues, such as lack of organization, misunderstandings, poor communications, and inadequate participation from team members. Thus, it is crucial for construction project teams to find a solution to help their team members to integrate and work together effectively.

1. Project team goals and objectives

Clear goals and objectives are major elements of project success (Dinsomore and Cooke-Davies, 2006 [20]; Rad and Levin, 2006. Parker (2008) further added that scope of the work is brought off in a much better way when goals are apparently defined and substantially understood and thus prospects of project and team success is increased. Camilleri (2011) [14] stated that employee commitment and participation at all levels to achieving goals and objectives are the important factors for the successful outcomes of project.

2. Project team leadership

It has been established that knowledgeable leadership leads to project success through convincing people of the need to change and to motivate them to work together for accomplishing project objectives in difficult work environments (Keller, 1992; Anantatmula, 2010 [7] & Juli, 2010). Camilleri (2011) [14] stated that personality and style of leader and management skills at all levels are the important factors for the successful outcomes of project. Moreover, Acharya *et al*. (2006) [3] posits that leadership is a factor that yields desirable team interpersonal effectiveness in perceived project success.

3. Project team roles and responsibility

Clear, understandable and matching employees to their areas of expertise lead to project success (Pratt, 2010[39]; Camilleri, 2011) [14]. Cobb (2012) [18] indicated that the main reason for the success of construction firms is making resources available when needed by project members. A clear structure and well defined roles promote the stability of coordination within a team (Choi, 2002 [16]; Molleman *et al*., 2004). Camilleri (2011) [14] stated that employee commitment to their roles and responsibility at all levels are the important factors for the successful outcomes of project.

4. Project team relationship

Stevens and Campion (1994) reviews literature on knowledge, skills and ability need for teamwork and concluded that good interpersonal relations, team initiative approaches, honesty, respect, trust, openness and collaborative behavior and cooperative attitude of team members are particularly attractive and unique factors linked to good team performance and hence project success.

5. Trust and value within the project team

There is less number of conflicts and high understanding when members trust, value each another and openly communicate with each other (Ensley *et al*., 2000) [26]. Hartenian (2003) [29] suggested that teams with cooperative behavior, trust and value one another are more likely to achieve their set goals properly hence project success. Honesty, respect and trust of team members are particularly

attractive and unique factors linked to good team performance and hence successful project outcome (Stevens &Campion, 1994).

6. Project team communication

Communication plays an important role in the quality of the relationship, trust and collaboration among construction project teams. Literature suggests that effective communication is vital for achieving improved project performance (Ejohwomu & Olalekan, 2017) [24]. Effective communication has been strongly linked with project success (Rad and Levin, 2003; Williams, 2002; Clutterbuck, 2007 [17]; Hernon and Rossiter, 2006) [31]. Kerzner (2013) indicated that inadequate communication is a major drawback to the development of good teams as it induces low motivation levels, drops in team spirit; and it contributes to poorly stated targets and poor project control, coordination and flow of work. Hoegl and Parboteeah (2003) [33] reported that good coordination and open exchange of pertinent information during the task promotes team effectiveness. Camilleri (2011) [14] stated that effective communication at all levels are the important factors for the successful outcomes of project.

According to Gido and Clements (2011) [28], the characteristics of an effective teams include high degree of cooperation, trust, open, timely effective communication and ethical behavior. These characteristics are important factors for project success. Previous studies in scope of teamwork remarked that the success of a project is heavily dependent on appropriate management of internal conflicts, effective communication, setting and agreeing on comprehensible goals and establishing good trusting relationships within the team (Kerzner and Saladis,2013; Dalal, 2011) [19].

Based on the theoretical ideas above of project team goals and objectives, team leadership, team roles and responsibility, team relationship, team trust and value and team communication, below is the conceptual framework of the study's variables.

