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Clients Versus Consultants Assessment of Project Success in Nigeria

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Authors' contributions

This work was carried out in collaboration between both authors. Author AEI designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author ACO managed the literature searches and some aspects of analyses of the study. Both authors read and approved the final manuscript.

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ABSTRACT

The effectiveness of project delivery depends largely on the collaboration of the project actors. Yet the perception of success might be subjective and dependent on the individual's opinion. This study assessed project success from clients versus consultants' perspective. A cross-sectional survey of One hundred and two (N=102) project participants on recently completed building projects in Nigeria was sought. From the result, the client representatives ranked success level far lower than the consultant's counterparts. These differences were observed with respect to the dimensions of the project success considered in varying magnitude. Particularly, the level of inconsistency in the project success assessment was found to be significantly different in terms of the project meeting functional requirements, client satisfaction, quality and absence of conflict. The overall success shows significant differences in the ranking of the project success among the two groups. This study provided evidence that differences exist in between client and consultants as regards project success judgement. Hence, the paper concludes that the establishment of clear project goals and aspirations among the key project actors right at the commencement of a project could help the success of the project management.

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1. INTRODUCTION

Collaboration of team remains central to an effective project delivery [1]. This collaboration is most relevant in the construction industry which requires a team of professionals. A project team is interdependent in nature and it encompasses the integration of construction professionals in project delivery process [2]. According to Emmitt and Gorse [3], design team is a loose grouping of interested parties brought together for a specific construction project. Design teams comprise professionals who form a temporary multi-disciplinary team to design and manage the implementation of the project. However, Lehtiranta et al. [4] lay emphasis on the importance of a mutual performance evaluation between the participants as a measure of project success. Cornick and Mather [5] explained the main parts of the construction project teams as the client, designer, construction manager and specialist sub-contractors again becoming larger with many sub-teams with their own leaders carrying out different functions. With regard to this, the construction project team comprises a team of diverse people and cultural backgrounds.

Various authors have highlighted the importance of teamwork in construction. Cornick and Mather [5] argued that a construction project of any scale can never be realised unless a team of people with diverse knowledge and skills are harnessed towards project success. Hence, team work is a prerequisite for the successful delivery of construction projects [6,2]. However, managing multidisciplinary design teams towards delivery of project success are constraint by some factors. Norouzia, Shabakb, Embic, and Khand [7] describe the challenges as more of social, and not technical even though most scholars and practitioners concentrate their management practices on technical issues rather than social issues. According to Ali, Rahmat, and Hassan [8], differences in knowledge and experience by project team makes collaborative design projects more difficult. How successful the project output is might depend on how well the strategic impact of the duo has been formulated. The delivery of project success is therefore, associated with collaboration of adequate strategic brief.

Opinions have been polarised on the use of appropriate measure of project success. Project success has conventionally been measured through the concept of cost, schedule and quality [9]. In literature, most importantly subjective measures, such as client satisfaction and project participants' satisfaction have been widely used [10,11,12,13,14]. More specifically, literature identified several success factors as measures of project performance. For instance, Turner and Müller [15] identified nine success criteria that the indicators of performance namely; overall performance of the meeting project (functionality, budget and timing), meeting user requirements, meeting the goal of the project goal, client satisfaction with the project results, reoccurring business relationship with the client, end-user satisfaction with the product of the project or service, suppliers' satisfaction, project team's satisfaction as well as other stakeholders' satisfaction. Chan and Chan [10] grouped the key performance indicators into objective measures (i.e. time; cost; safety; and environment) and the subjective measures (i.e. quality, functionality, and satisfaction of project participants).

Few studies have attempted examining the success criteria from project actors' perspective. For instance, Frodell [16] empirical study on project success was limited to clients' perspective. Success measures such as, meeting the budget; completion to time; profitability; and operation costs and project goals emerged from the study. Frodell's study was limited to client's perspectives, however, scholars [10,17] argued that the consultants or the contractors' perspective might provide different measures since project success means different things to different people. From the perspective of architects, emphasize is usually on aesthetics rather than building cost [10]. In the case of Yin, Qin and Holland [18], a design performance measurement matrix was constructed to measure collaboration between design project team members of which decision-making efficiency was adjudged the most important criterion for delivery efficiency.

