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Effectiveness of Clients' Involvement in Projects Management Life Cycle and Tertiary Institutions Project Delivery in Southwest, Nigeria

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ABSTRACT: *Determining the effectiveness of the relationship between clients' involvement and tertiary institutions building projects particularly in the Southwest region, is a crucial challenge as there have not been tangible attempts to empirically demonstrate how such involvement affects successful projects implementation. This study assessed effectiveness of clients' involvement in projects life cycle of tertiary institutions projects delivery in South-West Nigeria. the study is aimed at improving the level of clients' involvement in pre- construction, construction and post construction stages of tertiary institutions projects delivery. 405 copies of questionnaires were self-administered to construction projects stakeholders involved in the administration of tertiary institution projects in the South-West Nigeria while 290 copies of the questionnaire were retrieved representing 71.6%. The collected data were analysed using both descriptive (Mean Ranking and Relative importance Index (RII)) and inferential statistics (Partial Least Square in Structural Equation Modelling- PLS-SEM) with the aid of Statistical Package for Social Sciences (SPSS) and SMART-PLS. The study classified client involvement into time, cost and quality involvement. From the result of the study, timely provision of comprehensive control information at each stage of implementations process by the client leads to successful project delivery. Company's reputation (dCIPLC8) was ranked highest from quality involvement group while accuracy of project cost estimates (DCIPLC 13) was ranked first in the cost involvement group. Timely provision of comprehensive control information at each stage of implementations process by the client leading to successful project (dCIPLC 10) was adjudged first by all the respondents. Ability to handle unexpected crises and deviations from the plan which affects the duration of the project (dCIPLC 12) was ranked second. The result of the multivariate analysis revealed that the exogenous construct of timely involvement group had a positive significant relationship with all of the endogenous variables of pre-construction, post- construction and construction phases of the project at 95% level (β = 0.435, t = 3.197; β = 0.524, t = 4.857; β = 0.482, t = 4.526). The study also records a negative significant relationship between quality involvement groups and the endogenous variables of construction phase: (β = - 0.222, t= 1.875); post construction phase (β = -0.202, t = 1.977) and Pre construction phrase (β = -0.273, t = 3.015). The study concluded that involvement of client at each stage of tertiary institutions project will leads to successful project delivery.*

KEYWORDS: Clients' involvement, Project delivery, Project life cycle, Tertiary institutions

INTRODUCTION

The contribution of the construction industry to economic growth and long-term national development is widely acknowledged highlighting its importance, particularly to developing countries (Rasheed & Yarima, 2019) and the roles of clients' involvement in project management cannot be over emphasized. The primary aim for both the clients and project managers all over the world is completing each tendered projects within predefined time, cost and quality (Sergios, 2013). In Nigeria tertiary institutions, abandonment of construction projects is still a burning issue as it seems to be on the increase with successive governments. Ayodele and Alabi (2011), submitted that there were about 4,000 uncompleted or abandoned projects belonging to the Federal Government of Nigeria with an estimated cost of over N300 billion (being a sum spent on projects which cannot perform the functions for which they were initiated). In 2011, almost two decades after, Presidential Projects Assessment Committee (PPAC) reported that there were eleven thousand, eight hundred and eighty-six (11,886) ongoing or abandoned Federal Government of Nigerian (FGN) projects all over the country that worth estimated cost of N7.78 trillion ($47.9billion) to complete. Furthermore, Daily Trust (Nigerian Newspaper) reported in 2015 that a total sum of N12 trillion is claimed by Chartered Institute of Project Management of Nigeria (CIPMN) committee to have been spent on 56,000 currently abandoned government projects across the country (Alao & Jagboro, 2017).

It was apparent that project failure is very frequent in developing countries and in particular, Nigeria, with several causes, effects and consequences. The failure of projects from a cost perspective is a worrisome trend in the construction industry in Nigeria (Nzekwe *et al.*, 2016). Whereas in many cases project cost variation is inevitable because of inflation and other unforeseen events, more often than not, poor project conception and design make it impossible to make credible estimates of the costs of materials and of the project itself. Furthermore, the quality of public projects varied among government agencies due to the different approaches used. Some examples of problems experienced in construction projects in Nigeria include cost and time overruns, disputes, errors, uncertainties in plans and specifications, and increased maintenance costs (Enshassi et al., 2009). The lack of client involvement in public construction projects has been proposed as the main cause of myriad problems (Althynian, 2010). Kamara *et al.* (2002) pointed out that, when clients are appropriately involved in their respective construction projects, they are likely to be satisfied with the end product as their expectations are usually met or exceeded. Previous studies asserted that there is great need for the process to be more client oriented as correlation exists between clients' involvement and project delivery (Kadefors & Rosander, 2019; Pinto, 2017; Chigangacha, 2016; Sebastian, 2011; Kamara *et al.*, 2002; Althynian, 2010).

However, determining the effectiveness of the relationship between clients' involvement and tertiary institutions building projects particularly in the Southwest region, is a crucial challenge as there have not been tangible attempts to empirically demonstrate how such involvement affects successful projects implementation. The effectiveness of clients' involvement and the subsequent effect on the functionality of the client organization's projects should be measured in order to identify the value effects of the relationship. When the wrong indicators (measures) are utilized, performance measurement cannot be instructive and may even be deceptive. Therefore, it will be erroneous to

assume that clients' involvement adds significant value in all contexts and in view of this, it becomes important to examine the value effect of clients' involvement on tertiary institution building projects delivery in South West, Nigeria.