Table 1: Conceptualization of Research Variables

Construct	Definition	Variables	References
Team goals & objectives	Team members' commitment, understanding, agreement and the clarity around direction and priorities, aligning of the entire team around common goals and objectives	▪ Understanding team's goals and objectives ▪ Agreement of team members to the team goals & objectives ▪ Team commitment to achieving team's goals & objectives ▪ Level of team's achievements of outlined goals & objectives	Azmy, 2012 [11]; Assaf *et al*., 2013 [10]; Omid and Adeli 2016; &
Team leadership	Although the team has a formal leader, leadership functions shift from time-to-time, depending upon the circumstances, the needs of the group, and the skills of the members. The formal leader models the appropriate behavior and helps establish positive norms, comfortability, decision making and good judgements	▪ Comfortability with the concept of shared leadership. ▪ Comfortable with the decision-making process within the team. ▪ Spending time with team members to clarify team's expectations. ▪ Team exercise good judgment during decision-making process. ▪ Helping other team members in performing difficulties tasks.	Azmy, 2012 [11]; Assaf *et al*., 2013 [10]; Omid and Adeli 2016; & Oke and Ekaeke, 2013; Santosh, 2016 & Ullah *et al*., 2017
Team roles & responsibilities	There are clear expectations about the roles played by each team member. When action is taken, clear assignments are made, accepted and carried out. Work is fairly distributed among team members. Clear individual roles and responsibilities as well as agreement	▪ Team member's willingness to help with unforeseen problems that need immediate attention. ▪ Clear individual roles in relations to the team as a whole. ▪ Team members understanding of responsibilities assigned to them. ▪ Agreement with assigned roles & responsibilities.	Azmy, 2012 [11]; Assaf *et al*., 2013 [10]; Omid and Adeli 2016; & Oke and Ekaeke, 2013 & Santosh, 2016
Team relationships	The team spends time developing key outside relationships, mobilizing resources, and building credibility with important players. Conflict management, welfare and care for one another	▪ Effective conflict management is exercised within the team. ▪ Level of care about the welfare of my teammates. ▪ Teammates' care about each other. ▪ Good decisions made within the team regarding project matters. ▪ Decisions made with the involvement of all team members.	Azmy, 2012 [11]; Assaf *et al*., 2013 [10]; Omid and Adeli 2016; & Oke and Ekaeke, 2013; Santosh, 2016 & Ullah *et al*., 2017
Team trust & values	Team members feel free to express their opinions on the tasks as well as on the group's operation, coupled with a high level of trust, respect and value for one another and as a group.	▪ Treatment of other team members with respect. ▪ Team members trust for one another. ▪ Recognition of contributions to the team members. ▪ Team members believes of trust as an important component in team	Azmy, 2012 [11]; Assaf *et al*., 2013 [10]; Omid and Adeli 2016; & Oke and Ekaeke, 2013 & Santosh, 2016
Team communication	Team members feel free to express their opinions on the tasks as well as on the group's operation, coupled with a high level of Facilitation, participation, agreement, achievement as well as timely and effective communication within and outside of meetings.	▪ Participation of team members in team meetings. ▪ Facilitation of team meeting ▪ Achievement of clear outcome from team meetings. ▪ Level of agreement during team meetings. ▪ Effectiveness of communication outside team meetings.	Azmy, 2012 [11]; Assaf *et al*., 2013 [10]; Omid and Adeli 2016 & Ullah *et al*. (2017)

Methodology

Qualitative approach was used in this research; extensive literature review (exploratory) and describing some phenomena as a result of facts acquired by the use of questionnaire (descriptive) (McNabb, 2009). The data for this research were gathered through the use of questionnaire. One hundred and fifty (150) questionnaires were administered to three (3) categories of construction projects teams' members i.e Clients' team members, Contractors' team members and Consultants' tam members of an ongoing projects in four (4) major higher education institutions in Bauchi state (Abubakar Tafawa Balewa University Bauchi, Bauchi State University, Abubakar Tatari Ali Polytechnic Bauchi and Federal Polytechnic Bauchi) of north eastern region of Nigeria and were selected conveniently. Quantity Surveyors, Architects, Builders, Civil /Structural Engineers, Electrical and Mechanical Engineers are the principal members responsible for construction and completion of the construction project, they are the core main members who would typically remain for the whole project duration and are also considered as the focal members of the team because they are those that will get into trouble should something go wrong (Robbins and Finley, 2000). Ongoing projects are designated so that current data could be collected, the data can easily be accessible from working team when the project is in progress in order to study and interrogate other related issues if applicable, and not rather from a disbanded team. Tertiary institutions are chosen due to the fact that the major sources of funds for projects in these institutions come in the same root that is Tertiary Education Trust Fund (TETFund), the kind of building structures constructed are similar and these help put them on the same platform for discussion. Bauchi state is the most populous state in the northeastern part of Nigeria with a population of 6,537,314, this represents up to 25% of the entire population 26,263,866 of the region (NPC & NBS, 2016) in addition to being the most peaceful state in the region. Bauchi state covers 45,837 square kilometers which represents 16% of 280,416 square kilometers of the region (Nyako, 2015). The state has the highest numbers of higher institutions enjoying TETFund interventions than any other states in the region (Ibrahim, 2017 [35] & Bogoro, 2015, p.5) [12]. Therefore, is considered with highest number of essential physical infrastructure (ongoing projects) engaged by TETFund. A total of one hundred and thirty-nine (139) questionnaires were returned. Of the returned questionniares, 5 were discarded in the process of data cleaning due to severe issues of outliers and missing data, leaving 134 questionnaires considered valid and usable for the research analysis.