Karna and Junnonen [19] examined project's performance through a client, consultant and main contractor nexus based on their evaluation of projects sizes. Findings showed that contractors were satisfied with the designers' performance in small projects, whereas the client and the project consultant/manager rated the designers' performance most successful in large projects. Based on a survey of client and consultants in Nigeria, Ikudayisi and

Adegbehingbe [20] categorized project success into three namely, design management success (i.e. meeting functional requirement, technical requirement, client satisfaction and innovative result), project management success (i.e. meeting quality, time and budget requirements) and team management success (i.e. absence of conflict and team survivability). Elattar [17] developed a framework for project success which comprised three sets of success criteria viewed from three perspectives of owner; designer; and contractor. The criteria from the owner's perspective comprised: schedule, budget, meeting intended function, envisioned quality, aesthetic, return on investment (ROI), marketability, and curtailed aggravation. The designer's criteria included client satisfaction, quality of architectural design, payment of fees, professional fulfillment, meeting project budget, goal and schedule, high quality product/ process, construction ability, no liability claims, socially accepted, and clear scope of work. The contractor criteria for success entails meeting the schedule, budget, quality, as well as meeting stakeholders' expectations, client satisfaction, good communication, and absence of conflicts.

Many researches have been conducted on project success criteria and factors, yet, little has been done as regards comparing the opinion of stakeholders based on these indicators. Although, the indicators of construction project success have been investigated from several perspectives, the comparative studies of success performance on single or multiple case studies remain scarce. Only a few studies have broadly investigated the performance and mutual evaluation by various project participants related to project cases [21,22]. The participants' mutual evaluation is important because the performance of project participants is interdependent and overall project performance is a function of the performance of each participant [23,24]. The main objective of this study is to compare project performance opinions from the perspective of client versus consultant in Nigeria. The paper is structured as follows: section 2 discusses the methodological approach. Section 3 presents the results while concluding remarks are in section 4.

2. METHODOLOGICAL APPROACH

This study was conducted in Ibadan, Southwest, Nigeria. Ibadan is the capital city of Oyo State and the third most populated city in Nigeria after Kano and Lagos with a population of 3,720,643 people by 2006 census [25]. Ibadan was selected as the study area since the city has a considerable number of medium-sized consultancy firms as well as good number of corporate organizations, government ministries, educational institutions and research institutions executing various buildings projects. Due to the level of development in the city, large numbers of public buildings were executed within the city in recent times. A cross-sectional survey was undertaken on eighteen randomly selected project completed between 2015- 2017. The client representative and consultants on each of the randomly selected project served as the respondents.

The questionnaire survey was developed based on the most common indicators of project success from prior studies. The project success was assessed using ten constructs including; meeting functional requirement, technical requirements, producing innovative result, absence of conflict, meeting client's satisfaction, adherence to cost target, adherence to time schedule, adherence to quality and survivability and overall success of project. Respondents were asked to rate the items based on 5 Likert scale where "5= to a great extent", "4= much", "3= average", "2= a little" and "1= not at all". As suggested by prior studies, a multiple perspective is best in determining team's performance. In this study, project success was assessed from the clients and consultant's perspective.

To compare the opinion on project success among the clients and consultant's team, descriptive and inferential statistics were done. Mann-Whitney *U*-test was used to establish the level of consistency in the project success assessment among client versus consultants group. Although, *T-test* is the most widely used statistical tools to test difference between two means. However, due to unequal data size obtained for the two group (Client N=30 and Consultants N=72), an important criterion for *t*-test has not been met. When the assumptions underlying the *t*-test are not met, then the non-parametric equivalent, the Mann-Whitney *U* test, may be used [26]. Here, it was not possible to have equal sample size for the clients and consultants, or have access to large normally distributed samples. Fortunately, Mann-Whitney *U* statistical tests compares two independent groups that do not require large normally distributed samples. The Mann-Whitney *U* test requires all the observations to be ranked as if they were from a single sample [27]. Thus, the Mann-Whitney U statistical test is an excellent

alternative to parametric tests like the t-test, when the assumptions of these last ones cannot be respected.