LITERATURE REVIEW

Effectiveness of Clients' Involvement in Construction Projects

Effective and appropriate involvement by clients in their projects leads to good outcomes, and the degree of their involvement is influenced by, inter alia, taking the right decisions at appropriate project phases (Alsolaiman, 2014). Al-Kharashi and Skitmore (2009) established a link between ineffective of client involvement in project and poor project outcomes. According to Al-Kharashi and Skitmore (2009) effective involvement of client in projects requires flexible guidance throughout the project life cycle (Alsolaiman, 2014). Furthermore, to increase the effectiveness of client involvement in projects, emphasis should be placed on team contributions to the construction process via exchange of ideas and satisfaction of the project client. On most construction projects, clients have a high level of impact to influence project outcomes, therefore imperative focus should be redirected to their involvement in projects to increase the overall project quality (ASCE, 2012). In the same view, Alsolaiman (2014) indicated that for clients to be effectively and efficiently involved in their projects, they should have adequate knowledge and skills of the construction process since construction projects are faced with numerous complex situations affecting project success (Sweis *et al.,* 2008). effective client involvement has been recognized as one of the solutions to improving construction sector performance (Boyd & Chinyio, 2006). Chigangacha and Haupt (2017) defined effectiveness as the degree of achievement of project objectives. Kylindri *et al*. (2012) stated that effectiveness referred to project success (Baccarini & Collins, 2003; Kylindri, Blanas, Henriksen, & Stoyan, 2012). Takim and Adnan (2008) argued that effectiveness encompasses the measures of achieving of project objectives, user satisfaction and the use of the project. According to this study, effectiveness is concerned with doing the right thing. With those definitions in mind, effectiveness of client involvement in their projects therefore measures the degree to which their involvement influences successful project outcomes.

Project Delivery by Tertiary Institutions in Nigeria

Tertiary institution in this study is the End User of the public projects financed by the clients mostly the federal government of Nigeria. According to Ewa (2013), the first official statement on African Education was issued in 1925 by the British government tagged "Memorandum on Education Policy in British Tropical Africa". This is the foundation of Nigerian educational development. Government has since then been a major player in the three levels of education in Nigeria; Primary, Secondary and Tertiary levels through the implementation of various intervention programs involving huge capital outlay. These intervention programs include, the Universal Primary Education, the Universal Basic Education, award of scholarships, and establishment of Education Trust Fund (ETF) now Tertiary Education Trust Fund (TETFUND), mandatory contribution of 2% tax on profit by companies operating in Nigeria. Today, Nigeria has 78 public universities, 58 polytechnics, 67 colleges of education both federal and state. There are over one million University alone student's enrolment as at 2012/2013 academic session. This phenomenal growth in education requires enormous capital outlay from the stakeholders in terms of infrastructural development. Enormous capital projects were thus embarked upon after the civil war of 1966 and the oil boom era that followed in the 1970s to enhance the education sector and accelerate economic growth and development. The tertiary education

trust fund (TETFUND) was established by an act of National Assembly June 2011. The act replaces the Education Tax Fund Act Cap. E4 Law of the Federation of Nigeria 2004 and Education Tax fund (Amendment) act No. 17, 2003. The Fund was set up to administer and education tax collections to public tertiary educational institutions in Nigeria under the Act of universities, polytechnics, and colleges of education. The main source of income available to the fund is 2% education tax paid from the assessable profit of companies registered in Nigeria. The tax is collected by the Federal Inland Revenue service (FIRC).

The delivery of a project is attained within certain constraints of project time, cost and quality. According to Elattar (2009), project delivery can be measured from project success-meeting objectives. That is, stem from the needs or objective of a client. It is obvious that if these objectives are achieved, the project is claimed to be successful. It can also be described as project success-beyond project. Here, it seems there is more emphases on the assessment of the positive effects brought about by the project to judge success. The success of a project can be assessed along by four distinct dimensions; project efficiency, impact on the customer, direct and business success, and preparing for the future. In addition, attainments of such goals as satisfaction, absence of conflicts, professional image, aesthetics, and educational, social, and professional aspects are considered indications of project success **(**Elattar, 2009). It is generally accepted that the major goals in a construction project are budget, schedule and quality, although there are other more specific objectives, such as safety consideration and market entry, depending on the nature of the project (Elattar, 2009). Another perspective is six variables for measuring project performance. They are cost, time, quality, clients' satisfaction, health and safety and functionality (Ali & Rahmat, 2010).

RESEARCH METHOD

This study utilized a survey research design to gather in-depth information from 405 respondents from tertiary institutions in Ekiti, Ondo, and Osun States, Nigeria, involved in construction projects. Table 1 shows the summary of the total respondents surveyed in each population group in the study area. The population consisted of staff from Physical Planning Unit, contractors, and consultants of building construction projects in the selected universities. The selection of seven institutions was based on representation of government-owned universities in each state and the frequency of construction projects across the universities.

