Performance of Selected Funding Schemes Used in Delivering Educational Buildings in Nigeria

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Abstract

In recent times, poor project funding has become a major characteristic of projects executed within the education sector in Nigeria. This is largely as a result of the deteriorated economic situation within the country. Considering the need for proper utilisation of the merger available funds, assessing the performance of projects executed within the sector was deemed crucial. This paper presents the findings of an assessment of cost and time performance of projects delivered using government subvention, Tertiary Education Trust Fund, and Internally Generated Revenue. A study of selected projects delivered through these funding schemes was carried out, and a pro forma was used to harness cost and time data on the selected projects. A questionnaire survey was also conducted to ascertain the measures for improving the performance of educational buildings. Percentage, paired samples t-test, mean score, and Kruskal-Wallis H-Test were employed in analysing the data gathered. Findings revealed good cost performance for the three assessed funding options and poor time performance in all three cases. To improve performance, prompt payment for executed jobs, allowance for price fluctuations, the involvement of clients and construction professionals at an early stage, providing clear project brief and thorough detail design, are important.

Keywords
Capital Projects, Cost performance, Education funding schemes, IGR, TETfund, Time performance

1. Introduction

The development of any nation, to a large extent, depends on education. The Nigerian Government understands this fact and has been actively involved in education since the pronouncement of the statement on African Education by the British government in 1925 (Ewa, 2013). The Government has implemented various intervention programs within the education sector, and this has made it an active stakeholder in education. Programs such as the universal primary education, the universal basic education, award of scholarships, tertiary education trust fund (TETfund) among others have been initiated in a bid to sponsor different education projects (Ewa, 2005). However, in more recent times, projects within institutions of higher learning are evidently sponsored through; government subvention/allocation used in executing capital projects, TETfund, internally generated revenue (IGR), or organisations/ private donations (Ibrahim, 2014; Ogbogu, 2011; Okojie, 2009). These funds are used to deliver infrastructures alongside other necessities within these higher institutions, in a bid to afford them the opportunity to carry out their primary functions of teaching, research, and service among others.

Unfortunately, construction in the country has been characterised with poor performance (Mbachu and Olaoye, 1999; Ogunsemi, 2015; Ogunsemi and Jagboro, 2006), and educational buildings are not spared from this unhealthy situation. Projects executed within higher institutions are in most cases either left uncompleted or completed above budget, behind schedule and below standard (Ewa, 2013; Oyedele 2013; Edukugho, 2013). These poor project deliveries in these institutions tend to affect the quality of the education being delivered as it has been established that buildings are crucial in the delivery of quality education. Their function goes beyond just serving the present generation (Abdul-Lateef *et al.*, 2011; Aghimien *et al.*, 2016). Thus, achieving successful educational buildings should be a priority for those responsible for the delivery of education within the country, and construction professionals in general.

The fact that a building project has been practically completed is not enough to ascertain the success of such project. For a project to be termed 'successful' several important factors must be considered and this includes among others, project completion within specified budget and time. Cost and time have been essential measures of building success because of the huge priority placed on them by clients, and also as a result of their financial implications when they are exceeded (Hatush and Skitmore, 1997; Ogunsemi, 2015). Considering the poor economic background of Nigeria, where poor funding of projects in higher institutions is typical (Ajayi and Ekundayo, 2006; Udu and Nkwede, 2014), there is the need to assess the performance of educational buildings delivered using the different available funding options.

It is based on the above that this study assessed the performance of educational building projects delivered using government subvention (capital projects), TETfund and IGR. The study measured performance using the cost and time dimensions, and also identified the possible measures for increasing the performance of educational buildings. This was done with a view towards achieving educational buildings delivered within estimated budget and schedule. The choice of assessing these selected funding schemes is based on the premise that they have become the most popular funding schemes for infrastructure development in higher institutions in the country. While capital projects are being executed on a convenient interval using direct government funds, TETfund has been more proactive with lots of projects being funded on a regular basis. IGR is being used by institutions to augment what they get from the other funding schemes. This study adds to the body of existing knowledge as it reveals the performance of educational buildings delivered through these three major funding schemes in Nigeria; an area that has been devoid of research attention in the study of the performance of construction projects in the country. The subsequent parts of the paper include the review of related literature, the methodology adopted, the findings, conclusions drawn from the findings, and the recommendations made thereof.