Thus, Mann-Whitney *U*-test was used to determine whether the clients and consultants have a consistent assessment of the project success. The Mann-Whitney U statistic and Z value is calculated as specified:

$$U = n_1 n_2 + \frac{n_1(n_1+1)}{2} - R_1 \quad (1)$$

$$E(U) = \mu_U = \frac{n_i n_2}{2} \quad (2)$$

$$Var(U) = \sigma_U^2 = \frac{n_1 n_2 (n_1 + n_2 + 1)}{12} \quad (3)$$

$$Z = \frac{U - \mu_U}{\sigma_U} \quad (4)$$

where n_1 = the sample size for client; n_2 = the sample for consultant; R_1 = the sum of the ranks of the client sample, σ^2_U = the variance of the Mann–Whitney U, and μ_U = the mean of the Mann Whitney U. Decision to reject or accept the null hypothesis was based on level of significance as determined by the Z value.

3.RESULTS AND DISCUSSION

3.1 Characteristics of Respondents

The details of the respondents' characteristics are presented in Table 1. A larger proportion of respondents are consultants (70.6%), while about 29.4% are clients. In aggregate, greater proportion of the respondents are male (60.8%) with only 13.7% as females. Most respondents are literate as evident in the educational status with about 35.3% of consultant having a Bachelor of Science (BSc) whereas clients had about 15.7% of its respondent with Master's degree (MSc). Both clients and consultants are well experienced while, about 37.3% had post qualification experience of above fifteen years of practice. With respect to the organization type, a large percentage of consultants operate in the private sector (69.6%), but academic organizations dominated the circle of the clients. This means that the client's representatives are from academic institutions while most of the consultants are from private firms. Based on the average value of their projects, result shows that about 11.8% of the clients had between N51-100 million, while consultants (32.4%) had a greater value of projects ranging between N101million and N500 million. The highest percentage (43.1%) indicated that the average size of their projects were between N101million and N500 million. Considering the role on project, about 29.4% were clients' representatives on the projects. There was variation with respect to the building professionals, however, the service engineer had the highest percentage (18.6%) closely followed by architect (17.4%). In all, the level of education of the respondents, their professional qualifications, years of work experience, duty on projects and their various establishment backgrounds suggests that the information obtained from the participants are reliable in the study area.

3.2 Comparative Assessment of Client-Consultant towards Project Success

The mean ranks of the different response from both the client and consultant considered is shown in Fig. 1. Apparently, the mean ranks show that the client representatives ranked success level far lower than the consultant's counterparts in these aspects. Also, Karna and Junnonen [19] identified client's low satisfaction of the designer's performance in the project delivery. Differences were observed with respect to the perspective of the project success in varying magnitude. The radar chart revealed that project success was determined by consultant as absence of conflict/litigation (60.2), whereas it was the least relevant criteria for the clients. The large magnitude of no conflict/litigation between the client and the consultant emphasised the social aspect of the project success which could be a risk factor. Satisfaction of client (59.7) on the part of consultant followed after litigation. This suggests most consultants in project team opined that the clients were satisfied with the project outcome whereas the clients are not so satisfied. Clients regarded meeting the technical requirements (52.8) as the most successful aspect of the projects. Adherence to budget and innovative result was well rated by the clients' representatives. On the other hand, meeting functional requirement and quality were less rated. This implies that achieving these set goals in terms of quality and functionality matters were less satisfactory to the clients who are at the receiving end. There were no common grounds (similarity) with regard to the project success from both the client-consultant perspective as shown by differing mean ranks. This shows there exist differences in what each considered as most important successful delivery benchmark.

This is in line with Koutsikouri et al. [28] who found that even practitioners in team design have different perceptions of success and success factors.

3.3 Level of Variation in Clients versus Consultants Assessment

The summary of the Mann Whitney U test results for assessment of project success are presented in Table 2. The result reveals significant differences in success assessment in terms of meeting functional requirement ($p < 0.001$), client satisfaction ($p < 0.001$), quality ($p < 0.05$), absence of conflict/litigation ($p < 0.001$) and team survivability ($p < 0.1$). The z-value across all the variables ranges between -0.569 and -5.284, this implies that the amount of its probability that something happened by accident is not equal to or less than 0.05. Similarly, the overall success index shows significant difference in the project success assessment among the two groups ($p < 0.001$). The research results, therefore, shows statistically significant difference in the general assessment of the project success among the clients and consultants. The quality and client satisfaction of building and services that clients receive is partly dependent upon the client's own involvement in the project. Team survivability depends largely on the collaborative efforts between client and consultants as suggested by Müller and Jugdev [11] as team members need to work with each other in a supportive context to achieve successful project outcomes. Particularly, the disparity with respect to functional requirement is worrisome. This means that the fulfilment of the required function of this project falls short of the needs of the users, hence, a critical aspect of the project is not satisfactorily achieved by the design team.