Table 1: Summary of the Total Respondents Surveyed in each Population Group

S/N	INSTITUTIONS	POPULATION		
		Clients	Consultants	Contractors
1	Federal University of Technology, Akure, Ondo State.	31	16	12
2	Adekunle Ajasin University, Akungba, Ondo State.	23	19	10
3	Olusegun Agagu University of Science and Technology, Okitipupa, Ondo State.	12	15	8
4	Ekiti State University, Ado-Ekiti, Ekiti State.	39	44	23
5	Federal University, Oye-Ekiti, Ekiti State.	19	18	15
6	Obafemi Awolowo University, Ile-Ife, Osun State.	22	25	6
7	Osun State University, Osogbo, Osun State.	25	13	10
Total		**405**		

Source: Field Survey (2023)

The stratified random sampling technique was used to randomly select participants from universities. Data was collected using a questionnaire and subjected to face and content validity testing. Experts and senior lecturers were involved in content validity corrections. Cronbach's Alpha coefficient was tested using SPSS version 25, with a value ranging from 0.0 to +1.0. Structural equation modeling was used to establish relationships between variables and constructs.

The effect of clients' involvement in project management lifecycle on project delivery in the study area.

$$PD = f(QI, CI, DI) \quad (1)$$

$$PD = \beta_0 + \beta_1 QI + \beta_2 CI + \beta_3 PDI + e \quad (2)$$

Where,

β_0, is constant, e, is error term, $\beta_{1\text{-}3}$, are Parameter Coefficients, PD is Project Delivery, QI is Quality Involvement, CI is Cost Involvement, and DI is Duration Involvement.

Data from questionnaires were summarized, edited, coded, tabulated and analysed. The data obtained were analyzed using both descriptive and inferential statistics with the aid of Statistical Package for Social Sciences (SPSS) and Partial Least Square in Structural Equation Modelling (PLS-SEM) in SMART-PLS.

DATA ANALYSIS, RESULT AND DISCUSSION

This study uses a cross-sectional survey with questionnaires to gather information from clients, contractors, and consultants of tertiary institutions in Nigeria. Table 2 represented the copies of questionnaires administered and retrieved from the respondents. The study involved seven institutions, including Adekunle Ajasin University, Akungba (AAUA), Ekiti State University (EKSU), Federal University, Oye Ekiti (FUOYE), Federal University of Technology Akure (FUTA), Obafemi Awolowo University (OAU), Olusegun Agagu University of Science and Technology (OAUSTECH), and Osun State University (UNIOSUN). Out of the 290 questionnaires administered, 72.1% were retrieved, representing 72.1% of the total surveyed. Only two copies were discarded due to unengaged respondents and missing data. The total percentage of questionnaire returned (72%) is considered adequate for analysis, as Moster and Kalton (2017) suggest a response rate of 30-40% for a survey to be considered significant.

Table 2: Copies of Questionnaires Administered and Retrieved

Number of Questionnaire				**Percentage (%)**			
Administered	Retrieved	Discarded	Used				
405	292 (72.1)	2	290 (71.6)				
Name of Institutions							
AAUA	**EKSU**	**FUOYE**	**FUTA**	**OAU**	**OAUSTECH**	**UNIOSUN**	**Total**
42	98	42	34	26	14	34	290
14.5	33.8	14.5	11.7	9.0	4.8	11.7	100.0

Characteristics of the Respondents

Table 3 shows the socio-economic characteristics of the respondents which includes the position of the respondent on construction project, sex, academic qualification, professional membership, work experience, and type of construction projects executed. From the result on position of the respondent in Table 3, Clients comprised 66.2% of the respondents, with contractors comprising 15.9% and consultants representing 17.9%. This is consistent with research on client roles and responsibilities in the construction industry. Majority of respondents had first degrees which records 62.1%. These was followed by master degrees, HNDs, and Ph.D. with the least number of respondents of 2.1%. The professionals examined were well-versed in construction methodologies and procedures and are able to supervise various projects from start to finish by possessing analytical and organizational skills. Also, majority of respondents had up to 5 years of working experience, with 50% of the respondents having 11-15 years of experience and 30% had 6-10 years working experience on tertiary institutional projects. Majority of projects executed in the institutions were staff office buildings, health centers, lecture theatres, halls of residence, libraries and Informalisation and Communication Technology (ICT) buildings.

Table 3: Characteristics of the Respondents

Characteristics of Respondents	Freq.	Percentage	Characteristics of Respondents	Freq.	Percentage
Type			**Years of Work Experience**		
Client	192	66.2	1-5	128	44.1
Contractor	46	15.9	6-10	30	10.3
Consultant	52	17.9	11-15	50	17.2
Total	290	100.0	16-20	28	9.7
Sex			21-25	36	12.4
Male	262	90.3	26-30	6	2.1
Female	28	9.7	31-35	12	4.1
Total	290	100.0	Total	290	100.0
Highest Academic Qualification			**Type of Projects Executed**		
HND	44	15.2	Hall of residence	38	13.1
BSc./B.Tech/B.Eng	180	62.1	Lecture theatre	42	14.5
MSc.	60	20.7	Health Centre	52	17.9
Ph.D	6	2.1	Staff office Building/Administrative Building	102	35.2
Total	290	100.0	Library	22	7.6
Professional Membership			ICT Building	6	2.1
MNIQS	42	14.5	Specify others	28	9.7
MNIOB	40	13.8	Total	290	100.0
ARCON	128	44.1			
NIESV	4	1.4			
Specify others	76	26.2			
Total	290	100.0			

Characteristics of Projects Constructed in the Institutions

Table 4 shows the characteristics of projects constructed in the institutions. Majority of respondents have handled up to 3 projects in their institutions, with an average of 11 projects being conducted so far. The delivery time for most projects took longer than expected, with an average completion time of 22 months. This has led to total project abandonment due to clients not being frequently involved in managing project costs and execution. Public projects of crucial nature, such as hostels or lecture theatres, could drag for years, even during the ongoing epidemics.