Data collected from field through the structured questionnaire were analysed using both descriptive and inferential statistics. Descriptive statistics concern with the development of certain indices from the raw data while inferential statistics concern with the process of generalization of results (Kothari & Garg, 2014). Mean, frequencies and percentages were used as descriptive statistics tool, while in inferential statistics; multiple regression was conducted. Statistical package for social science (SPSS) version 20 (IBM 20) was used in the analysis.

Results

Prior to analysis of data collected for this research, wrong posting and missing value check, questionnaire response rate analysis as well as reliability test was conducted. According to Pallant, (2011, p. 43), it is of great importance for a researcher to ensure that data collected are free from errors before subjecting to analysis. All values assigned for a scale were carefully checked and all wrongly posted values were corrected.

Table 2: Response rate

Questionnaires	Frequency	Percentage
Distributed	150	100%
Returned	139	93%
Usable/Valid	134	89%

Source: Author's field work (2023)

Table 2: shows that the response rate for the study was 89 percent. This response rate is considered adequate for this research based on the argument of Sekaran, (2003) that response rate of 30 percent is acceptable for surveys.

This research as well conducted internal consistency test on the questionnaire to test its reliability using Cronbach's alpha coefficient. Cronbach's alpha which is the most extensively used reliability measurement of questionnaire, provides an internal consistency of a scale or test which ranges from 0 for completely unreliable test to 1 for completely reliable test (Hinton, McMurray, & Brownlow, 2014 [32]; Tavakol & Dennick, 2011). According to Hinton *et al*. (2014) [32] the alpha score above 0.75 is generally regarded as highly reliable, from 0.50 to 0.75 is generally accepted as moderately reliable, while score that is less than 0.50 is generally taken as a scale of low reliable.

With reference to above, this research adopted a value of 0.70 Cronbach's alpha score as a yardstick for the measurement of reliability of the constructs. Table 3 below shows the Cronbach's alpha scores and their corresponding grade of each construct.

Table 3: Reliability test of Constructs

Study's Constructs	No. of Items	Cronbach's Alpha	Reliability Grade
Goals & objectives	5	0.85	Highly reliable
Leadership	5	0.76	Highly reliable
Roles & responsibility	6	0.80	Highly reliable
Relationship	6	0.76	Highly reliable
Trust and values	7	0.76	Highly reliable
Communication	6	0.80	Highly reliable
Cost performance	12	0.80	Highly reliable

Source: Author's field work (2023)

From table 3 above, all the measured research constructs attained the level of high reliability with Cronbach's alpha score of more than 0.70.

Table 4: Respondents' Profile

S/N	Respondents'Details	Response	Frequency	Percent
1	Gender	Male	119	88.8
		Female	15	11.2
2	Team	Clients' team	25	18.7

		Consultants' team	43	32.1
		Contractors' team	66	49.3
3	Size of the team	2-4 People	15	11.2
		5-6 People	63	47.0
		7-10 People	34	25.4
		More than 10	22	16.4
4	Educational Background	HND	25	18.7
		Degree	27	20.1
		PGD	32	23.9
		Masters	50	37.3
5	Professional discipline	Architecture	30	22.4
		Building	20	14.9
		Quantity Surveying	36	26.9
		Engineering	48	35.8
6	Years of Experience	Less than 5yrs	4	3.0
		5- 10yrs	14	10.4
		11- 15yrs	34	25.4
		15 years and above	82	61.2
7	Major Individual Projects Undertaken in last 5 years	1-10	26	19.4
		11-20	101	75.4
		Above 20	7	5.2
8	Statutory Professional Body	ARCOM	30	22.4
		CORBON	20	14.9
		QSRBN	36	26.9
		COREN	48	35.8

