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Assessment of Project Performance Variables on Timely Delivery of Tetfund Projects in Bauchi State

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Abstract

This research examines the impact of consultant project performance variables on timely delivery of TETFund projects, with specific application to public Tertiary institution in Bauchi State. The paper adopted a questionnaire survey. Structured questionnaire was administered to 144 construction professionals to elicits information's on consultant's project performance factors that impact timely delivery of projects, out of which 125 representing 86.8% properly filled questionnaires were analysed. The study deployed descriptive statistics such as mean and standard deviation, and inferential statistics such as the multiple regression analysis for data analysis. The result shows that cost, quality and time were agreed as main elements that are mostly considered in the measurement of project success, also the project performance indicators with significant influence on timely project success are delegation of decision-making authority, interaction skills, proper planning for project execution, competence and experience. The study concluded that cost, quality and time were agreed as the main elements that are mostly considered in the measurement of project success. Therefore, the research recommended that timely project success can be improved by improving on the project performance indicators, and also competent and experience professionals should be entertained in awarding projects so as to achieve cost effectiveness, quality work and timely delivery of projects. This research has practical implication to policy makers and stakeholders in the construction on the benefit of timely project implementation.

Keywords: Construction Professionals, Cost Effectiveness, Experience, Consultant Project Performance, Project Success.

Introduction

The major objective of every client is to completion a project within the stipulated cost and time, and the achievement of this objective is called project performance. Project performance (PP) is the extent to which projects are delivered based on the requirements of the clients. These requirements include completing the project within budgeted cost, stipulated time, and agreed quality (Bala, Yusuf, Usman and Ibrahim, 2022). Project success can be determined using time and cost performance criteria (Rahman, Memon, Nagapan, Latif, and Azis, 2012). However, according to Ogunde, Olaolu, Afolabi, Owolabi and Ojelabi (2017) construction projects across the world especially in developing countries (including Nigeria) have a high rate of poor project performance projects than developed countries. It is reported that over 70% and 50% of the construction projects started in Nigeria are likely

to exceed the time and cost budgeted with a magnitude of over 50% and 20% respectively (Okweto, 2012).

Construction Projects are needed to be completed within the stipulated time frame, budgeted cost, and required quality. Majority of the project in Nigeria experience time and cost overrun which in turn lead to resource wastage; even though project professionals have a detailed understanding of several constraints like project budgets, project time given for completion, and all resources needed for the project due to their skills, knowledge, and experience to manage projects correctly and clearly, project still fail to meet up with performance. According to Oluwaseun and Aigbavboa (2019), the level to which construction consultants render their services to construction clients is below expectation, this causes performance gaps in terms of accuracy in the cost of construction works estimates; time estimation and project delivery free from danger, risk or doubt.

Project success could be measured in terms of parameters or nature of the project e g. performance, aestheticism, stability, safety, quality service rendered. One of the best ways of achieving construction project quality delivery hinged on adequate design and quality of supervision exercised at planning and production stage. A study by Masengesho, Wei, Niyirora, and Umubyeyi (2021) revealed that even if there are many obstacles in the use of project consultants in the construction industry, they are needed in a project to make it more successful through adequate monitoring and supervision of contractors work, making sure construction project timing is met, , removing major variations that affect construction project, improving quality of the project products and reducing and saving the overall project's life cycle cost in line with the client's wishes.

The industry is characterized with continued decrease of profit margin, service quality performance, cost and time overrun, abandoned and uncompleted project due poor project definition, control and management of the project delivery process, unnecessary waste generation and non-value adding activity (Olusegun and Machael, 2011). Furthermore, Okoye et al., (2015) identify an emerging trend in construction where the construction activities not only deliver the desired project but are geared towards satisfying its users otherwise known as the customer. Accordingly, poor timely delivery of project was also found to be attributing factors in the poor project performance (Agboola et. al., 2023).