2. Literature Review

Higher institutions in Nigeria are owned either by the federal government, state governments, private organisations or individuals, and they offer higher education to qualified candidates. The Government at the federal or state level is the major funder of public/government established higher institutions. However, the Government at the federal level holds more share in public tertiary institutions financing than the State Government (Ogbogu, 2011; Ogunyinka, 2013). Ogbogu (2011) noted that 90% of the total income being disbursed through the Nigerian Universities Commission (NUC) to universities comes from the federal government, while the universities generate the remaining 10% themselves. Although these government subventions form the larger share of these institutions income, its inadequacy has over time been identified (Adeniyi, 2008; Ajayi and Ekundayo, 2006; Bamiro and Adedeji, 2010; Udu and Nkwede, 2014). This has led to the adoption of other funding schemes in order to survive and carry out their activities.

TETfund, on the other hand, is a government initiated program to help assist the education sector in necessary areas. The TETfund Act of 2011 birth this program, which was designed to be an intervention agency. It is the responsibility of the agency to adequately manage, distribute as well as monitor the education funds given to government-owned higher institutions. For the proper attainment of the agency's objectives, the TETfund Act of 2011 imposed a mandatory 2% Education Tax on the assessable profit of registered companies in the country. This tax is distributed to these higher institutions for the execution of different projects, and these projects are monitored by the agency (TETfund, 2016).

The recent growth in the number of higher institutions coupled with the huge economic challenges facing the government has placed a serious constraint on the adequate funding of higher institutions by the government (Onuoha, 2015). This situation forced the Government, to direct all government higher institutions to adopt possible strategies that will help them generate revenues that will help cater for some of the institutions' needs. Based on this development, higher institutions expanded the scope of their internally generated revenue to include student levies, grants, private sector contributions, commercial activities and consultancy, and other diverse initiatives (Ogbogu, 2011; Okojie, 2009).

Considering the obvious inadequacy in funds, it is necessary that the available ones are utilised effectively. Achieving project success for buildings being constructed is necessary. For building projects, success is in most cases measured based on the performance of cost and time. The performance of building projects to cost has been said to be crucial to building project success. According to Bubshait and Almohawis (1994), cost performance is the extent of which the completion of a project within the estimated budget is encouraged by the general conditions of

such project. Hussin *et al.,* (2013) and Memon *et al.,* (2010) opined that cost crucial measures of project success, and it is often of major concern to construction stakeholders. However, despite the importance of this aspect of construction projects, most projects are completed over their estimated budget. Azhar *et al.* (2008) observed that delivering construction works above budget is a serious problem in the construction industry. This problem is evident in both the developed countries and the developing ones. The trend is, however, more severe in developing ones.

In Uganda, a cost overrun of more than 100% was experienced on the Northern-by-pass project executed in Kampala (Hussin *et al.,* 2013). In Croatia, Zujo *et al.* (2010) observed that out of 333 construction projects 270 (81%) experienced overrun in terms of cost. In the United Kingdom, Jackson (2002) found out that most construction clients' complained of the delivery of their projects above budget, while studies from Malaysia have also revealed similar issues of cost overrun within the country's construction industry (Ibrahim *et al.,* 2010; Toh *et al.,* 2011; Memon *et al.,* 2012). Memon *et al*. (2012) reported a 5 to 10% cost overrun on construction projects in a southern part of Peninsular Malaysia. In Nigeria, Omoregie and Radford (2006) reported a 14% average percentage budget overshoot. These differrent submissions further confirm Ogunsemi (2015) assertion that getting construction projects executed without cost overrun is almost impossible.