Source: Author's field work (2023)

From the above tables 4, of the total respondent 119 (88.8%) of the respondents were males and 15 (11.2%) were females. This follows team, the result shows that 25 (18.7%) of the respondents represented client's team, 43 (32.1%) were consultants and almost half of the respondent representing 49.3% were contractors. Also in table 4, 15 (11.2%) of the respondents were few and were with team between 2-4 members, 63 (47.0%) of the professionals were in project teams constituting five to six members, 34 (25.4%) of the respondents were in project teams made up of seven to ten members and project teams of 10 and above members constituted 16.4%. Majority of the respondents (more than half) have master's degree, degree and post graduate diploma with a composition of 50 (37.3%), 27 (20.1%) and 32 (23.9%) respectively. From the same table 4, 30 (22.4%) of the respondent were Architects, 20 (14.9%) were Builders, 36 (26.9%) were Quantity surveyors and engineering (civil/structural, electrical and mechanical) constituted 48 (35.8%).). This results affirmed that these respondents acquired substantial academic qualification to provide inputs based on the enquiry of this study, while just a few 25 (18.2%) were with higher national diploma certificate. 61.2% (more than half of the sample) have more than 15 years of construction experience. The other half of the sample falls between 0 to 15 years of construction experience-four people (3.0%) with less than 5 years of experience, 10.4% (14 people) with 5-10 years of experience, and 34 people with 10-15 years of experience (25.4%). This shows that majority of the respondents have adequate years of experience to respond to this research. Number of professionals who had undertaken projects between 1 to 10 were 26 (19.4%) of the respondents that had undertaken projects between 11 to 20 which represent 101 (75.4%) and the number of professionals undertaken projects above 20 were a few and that constituted 5.2%. Majority (more than half) of the respondents were with teams who had undertaken projects between 11 and 20 and will be able to give an adequate perception of effectiveness of the teams and of course cost performance position. In the same table 4 above, all respondent that responded to study questionnaires belongs to their statutory professional body with ARCON members composed of 30 (22.4%), CORBON 20 (14.9%), QSRBN 36 (26.9%) and COREN 48 (35.8%).

This research checked the normality of the data distribution using skewness and kurtosis. Kothari and Garg (2014 p136) recommended that skewness and kurtosis values of -3 to +3 are considered a symmetrical distribution which are suitable for parametric tests and presume a normal distribution. The result shows that all the variables are within the recommended range of -3 and +3 (Kotheri & Garg, 2014). This indicated that there was agreement between the opinions of the respondents which reduced the occurrence of outliers.

The regression model was specified to produce the model summary, the analysis of variance (ANOVA) and the coefficient to determine the influences of the independent variable or predictor on dependent variable as presented in table below.

Table 5: Model Summary and ANOVA for Cost Performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
1	.764	.584	.565	.295	*29.734*	*.000*

Source: Author's field work (2023)

Table 5 above shows the regression model summary and the ANOVA result for cost performance. The model produced overall R value of 0.764 and R square value of 0.584 with F-statistics of 29.734 which are significant as indicated by p value of 0.000 far below the recommended maximum of 0.05 (Pallant, 2011). This shows that the model predicts about 56.5 percent of the variation in cost performance. In other words, about 56.5 percent in the changes in cost performance whether high or low can be explained by changes in the effectiveness of construction project team. The model is fitted well and good as it produced a strong R square and F statistics values.

The individual influence of team effectiveness factors on cost performance is presented by the standardized regression coefficients in table 6 below.

Table 6: Regression coefficients for cost performance

	Unstandardized coefficient		Standardized coefficient	t	Sig.
	B	Std Error	Beta		
Constant	.079	.160		.341	.439
Goals & Objectives	.059	.037	.085	1.085	.087
Leadership	.014	.050	.166	2.027	.003
Roles & Responsibility	.148	.048	.180	2.131	.002
Relationship	.111	.034	.107	1.321	.043
Trust & Values	-.087	.060	.089	-1.019	.104
Communication	.184	.054	.213	2.391	.001

Source: Author's field work (2023)

Table 6 above shows the individual influence of the independent variables on the dependent variable (cost performance). The result shows that the team effectiveness factors with significant influence on cost performance are communication, roles and responsibility and leadership as indicated by t-statistics values of 2.391, 2.131 and 2.027 with p-values of 0.001, 0.002 and 0.003 which are far below the recommended maximum of 0.05 (Pallant, 2011). The other team effectiveness factors do not have significant influence on cost performance of public building projects. Trust and values is the team effectiveness factor with the least influence on cost performance.