Table 4: Characteristics of Projects Constructed in the Institutions

Item	Number of projects handled up to date	Expected duration of the project	Time taken to deliver the project
Mean	10.86	1.36	1.88
Median	9.00	1.00	2.00
Mode	3	1	2
Std. Deviation	12.193	0.684	1.057
Skewness	3.749	2.572	3.597
Std. Error of Skewness	0.201	0.201	0.201
Kurtosis	20.642	8.321	23.767
Std. Error of Kurtosis	0.400	0.400	0.400
Minimum	3	1	1
Maximum	100	5	10

Effects of Client's Involvement and Project Management Life Cycle Phases

This section provided the results on the analysis of the relationships between clients' involvement and project management life cycle phases. Before the procedure for this analysis, first, the study provided the descriptive analysis of the clients' involvement in the institutional projects.

Descriptive analysis of Effects of Clients' Involvement in Project Management Life Cycle

Table 5 showed the distributions of the sub-constructs of clients' involvement in institutional projects. The involvement included; duration, quality, and cost of the institutional projects. From Table 5, similar trends were noticed for the duration involvement with most of the respondents in agreement to the indicators under this sub-construct. The Pattern showed that the least frequencies were noticed with the strongly disagreed column. Likewise, the lightest frequencies were noticed with the agreement with only exceptions found with dCIPLC2 and DCIPLC6. Infrastructural facilities extension is one of the effects of clients' involvement on both project delivery and minimizes time overrun respectively. Clients' involvements in the quality of institutional projects were not consistent with the three indicators used in the category. The first item DCIPLC4 (improved standard of the client) have its highest frequencies in the disagreement column, while the second item dCIPLC8 (company's reputation is upheld) had its highest frequencies in the agreement column (152), whereas, dCIPLC9 (high quality of the project is achieved) had the highest frequencies as found in somehow agreed (106) column. However, the distributions for the lowest frequencies were consistent as they were mostly indicated represented in the strongly agreed section.

Also, Table 5 showed the clients involvement in the cost of institutional projects. The cost involvement which was captured with three indicators showed similar trend for dCIPLC3 and dCIPLC5 ('It leads to wealth accumulation." and "Reduces feasibility of Cost overrun´´, respectively). The two items have their highest and lowest frequency counts within the disagree and strongly disagree columns

respectively. The last item dCIPLCI3 (Accuracy of project cost estimates) has its highest with somehow agree (128) and strongly disagree (0).

Table 5: Effects of Clients' Involvement in Projects Management Life Cycle

	1	2	3	4	5	Mean	S.D	RII	RANKING	
Duration Involvement									**LRK**	**GRK**
Client involvement leads to timely project delivery	28	22	18	150	72	3.745	1.195	0.749	3	**5**
Infrastructural facilities extension is one of the effects of clients involvement in project delivery	8	126	44	68	44	3.048	1.180	0.608	5	**9**
Minimizes time overrun	2	38	138	60	52	3.421	0.955	0.684	4	**7**
Timely provision of comprehensive control information at each stage of implementation process by the client leads to successful project delivery	4	6	36	174	70	4.034	0.758	0.807	1	**1**
Ability to handle unexpected crises and deviations from the plan	6	10	42	170	62	3.938	0.827	0.788	2	**2**
Quality Involvement										
Improved standard of the client	8	122	54	54	52	3.069	1.200	0.614	3	**8**
Company's reputation is upheld	2	20	54	152	62	3.869	0.852	0.774	1	**3**
High quality of the project is achieved	6	8	106	102	68	3.752	0.917	0.750	2	**4**
Cost Involvement										
It leads to wealth accumulation	18	142	38	50	42	2.848	1.215	0.570	3	**11**
Reduces feasibility of cost overrun	18	120	40	80	32	2.959	1.178	0.592	2	**10**
Accuracy of project cost estimates	0	28	128	72	62	3.579	0.933	0.716	1	**6**

Note: S. D = Standard Deviation; RII= Relative Important Index; LRK= Local Ranking; GRK= Global Ranking; Strongly Disagree = 1; Disagree = 2; Somehow Agree =3; Agree = 4; Strongly Agree = 5

Ranking of the Effects of Clients' Involvement in Institutional Projects

Table 6 showed the local and global ranking as well as the construct ranking of clients' involvement in institutional projects. The local ranking involves the indicators within a particular construct, while the globed ranking involves the indications used for client's involvement-regardless of their sub-constructs. From the Table 4.5, it could be depicted that dCIPLC 10 (Timely provision of comprehensive control information at each stage of implementations process by the client leads to successful project delivery) was ranked first locally in duration involvement. Whereas, dCIPLC8 (company's reputation is upheld) was ranked highest in the quality involvement as well as the accuracy of project cost estimates (DCIPLC 13) was ranked first in the cost involvement. On the global ranking for all of the indicators dCIPLC 10 was adjudged first followed by dCIPLC 12, the ability to handle unexpected crises and deviations from the plan that can affect the duration of the project was ranked second. The next section discussed the structural analysis of the paths between clients' involvement and project management life cycle phases.