The Tertiary Education Trust Fund (TETFund) was established as an intervention agency under the TETFUND Act, 2011; which is charged with the responsibility for managing, disbursing and monitoring the education tax to public tertiary institutions in Nigeria. To enable the TETFund achieve the above objectives, the TETFUND Act, 2011 imposes a 2 percent (2%) education tax on the assessable profit of all registered companies in Nigeria. The Federal Inland Revenue Service (FIRS) was empowered by the Act to assess and collect the Education Tax. The Fund administers the tax imposed by the Act and disburses the amount to federal and state tertiary educational institutions. It also monitors the projects executed with the funds allocated to the beneficiaries.

The Education Tax Act was replaced by the TETFund Act 2011 due to lapses and challenges in operations of the ETF (Mukhtar, Abdussalam and Mustapha, 2021). One of such lapses was that, the ETF was overburdened and overstretched. The TETFund Act 2011 mandated the Fund to operate as an intervention agency in Nigerian federal and state tertiary institution to provide funding for educational facilities and infrastructural development in public tertiary institutions, with a view to ensuring rehabilitation, restoration and consolidation of Tertiary Education in Nigeria. The funds are disbursed for the general improvement of education in federal and states tertiary institutions, and specifically for the provision or maintenance of essential physical infrastructure for teaching and learning among others (TETFund, 2020). Despite efforts by TETFund in discharging its responsibilities, Zailani, Kolo and Abubakar (2019) reported that there is poor time performance of TETFund projects in tertiary institutions in Nigeria. For instance, Aghimien and Aigbavboa (2018) found that about 86% of the assessed TETFund projects experienced time overrun of 66% to 86%. Whereas Gambo, Ibrahim, Iliyasu, Winston and Ibrahim (2017) revealed that 43% of the TETFund projects studied were not completed within agreed time and cost.

A study by Masengesho, Wei, Niyirora, and Umubyeyi (2021) revealed that even if there are many obstacles in the use of project consultants in the construction industry such as lack of knowledge and practice in project consulting, lack of well-trained project consulting professionals, lack of training opportunities in project consulting, lack of knowledge and experience in addition to the senior management opposition, and lack of local project consulting guidelines and information; they are needed in the construction project to make it more successful through reducing and saving the overall project's life cycle cost in line with the client's wishes, keeping time of construction project, improving quality of the project products in the present and future, removing major variations that affect construction project with its attendant cost overrun, and advising on construction project process.

According to Agboola et. al., (2023) major criteria for selection contractor to carry out project specific activities Nigeria in the areas of experience, timely completion of work experience, reputation. Technical and management ability and financial stability. However, problem still persist on meeting up with these demand from professionals as many projects still fail to meet up its expectation in terms of time cost and also quality. On account on these self-evident shortcomings which affect many projects works especially government works like the TETFUND. Failure of such project have left the education environment of our tertiary institution awful, as many projects take long overdue time for it to be delivered, they fail to meet up with the expectation of the end users.

The TETFund initiative was established to operate as an intervention agency in Nigerian federal and state tertiary institution to provide funding for educational facilities and infrastructural development in public tertiary institutions, with a view to ensuring rehabilitation, restoration and consolidation of Tertiary Education in Nigeria. The funds are

disbursed for the general improvement of education in federal and states tertiary institutions, and specifically for the provision or maintenance of essential physical infrastructure for teaching and learning among others (TETFund, 2020). Despite efforts by TETFund in discharging its responsibilities, Zailani, Kolo and Abubakar (2019) reported that there is poor time performance of TETFund projects in tertiary institutions in Nigeria. Aghimien and Aigbavboa (2018) found that about 86% of the assessed TETFund projects experienced time overrun. Whereas Gambo, Ibrahim, Iliyasu, Winston and Ibrahim (2017) revealed that 43% of the TETFund projects studied were not completed within agreed time and cost. Therefore, the study tends to assess the impact of consultants project performance variable on timely delivery of Tetfund projects.