Discussion of Result

The objective of this research paper is to determine the influence of project team effectiveness on cost performance in higher institutions' building projects in Bauchi State north eastern Nigeria. Multiple regression analysis revealed that the model predicts about 56.5 percent of the variation in cost performance. In other words, about 56.5 percent in the changes in cost performance whether high or low can be explained by changes in the construction projects team effectiveness. The model is fitted well and good as it produced a strong R square and F statistics values. The influence however reached substantial significance level. Furthermore, on the individual influence of the independent variables on the dependent variable, the result shows that the team effectiveness factors with significant influence on cost performance are communication, roles and responsibility and leadership. Communication is the team effectiveness factor with the highest influence on cost performance as indicated by standardized beta coefficient of 0.213. This direct relationship shows that an improvement in team effectiveness factors significantly improves cost performance. The result also indicated that any 1-unit change in team effectiveness factors causes cost performance to change by 0.213 as indicated by the standardized beta coefficient. This is followed by roles and responsibilities with t-statistics values of 2.131, p-values of 0.002 and beta value of 0.180. The result also indicated that any 1-unit change in team effectiveness factors causes project performance to change by 0.180 as indicated by the standardized beta coefficient. This also followed by leadership with t-statistics values of 2.027, p-values of 0.003 and beta value of 0.166. The result also indicated that any 1-unit change in team effectiveness factors causes project performance to change by 0.166 as indicated by the standardized beta coefficient. The other team effectiveness factors do not have significant influence on cost performance of public building. Trust and values is the team effectiveness factor with the least influence on cost performance.

Conclusion and Recommendation

This research was conducted to determine the influence of project team effectiveness on cost performance in higher institutions' building projects in Bauchi State north eastern Nigeria. The results of the analysis revealed that the influence of project team effectiveness on cost performance amount to significantly 56.5%. Conclusively, construction is normally evaluated based on three performance evaluation criteria. These criteria are cost, time and quality. Although all these criteria are indispensable in construction, the first two are the fundamental criteria for success of any project. In Nigeria, specifically, construction industry has long been associated with poor cost performance. Despite this, efforts were limited in determining the issues relating to team effectiveness and cost performance by construction projects teams. Hence, from the result above, project team effectiveness, as other factors do, also contribute significantly to the poor cost performance of public building projects in the North Eastern Nigeria. Cost performance can therefore be improved by improving the team effectiveness factors. The study therefore, recommended the improvement of the team effectiveness factors in order to improve cost performance. In order to improve cost performance, the most influential team effectiveness factor on cost performance i.e communication, roles and responsibility and leadership should be given more emphasis in improvement. On the other hand, professional bodies in construction industry should endeavor to be organizing team effectiveness symposiums and colloquiums to share knowledge and advances in working collaboratively as a team. Professional bodies in the construction industry should also ensure that their members imbibe collaborative working culture in their construction teams. Government and all its agencies concerned with construction activities should ensure the enforcement of team working in all construction projects. Clients, contractors and consultants should also be team conscious and demand nothing less than a collaborative working from their respective team. Finally, all stakeholders in construction projects should give priority to team effectiveness in construction projects.

This research is limited to ''construction team only'' as we have design team and construction team in generic phases in a construction project. Only ongoing projects and its team members was considered in four (4) higher education institutions in Bauchi state North Eastern Nigeria.

On the area for further studies, this research is limited to the influence of only six factors that influence cost performance. Further research can be conducted to explore additional factors that have influence on cost performance as well as other projects success criteria. Similar research can be replicated in other region of the country since the findings in Bauchi state, North Eastern Nigeria might not be

generalizable to the whole country. The research is also limited to quantitative approach using survey research design. Another study may explore the problem further using the qualitative research approach or using the mixture of both quantitative and qualitative approaches known as mixed approach. This will give the research the advantage of each approach and minimizes the disadvantages of the approaches.

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