Table 6: Ranking of the Effects of Clients' Involvement in Institutional Projects

Code	**Description**	**LRk**	**GRk**	**CRk**
	Duration Involvement in Project Delivery (Mean= 3.637, STD= 1.060)			1
dCIPLC1	Client involvement leads to timely project delivery	3	5	
dCIPLC2	Infrastructural facilities extension is one of the effects of client's involvement in project delivery	5	9	
dCIPLC6	Minimizes time overrun	4	7	
dCIPLC10	Timely provision of comprehensive control information at each stage of implementation process by the client leads to successful project delivery	1	1	
dCIPLC12	Ability to handle unexpected crises and deviations from the plan	2	2	
Code	**Description**	**LRk**	**GRk**	**CRk**
	Quality Involvement in Project Delivery (Mean= 3.563, STD= 1.059)			2
dCIPLC4	Improved standard of the client	3	8	
dCIPLC8	Company's reputation is upheld	1	3	
dCIPLC9	High quality of the project is achieved	2	4	
Code	**Description**	**LRk**	**GRk**	**CRk**
	Cost Involvement in Project Delivery (Mean= 3.129, STD= 1.159)			3

dCIPLC3	It leads to wealth accumulation	3	11	
dCIPLC5	Reduces feasibility of cost overrun	2	10	
dCIPLC13	Accuracy of project cost estimates	1	6	

Note: LRK= Local Ranking; GRK= Global Ranking

Measurement Model Assessment for Clients' Involvement and Project Management Life Cycle Phases

The assessment of measurement model in this section involved that of PMLCPs: pre-construction phase, construction phase, and post construction phase as well as the clients' involvement: duration, quality, and cost involvements. All the constructs were modelled in formative form before it was tested for collinearity. Quality assessments was carried out on the criteria related to formative modelled constructs to arrive at the result.

Table 7 shows the result of the outer VIF for the clients' Involvement in institutional projects. The outer VIFs of the items used in capturing the constructs with the highest VIF was produced by bPrcph (VIF = 3.523). This therefore suggested that there was no concern of col-linearity among the items as none of them exceeded the threshold of 5.0 (Hair *et al.*, 2017).

Table 7: Outer VIF for the Clients' Involvement in Institutional Projects

Item	VIF	Item	VIF	Item	VIF
bCph1	1.854	bPrcph1	3.389	dCIPLC12	1.380
bCph2r	2.985	bPrcph2	3.308	dCIPLC13	1.289
bCph3	2.476	bPrcph3r	3.102	dCIPLC2r	1.159
bCph4	1.798	bPrcph4	3.523	dCIPLC3	1.309
bCph5	1.907	bPrcph5	2.249	dCIPLC4	1.503
bCph6	1.639	bPrcph6	2.704	dCIPLC5	1.395
bPocph1	2.133	bPrcph7r	2.922	dCIPLC6r	1.288
bPocph2	2.348	bPrcph8	2.365	dCIPLC8r	1.278
bPocph3r	1.687	dCIPLC1	1.216	dCIPLC9	1.806
bPocph4	1.434	dCIPLC10	1.518		

Significance of Clients' Involvement in Institutional Projects

Table 8 presented result of **significance of clients' involvement in institutional projects. From** Table 8, Some items were marked as Relatively Important (RI), Absolutely Important (AI) and Theoretical Relevance (TR). The items marked RI were significant and relatively important while some of the items were significance because of their loading and were considered as absolutely important (AI). Some items were retained because of their theoretical relevance which are marked with TR. These considerations accepted the decision from the quality assessment of formative modelled items that it can be used to predict the relationship between the variable constructs.

Table 8: Significance of Clients' Involvement in Institutional Projects

	Weights	T Statistics (|O/STDEV|)	P Values	Loadings	T Statistics (|O/STDEV|)	P Values	Decision
bCph1 -> Const_Phase	0.224	1.212	0.226	0.735	8.213	0.000	AI
bCph2r -> Const_Phase	0.091	0.392	0.695	-0.763	7.641	0.000	AI
bCph3 -> Const_Phase	0.492	2.185	0.029	0.909	11.468	0.000	AI
bCph4 -> Const_Phase	0.171	0.741	0.459	0.657	4.552	0.000	AI
bCph5 -> Const_Phase	0.231	0.933	0.351	0.788	5.999	0.000	AI
bCph6 -> Const_Phase	0.224	0.842	0.400	0.726	4.546	0.000	AI
bPocph1 -> Post_Phase	0.654	2.657	0.008	0.904	10.376	0.000	RI
bPocph2 -> Post_Phase	-0.226	0.651	0.515	0.653	3.470	0.001	AI
bPocph3r -> Post_Phase	-0.420	2.323	0.020	-0.764	7.369	0.000	RI
bPocph4 -> Post_Phase	0.342	2.664	0.008	0.687	6.187	0.000	RI
bPrcph1 -> Pre_Phase	0.113	0.540	0.589	0.733	7.218	0.000	AI
bPrcph2 -> Pre_Phase	0.268	1.292	0.196	0.815	8.410	0.000	AI
bPrcph3r -> Pre_Phase	0.027	0.147	0.883	-0.797	10.380	0.000	AI
bPrcph4 -> Pre_Phase	0.139	0.602	0.547	0.842	10.179	0.000	AI
bPrcph5 -> Pre_Phase	0.510	2.981	0.003	0.906	12.588	0.000	RI
bPrcph6 -> Pre_Phase	0.047	0.175	0.861	0.704	5.842	0.000	AI
bPrcph7r -> Pre_Phase	-0.252	0.716	0.474	-0.783	7.116	0.000	AI
bPrcph8 -> Pre_Phase	-0.146	0.835	0.404	0.612	5.561	0.000	AI
dCIPLC1 -> Duration of Project	0.702	4.909	0.000	0.639	3.572	0.000	RI