Literature Review

Construction Project Success

For any country, the success of a construction project is an important issue for most of its economic development, owners, and users (Ramlee *et al.,* 2016). The outcome of a construction project could either be a success or failure, therefore once a project fails to be delivered, it is deemed a failure. Hence, project performance is measured on the prediction of project outcome whether it succeeds or fail (Omran, *et. al.,* 2012). This performance is measured based on timely completion, estimated cost, and expected quality. In the project management literature, many researchers have extensively discussed the issue of project success. Most research on project success focus on how to measure it success and other specific factors that affect the success of the project (Wang and Huang, 2006). For the architects, the project may be said to be successful base on aesthetic performance, while for the contractors, the project is successful when they get more benefit from it. Collins and Baccarini (2004) pointed out that project success is not only related to completion time, cost, and quality objectives, but also requires relevant education to the project management community. The concept of development project success is to set standards and criteria to help project participants complete the project with the best outcomes (Chan and Chan, 2004). Successful completion of cost, time, and quality goals was considered as direct project management success. Project success involves meeting the project goal (Pheng and Chuan, 2006).

Project Performance

The construction industry is considered to be one of the most risky and complex industries. However, it plays a major role in the development and achievement of society goals. It is one of the largest industries and contributes to about 10% of the gross national product (GNP) in industrialised countries (Navon, 2005). Construction project and performance success of construction projects depends mainly on success of performance. Many previous researches had studied the performance of construction projects. Akanni, Ako and Akpomiemie (2015) remarked that one of the principal reasons for the construction industry's poor performance has been attributed to the inappropriateness of the chosen

procurement system. Agboola et. al., (2023) also stated that performance of construction project is impacted by the bid, reputation of contractor, financial stability, experience technical and management ability and selection of appropriate contractor to handle the project. Agboola et. al., (2023) identified the main performance criteria of construction projects as financial stability, experience, reputation, technical and management ability timely completion of work, cultural experience, track and proven record. Also, Chan and Kumaraswamy (2002) stated that construction time is increasingly important because it often serves as a crucial benchmark for assessing the performance of a project and the efficiency of the project organization. Furthermore Cheung, Suen and Cheung (2004) identified project performance factors as people, cost, time, quality, safety and health, environment, client satisfaction, and communication.

According to Ajayi (2010) the most suitable performance yardsticks to ensure that the project has been performed adequately are: the quality of work, the delivery of the project on time, the productivity rate of the contractor and project completion within the estimated budget. Most of reviewed literature on construction projects suggested that the common criteria for project management success are generally considered to be cost, time and quality (Nega, 2008).

Factors Affecting Timely Performance of Construction Projects

Several studies have been carried out to identify factors affecting time performance of construction projects. Study conducted by Assaf and Al-Hejji (2006), revealed 73 causes of delay in large construction projects, the identified causes were categorized into nine groups namely: factors related to project, client, contractor, consultant, design-team, materials, equipment, manpower (labour), and external factors. The study identified the most important causes of delay as shortage of labour, unqualified work force, inadequate contractors experience, difficulties in financing project by contractor, ineffective planning and scheduling of project by contractor, low productivity level of labour, rework due to errors during construction, delay in progress payments by client, original contract duration is too short, shortage of labour, delay in material delivery, poor site management and supervision by contractor, type of project bidding and award, poor qualification of the contractor's technical staff, change in orders by client during the construction, slowness in decision making process by the client, late procurement of materials, mistakes and discrepancies in contract documents.