Table 1. Characteristics of respondents

Variables		Client 30 (29.4%)	Consultants 72 (70.6%)	Total 102 (100%)
Gender	Male	26 (25.5%)	62 (60.8%)	88 (86.3%)
	Female	4 (3.9%)	10 (9.8%)	14 (13.7%)
Education	HND	9 (8.8%)	16 (15.7%)	25 (24.5%)
	BSC	3 (3.9%)	36 (35.3%)	39 (38.2%)
	MSC	16 (15.7%)	19 (18.6%)	35 (34.3%)
	PhD	2 (2.0%)	1 (1.0%)	3 (2.9%)
Post Qualification	Less >3	0 (0%)	5(4.9%)	5 (4.9%)
	3-6	7 (6.9%)	17 (16.7%)	24 (23.5%)
	7-15	12(11.8%)	23 (22.5%)	35 (34.3%)
	15+	11 (10.8%)	27 (26.5%)	38 (37.3%)
Organization type	Private	0 (0%)	71(69.6%)	71 (69.6%)
	Public	11 (10.8%)	1(1.0%)	12 (11.8%)
	Academic	19(18.6%)	0 (0%)	19 (18.6%)
Size of organization	Less >5	0	2 (2.0%)	2 (2.0%)
	6-15	0	24 (23.5%)	24 (23.5%)
	16-30	0	34 (33.3%)	34 (33.3%)
	30+	30 (29.4%)	12 (11.8%)	42 (41.2%)
Average Project value	Up to 10 million naira	0	12 (11.8%)	12 (11.8%)
	11- 50 million naira	0	9 (8.8%)	9 (8.8%)
	51-100 million naira	12(11.8%)	13 (12.7%)	25 (24.55)
	101-500 million naira	11(10.8%)	33 (32.4%)	44 (43.1%)
	501 million- 1 billion naira	1(1.0%)	2 (2.0%)	3 (2.9%)
	Above 1 billion naira	6 (5.9%)	3 (2.9%)	9 (8.8%)
Role on Project	Project manager	N/A	3 (2.9%)	3 (2.9%)
	Architect	-	18 (17.4%)	18 (17.4%)
	Structural Engineer	-	16 (15.7%)	16 (15.7%)
	Service Engineer	-	19 (18.6%)	19 (18.6%)
	Quantity Surveyor	-	16 (15.7%)	16 (15.7%)
	Client representative	30 (3.9%)	N/A	30 (29.4%)