dCIPLC10 -> Duration of Project	0.465	2.519	0.012	0.494	2.305	0.021	RI
dCIPLC12 -> Duration of Project	0.228	1.599	0.110	0.377	1.828	0.068	TR
dCIPLC13 -> Cost of Project	-0.394	1.007	0.314	0.125	0.371	0.711	TR
dCIPLC2r -> Duration of Project	0.580	3.417	0.001	0.315	1.402	0.161	RI
dCIPLC3 -> Cost of Project	0.741	2.280	0.023	0.852	3.475	0.001	RI
dCIPLC4 -> Quality of Project	0.948	5.253	0.000	0.785	3.314	0.001	RI
dCIPLC5 -> Cost of Project	0.570	1.611	0.107	0.731	2.405	0.016	AI
dCIPLC6r -> Duration of Project	0.423	2.489	0.013	0.125	0.596	0.551	RI
dCIPLC8r -> Quality of Project	0.631	2.578	0.010	0.413	1.330	0.184	RI
dCIPLC9 -> Quality of Project	-0.020	0.072	0.942	0.234	0.690	0.490	TR

Source: Field Survey, 2021

Structural Assessment for Clients' Involvement and Project Management Life Cycle Phases

Figure 1 and Figure 2 shows the setup for the relationship between the constructs of clients' involvement (time cost and quality) and project delivery constructs (pre-construction phase, construction phase and post construction phase). The structural model provided information on the relevance and significant of the hypotheses as stated below.

HYPOTHESES

Ho_1: Cost involvement has no significant effect on pre-construction phase of institutional projects delivery

Ho_2: Duration involvement has no significant effect on pre-construction phase of institutional projects delivery

Ho_3: Quality involvement has no significant effect on pre-construction phase of institutional projects delivery

H_{o4}: Cost involvement has no significant effect on construction phase of institutional projects delivery

H_{o5}: Duration involvement has no significant effect on construction phase of institutional projects delivery

H_{o6}: Quality involvement has no significant effect on construction phase of institutional projects delivery

H_{o7}: Cost involvement has no significant effect on post-construction phase of institutional projects delivery

H_{o8}: Duration involvement has no significant effect on post-construction phase of institutional projects delivery

H_{o9}: Quality involvement has no significant effect on post-construction phase of institutional projects delivery.

Note*:** ***When the established T-Value is greater than 1.96 and P value is less or equal to 0.05, the null hypothesis is rejected while the alternate hypothesis is accepted, otherwise accept the null hypothesis and reject the alternate hypothesis.

Based on the results, the Null hypotheses ***H_{o2}, H_{o3}, H_{o5}, H_{o6}, H_{o8}, and H_{o9}*** *were rejected while,* ***H_{o1}, H_{o4} and H_{o7}*** *were accepted.*

Figure 1 shows the result of the algorithm for clients' involvement and project life cycle (PLC) PLCPs. Figure 1 shows the result of the Bootstrapping for Clients' Involvement and PLCPs. The results in Figures 1 and 2 were also reported in Table 9. It should be recalled that clients' involvement was captured by three (3) exogenous constructs: cost involvement, duration involvement, and quality involvement, whereas the Project Life Cycle (PLC) phases was captured by three (3) endogenous constructs: pre- phase, cost-phase, and post-phase, as shown in Figures 1 and 2