Shehu and Akintoye (2014), conducted a research which they developed a list of 84 major causes of time overruns in Malaysian construction projects, the overall mean responses indicated that the ten most critical factors were cash flow problem faced by the contractor, late payment from contractor to subcontractor or suppliers, problems between the contractor and his subcontractors with regards to payments, ineffective planning and scheduling of the project by the contractor, difficulties in financing the project by the contractor, ineffective control of the project progress by the contractor, late payment from

client to contractor, bureaucracy in government agencies, slow permits by local authorities, and delay in progress payments by the client. Also, Gambo *et al.,* (2017) identified the following as factors affecting the successful completion of some selected TETFund projects, these are increase in materials price, inadequate supply of materials, lack of quality control of materials, difficulties in receiving progress payment from the client, lack of technical skill of the project managers, lack of experience of the project managers, lack of managerial skills of the project managers, lack of motivating skills of the project manager, lack of commitment of project team members, and the economic environment.

Method

This study sets out to identify impact of consultant's project performance variables on timely delivery of project in Bauchi, Bauchi State. The respondents targeted were Professionals (Consultants) involved in TETFund construction project within higher institution of learning in Bauchi State, which include, Architects, Civil Engineers, Quantity Surveyors, Builders and others. Bauchi was considered for this study based on the recommendation of Zailani, Kolo, and Abubkar, (2019) that many TETFund projects of tertiary institution suffers delay in its delivery and this constitute a problem of lack of space available for teaching and conducive learning. The study employed primary source of data which is the use of questionnaire. Self-administered questionnaire was administered to professionals using purposive sampling technique. The choice of purposive sampling was informed by: non availability of an authoritative sampling frame of active professionals in Nigeria (Achuenu, Izam and Bustani, 2000). A total of 144 questionnaires were administered to respondents in the study area. However, only 125 questionnaires were completed and returned, and used for analysis and this is because they were properly filled. These 125 questionnaires represented 86.8% response rate. This response rate is higher than 25.4% (Emuze, 2011) and 33.5% (Olatunji, 2010) in the construction industry. The questionnaire consisted of two sections. Section one covered the demographic background of the respondents, while Section two asked respondents to rate the level of importance of each of the identified variables of project performance. SPSS was used for the analysis: to run frequency, ranking, mean and standard deviation (descriptive statistics) and regression analysis (inferential statistics) to analyse the data obtained from the questionnaire responses. Data for major criteria for selecting a capable contractor, selecting a contractor base on bid, and why the need for selecting contractor was evaluated on 5 point Likert scale (1= Strongly Not Agree (SNA); 2= Not Agree (NA); 3= Moderate (M); 4= Agreed (A); 5= Strongly Agreed (SA)). In describing the data, the study writes out the facts the way it is, in clear and fair descriptive reporting, also it filters out those matters which are not relevant to the research problem.

Result and Discussion

Table 1 below present the profiles of the respondents. 33.6% were from architecture background. 23.2% is from civil engineering background, 24% were from quantity

surveying background, 11.2% were from building background while 8% are from other background. The result shows that the professionals are almost evenly represented. 51.2% have 11-15 years' experience, 28.8% have 6-10 years of experience, 11.2% have 1-5 years of experience, while 8.8% have 15 years and above experience. 45.6% of the respondent have handled 6-10 number of projects yearly, 28.8% have 1-5 projects, while 25.6% have 11 and above projects handled yearly. Also, 36.8% of the professionals holds bachelor's degree, 57.6% hold master's degree, 3.2% have higher national diploma, while 2.2% holds ordinary national diploma certificate. Findings from the professional's demographic profile reveals that respondents are well experienced and educated enough to respond to this research enquiry.

Table 2 shows the evaluation of project success measure by the consultants' construction professionals in TETFUND projects in Bauchi Tertiary institutions. The project success was evaluated using factors such as satisfaction, cost, quality, and time. The results indicated that satisfaction (satisfaction of interpersonal relations with project team members which include meeting budget, schedule, quality of workmanship, client and project manager's satisfaction, transfer of technology, friendliness of environment, health and safe), cost, (projects are executed within the planned budget), and quality, (projects meet required quality level) were agreed as elements that were considered as being the main measure of project success in the study areas as indicated by mean values of 3.76, 3.74 and 3.69 respectively. Time as one of the project success measure was found to be moderate with a mean score of 2.82. The general project success measure in TETFUND construction projects in Bauchi state was agreed to be time, cost, quality and satisfaction as indicated by a mean score of 3.51. This finding revealed that time, cost, quality and satisfaction are responsible for timely project success.