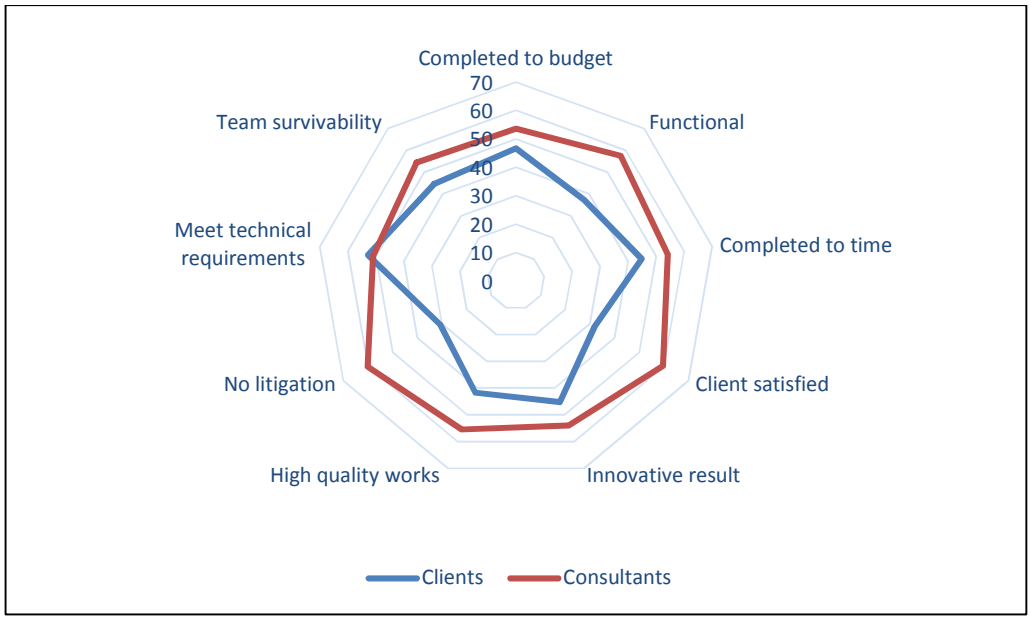

Fig. 1. A radar chart showing client-consultant assessment of the project success

Table 2. Mann-whitney test result

	Position	N	Mean rank	Sum of ranks	Mann-whitney	Wilcoxon W	Z	Asymp 2 tailed
Budget	Client	30	46.65	1399.50				
	Consultants	72	53.52	3853.50				
	Total	102			934.50	1399.50	-1.109	0.268
Functional Requirement	Client	30	37.27	1118.00				
	Consultants	72	57.43	4135.00				
	Total	102			653.00	1118.00	-3.324	0.001
Completion Time	Client	30	44.88	1346.50				
	Consultants	72	54.26	3906.50				
	Total	102			881.50	1346.50	-1.532	0.125
Client satisfied	Client	30	31.92	957.50				
	Consultants	72	59.66	4295.50				
	Total	102			492.50	959.50	-4.598	0.000
Innovative result	Client	30	45.30	1359.00				
	Consultants	72	54.08	3894.00				
	Total	102			894.00	1359.00	-1.460	0.144
Quality	Client	30	41.77	1253.00				
	Consultants	72	55.56	4000.00				
	Total	102			788.00	1253.00	-2.269	0.024
	Client	30	30.67	920.00				
No Co|nflict/ litigation	Consultants	72	60.18	4333.00				
	Total	102			455.00	920.00	-5.284	0.000
Technical requirement	Client	30	52.83	1585.00				
	Consultants	72	50.94	3668.00				
	Total	102			1040.00	3668.00	-0.569	0.569
Team survivability	Client	30	44.57	1337.00				
	Consultants	72	54.39	3916.00				
	Total	102			872.00	1337.00	-1.650	0.099
Overall success	Client	30	35.83	1075.00				
	Consultants	72	58.03	4178.00				
	Total	102			610.00	1057.00	-3.693	0.000

On the other hand, the client and the project consultant/manager have the closest rating for meeting technical requirement and budget. This is perhaps due to the fact that the budget and technical requirement are most of the time clearly specified in the bill of quantities and the construction drawings. The most successful aspect for both parties is the technical requirement.

In all, project participants' mutual evaluation is highly important because the performance of the project participants is interdependent and overall project performance is a function of the performance of each participant [23,24]. Therefore, the importance of a general agreement about project objectives, critical success factors and how to measure success are highly recommended. Based on significant variables, a mutual understanding of the project success can enhance project participants' understanding of running a successful project and set a baseline for improving project performance and help achieve those objectives. This will require positive satisfaction by both the clients and consultants and ensure that the required quality is delivered as well as experienced and possess specialist skills in specific building types. The establishment of clear goals and proper project definition among the key project actors especially at the commencement of a project can be a veritable tool for an effective project delivery.

4. CONCLUSION

This study compared the project success assessment among clients and consultants based on eighteen completed projects in Ibadan, southwest, Nigeria. The mean ranks show that the client representatives ranked success level is far lower than the consultant's counterparts in various aspects of the success indicators considered. The overall success assessment shows significant difference in the project success assessment among the two groups. More specifically, statistically significant differences in the assessment of the project success was apparent as regards meeting functional requirement, client satisfaction, quality, absence of conflict/litigation and team survivability owing to the comparative assessment by the clients and consultants. Understanding these perspectives bought to fore the need to establish clearer project goals and aspiration among the key project actors right at the commencement of a project as this could help project management success. The need for improved understanding of client's requirement and effective client-consultant relationship also remains central toward reducing disparity in the project judgement and satisfaction. Besides, project actors need continuous professional development in the area of expertise, experience and competency towards project delivery success.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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