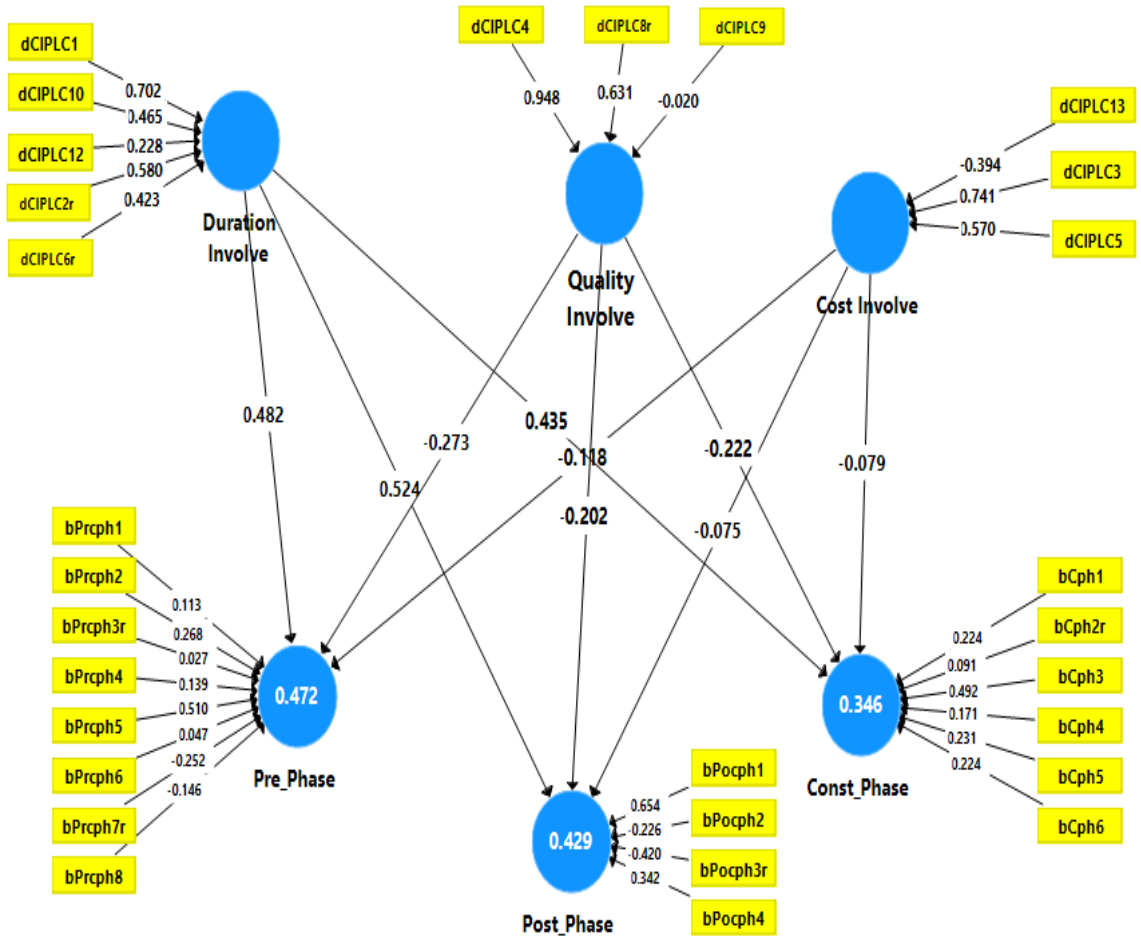

Figure 1: Algorithm for Clients' Involvement and PLCPs

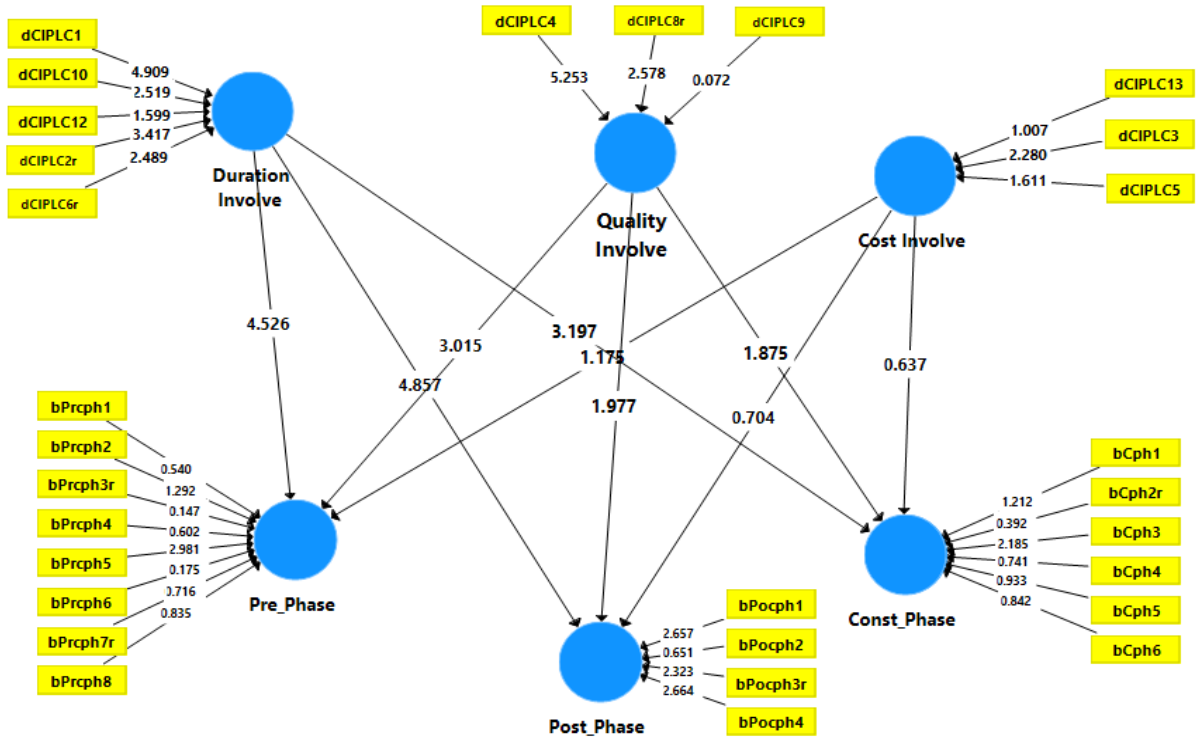

Figure 2: Bootstrapping for Clients' Involvement and PMLCPs

Path Analysis of Clients' Involvement and PLCPs

Table 9 presented the result of path analysis of clients' involvement and PLCPs. The path analyses were based on the values of the VIFs, beta coefficients, t-statistics or P-values to ascertain their significance, the R-square-values, f-squares to show the effect sized of exogenous constructs. It was evident from Table 4.15 that the exogenous construct, cost involvement was not significant on any of its relationships with the three endogenous constructs, where it recorded p-values of 0.524, 01482, and 0.240, However, the exogenous construct of "duration involvement had positive and significant relationships with all of the endogenous variables at 95% level (β= 0.435, t = 3.197; β = 0.524, t = 4.857; β = 0.482, t = 4.526). Also, there were negative and significant relationship between the quality involvement and the endogenous variables of construction phase (β = - 0.222, t= 1.875); Post construction phase (β = -0.2022, t = 1.977) and pre-construction phrase (β = -0.273, t = 3.015). From the result of the relationship in the study, the construction phase was significant at 90% level. Also, there was no issue of multi collinearity as all the inner VIFs values were below the threshold of 5.0.