This research found that satisfaction, cost, and quality were agreed as elements that are mostly considered as the main measure of project success in the study, while time, as one of the element measures was found to be a moderate element measure. This finding confirms the finding of Chan (2001) that time, cost, and quality were the criteria for evaluating successes or failures of projects. Gwaya *et al.,* (2014) postulate that timely project completion is therefore observed as a success factor. Agboola et al., (2023) confirms that timely execution of project is one of the major criteria for evaluating professionals in the construction industry. Project success is a term that has elicited enormous research with differing views on various aspects of it. Its definition has changed over the years for instance in the 1960s, project success was measured in technical terms. According to Kerzner (2017), project success is often defined by meeting the objectives of completing the project within the planned time, budget, and the required level of quality.

Table 3 and 4 below shows the impact of consultant's performance indicators on timely project success in TETFUND construction projects of selected Bauchi tertiary institutions. Multiple regression analysis (MRA) was employed in the analysis. Quality evaluations were conducted at the earlier stage of the analysis to ensure that the data meet the multivariate

analysis requirements. This is based on the recommendations of Hair et al. (2010) and Pallant (2011) that data must be normally distributed, internally consistent, and devoid of missing values, outliers and multicollinearity.

The regression model was estimated. The model treated all the individual constructs of consultants' performance indicators as the independent variable that is the 12 independent variables which include Interaction Skills (IS), Efficient Management of Information (EMI), Proper Planning for Project Execution (PPE), Establishment of Standard Procedure (ESP), Organization of Collaboration among Team Members (OCT), Clients Support (CS), Commitments and Flexibility (CF), Adequacy of Resources and Understanding of Clients Requirements (ARU), Delegation of Decision-Making Company (CDDMA), Clients Characteristics and Contribution (CCC), Competency and Experience (CE), Project Solving Skills (PSS). The essence of this is to identify the individual prediction of each variable in the model so as to enable specific actions to be taken. 12 variables were entered into independent variables in the model. The regression model was specified to produce the model summary, the analysis of variance (ANOVA) and the coefficient to determine the individual impact of each of the independent variables or predictors on the dependent variable as presented in Tables 3. The model produced overall R value of 0.678 and R square value of 0.460 with F-statistics of 7.936 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 46 percent of the variation in timely project success. In other words, about 46 percent in the changes on timely project success whether high or low can be explained by changes in the consultants' performance indicators of the consultant's professional. The model is fitted well and is good for the analysis as it produced a strong R square value.

The individual influence of each consultant's performance indicators on timely project success is presented by the standardized regression coefficients in Table 4. The result shows that the consultants' performance indicators with significant influence on timely project success are interaction skills, proper planning for project execution, delegation of decision-making authority and competency and experience as indicated by the t-statistics values of 2.91, 2.47, 4.28 and 3.14 respectively and p-values of 0.004, 0.005, 0.00 and 0.02 respectively. Delegation of decision-making authority is the consultants' performance indicators (CPI) with the highest influence on timely project success as indicated by standardized beta coefficient of 0.466 followed by competency and experience with beta value of 0.422. This is also followed by interaction skills and proper panning for project execution having beta values of 0.283 and 0.252 respectively. The other consultants' performance indicators do not have significant influence on timely project success. Organisational collaboration among team members is the CPI with the least influence on timely project success in TETFUND projects.

This is similar to the findings of Saqib, Farooqui and Lodi (2010), that the most important critical success factors for timely delivery of project in Pakistan was the decision-making

effectiveness of the project management team, project manager experience, contractor experience supervision and planning effort.

The analysis found that consultants performance has a significance influence on timely projects success in TETFund construction project in Bauchi with overall R value of 0.678 and R square value of 0.460 with F-statistics of 7.936 and significant p value of 0.000 far below the recommended maximum of 0.05 (Pallant, 2011), the research further utilizes a model that consider the consultant performance indicators (CPIs) individually and found interaction skills, proper planning for project execution, delegation of decision-making authority and competency and experience as indicated by the t-statistics values of 2.91, 2.47, 4.28 and 3.14 respectively and p-values of 0.004, 0.005, 0.00 and 0.02 respectively with good significance influence on timely delivery of TETFund project in Bauchi.

Table 1: Respondents' Profile

S/N	Respondents' Details	Response	Frequency	Percent
1	Professional background	Architecture	42	33.6
		Civil Engineering	29	23.2
		Quantity Surveyor	30	24.0
		Building	14	11.2
		Others	10	8.0
2	Year of experience	1-5 years	14	11.2
		6-10 years	36	28.8
		11-15 years	64	51.2
		15 and above	11	8.8
3	Number of Projects handled yearly	1-5	36	28.8
		6-10	57	45.6
		11 project and above	32	25.6
4	Highest level of education	OND	3	2.2
		HND	4	3.2
		Bsc.	46	36.8
		Msc.	72	57.6

Table 2: Project Success Measure

Project Success Measure	Mean	SD	Remark
Satisfaction: satisfaction of interpersonal relations with project team members which include meeting budget, schedule, quality of workmanship, client and project manager's satisfaction, transfer of technology, friendliness of environment, health and safe	3.768	.719	Agreed
Cost: (projects are Executed within the planned budget)	3.744	.869	Agreed
Quality: (Our projects Meet required quality level)	3.696	.557	Agreed
Time: (Our projects are completed within planned time)	2.824	1.001	Moderate
Aggregated PSM	3.508	.607	Agreed

Table 3: Model Summary and ANOVA

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
1	.678[a]	.460	.402	.46981	7.936	.000[b]

Table 4: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
	(Constant)	1.319	.525		2.513	.013
	IS	-.399	.137	-.283	-2.912	.004
	EMI	-.050	.159	-.034	-.315	.754
	PPPE	.276	.112	.252	2.467	.005
	ESP	-.117	.068	-.189	-1.720	.088
	OCT	.023	.148	.017	.155	.877
	CS	-.021	.085	-.027	-.251	.802
	CF	-.086	.094	-.083	-.922	.359
	ARU	.074	.089	.089	.831	.408
	CDDMA	.442	.103	.466	4.277	.000
	CCC	.135	.086	.148	1.570	.119
	CE	.391	.125	.422	3.137	.002
	PSS	-.063	.093	-.078	-.679	.498

Conclusion

This research evaluates the consultant's performance on timely project success in TETFund construction projects in Bauchi metropolis with a view to identify ways of enhancing timely

project success. The research found, interaction skills, efficient management information, proper planning for project execution, establishment of standard procedures, organisation of collaboration among team members, clients' support, commitment and flexibility, adequacy of resource and understanding of client's requirements, delegation of decision-making authority, clients characteristics and contribution, competency and experience and problem solving skill as CPIs were agreed to be the fundamentals consultants performance indicators of construction project. Furthermore, the consultants' performance indicators (CPIs) significantly influenced the timely project success in TETFUND. Therefore, timely project success can be improved by improving the quality consultants' performance indicators. The research therefore recommend that government and all its agencies concerned with construction activities should ensure the enforcement of timely project completion within the approve duration sign in the contract agreement. Consultants should ensure that construction firms make good planning and schedule to complete a project within the stated duration. Clients should also be of time conscious and demand nothing less than a planning and schedule. This research has practical implication to policy makers, construction industry, contractors and clients and contributes to the body of knowledge on timely construction project implementation.

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