Table 9, also reported the R-squares for each of the endogenous model where Construction phase (R^2 = 0.332), post construction phase (R^2 = 0.417) and pre-construction phase (R^2 = 0.461). From the results of coefficient of determination, it is evident that the exogenous variables were able to predict the variances in the pre-construction phase. Also, construction life cycle with more than the other two phases within the post construction phase came second with R-square value of 0.417. At 90% level. there was no issue of multicollinearity as all the inner VIFS were below the threshold of 5.0.

Table 9 also reported the R-squares for each of the endogenous model where construction phase of the project records (R^2= 0.332), post construction phase recorded (R^2= 0.417) while the pre-construction phase of the project recorded (R^2= 0.461). From these results of coefficient of determination, it is evident that the exogenous variables were able to predict the variances in the pre-construction phase of construction project life cycle more than the other two phases with the post construction phase coming second with R-square value of 0.1417. Table 9 also, contained information on the effect sizes (f-squares) of the various relationships in the analyses between clients' involvements and PLCPs. The effect sizes of the relationships involving duration were large and significant to predict the strength of the model. It was noticed that the effect sizes pertaining to quality were small for all of its relationships to predict the strength of the model. The effect size for the cost have no effect in the models involving construction phase (Const-Phase = 0.008) and post- construction phase (Post-Phase = 0.008). However, cost involve relationship with Pre-Construction phase (Pre-Phase) yielded a small effect (f^2=0.021).

Table 9: Path Analysis of Clients' Involvement and PLCPs

Path	Beta	T Statistics (|O/STDEV|)	P Values	2.5%	97.5%	VIF	f Square	R Square	R Square Adjusted
Cost Involve -> Const_Phase	-0.079	0.637	**0.524**	-0.377	0.124	**1.225**	**0.008**	0.346	0.332
Duration Involve -> Const_Phase	0.435	3.197	**0.001**	0.134	0.650	**1.187**	**0.243**		
Quality Involve -> Const_Phase	-0.222	1.875	**0.061**	-0.451	0.016	**1.254**	0.060		
Cost Involve -> Post_Phase	-0.075	0.704	**0.482**	-0.316	0.111	**1.225**	**0.008**	0.429	0.417
Duration Involve -> Post_Phase	0.524	4.857	**0.000**	0.267	0.690	**1.187**	**0.405**		
Quality Involve -> Post_Phase	-0.202	1.977	**0.048**	-0.410	-0.001	**1.254**	0.057		
Cost Involve -> Pre_Phase	-0.118	1.175	**0.240**	-0.314	0.095	**1.225**	0.021	0.472	0.461
Duration Involve -> Pre_Phase	0.482	4.526	**0.000**	0.236	0.659	**1.187**	**0.372**		
Quality Involve -> Pre_Phase	-0.273	3.015	**0.003**	-0.469	-0.112	**1.254**	0.113		

Therefore, based on the results, the Null hypotheses ***Ho_2, Ho_3, Ho_5, Ho_6, Ho_8, and Ho_9*** *were rejected while,* ***Ho_1, Ho_4 and Ho_7*** *were accepted*

Result from the analysis shows that 'quality involvement' of stakeholders has the highest structural weight and Improves standard of the client is the most important indicator of clients' involvement in project life-cycle phases of tertiary projects as identified by stakeholders in the study area. This result implies that, any government policy that aims at improving the delivery of tertiary building projects

should identify clients' involvement in the project life cycles. From the study it was also observed that the improvement projects bring to clients' standard is very important in enhancing stakeholder's involvement and this factor should be highly considered. Thus, Tertiary projects implementation polices should incorporate improvement in clients' standard in the entire project life-cycle phases.

CONCLUSION

The study analyzed the effectiveness of clients' involvement in project life cycles and tertiary institutions project delivery in South-West, Nigeria. It found that timely provision of comprehensive control information at each stage of implementation leads to successful project delivery. The company's reputation was ranked highest in quality involvement, while the accuracy of project cost estimates was ranked first in cost involvement. Globally, the ability to handle unexpected crises and deviations from the plan affected the duration of the project. The exogenous construct of "duration involve" had positive and significant relationships with all endogenous variables at 95% level. The study found that the effect sizes for the relationships involving "duration involve" were large or significant, explaining its relevance and strength in the model. The effect sizes for "quality involve" were small, and the cost had no effect in the construction phase and post-construction phase. The study concluded that client involvement at each stage of implementation leads to successful project delivery and non-abandonment of projects.

RECOMMENDATIONS

Based on the findings from the study, the researcher would like to make the following recommendations to the Federal and State governments of Nigeria, sponsors of projects in tertiary institutions, project managers and stakeholders in the construction industry in Nigeria towards the effectiveness of clients involvement in tertiary institutions to attain an improved level of clients involvement in tertiary institutions projects delivery:

1. Any government policy that aims at improving the delivery of tertiary building projects in the life-cycle phases should identify with the resolution that the improvement that such projects brings to clients standard, is very important in enhancing stakeholder's involvement and this factor should be highly considered. Thus, Tertiary building projects implementation polices should incorporate improvement in clients' standard in the entire project life-cycle phases.
2. A decision-making framework for guiding clients' involvement towards successful project delivery in tertiary institutions must be developed in order to advance the current practices Mohammed *et al.,* (2020). Clearer guidelines required dignifying the roles and responsibilities of each professional in the physical planning units of universities participating. Also, compliance with the guidelines should be a thing of priority.

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