Chan and Chan (2004) described time in construction as the duration of completing a project. Time of construction is calculated as the numbers of days, weeks or months from when the site was taken over by the contractor to when the project is handed over to the client. Lim and Mohammed (1999) submitted that construction project performing to time is important, as completion time has become a key criterion for most clients, and stakeholders. Hussin *et al.* (2013) stated that completing a construction on time has become a basic requirement for determining success in construction. However, this is not a usual occurrence in most construction industries around the world. The study of Le-Hoai *et al*. (2008) on delay and cost overruns in Vietnam construction projects in comparison with other selected countries revealed that the issue of time overrun as a big problem, especially with government funded projects. In Jordan, Al-Momani (2000) found that delays occurred in 106 (82%) out of 130 public projects assessed. In a similar study, Frimpong *et al.* (2003) found 33 (70%) out of 47 projects in Ghana were delivered behind schedule. Amu and Adesanya (2011) discovered that in southwestern Nigeria, out of 3,407 projects, only 24 projects were completed within the estimated time. A total of 1517 were delayed, and the rest were abandoned. Omoregie and Radford (2006) have earlier reported an average percentage time overrun of 188%. Obviously delay in delivering construction projects has become serious and expensive problems for the construction industry. Late completion of projects can deny clients the benefits or profits that their projects are likely to generate through their usage within the predetermined period. This might expose them to financial and economic risks. For construction contractors, delays in completion mean additional cost from extended insurances, extended use of site office overheads, labour and equipment, standby costs, and intangible costs such as opportunity cost (Kumaraswamy and Chan, 1998; Kikwasi, 2012).

3. Methodology

The study assessed the performance of the capital project, TETfund and IGR delivered educational buildings, using cost and time as the major performance measurement. The study was based on educational building projects executed in public higher institutions in Ondo State, Nigeria within 2006 to 2016. It is believed that since the government is a major contributor to the education sector, and the various funding schemes are used in the provision of infrastructures in all public institutions within the country, it can be said that these selected public institutions give a reasonable insight of happenings in government-owned higher institutions around the country. There are nine public institutions within the selected state; however, the study was restricted to only five of them due to the availability of data required. Two out of the remaining four institutions were left out of the study as a result of the absence of a physical planning/works department in the schools and the absence of construction project within the selected time frame. The other two were dropped because they are newly established with construction works just commencing, hence no data could be gathered for completed projects. The private institutions were left out of the study because they are individually owned institutions, and are funded as such.

In assessing cost and time performance, data relating to cost and duration of building projects delivered within the selected ten years frame were gathered from the physical planning/works department of these institutions using a pro forma. Preliminary investigations show that more projects were delivered using TETfund and IGR. Only data for fourteen capital projects were assessable for the selected time frame. Based on this finding, only fourteen projects

were randomly selected for the three funding schemes under review. This was done in a bid to achieve a uniform base for comparison.

The possible measures for improving the performance of educational buildings were also assessed using a questionnaire survey conducted among construction professionals involved in the delivery of these educational building projects. These construction professionals include those in the Physical Planning Unit/Works Department of the identified institutions representing the Client (i.e. the institution), outsourced Consultants (Architects, Quantity Surveyors, and Engineers), and the Contractors that handled the identified buildings. A total of 207 questionnaires were distributed and 134 were retrieved and ascertained fit for analysis. The questionnaire used harnessed information on the background of the respondents, and the possible measures to be adopted in order to increase the performance of educational buildings. A 5 point scale (1 being very low, to 5 being very high) was used in assessing the most significant measures.

Data analysis was done using percentage, paired samples t-test, mean item score (MIS) and Kruskal-Wallis H-Test. Cronbach's α was calculated to ascertain the internal consistency of the research questionnaire and an alpha value of 0.720 was derived for the possible measures of improving the performance of these educational building projects. This alpha value means that the questionnaire is consistent and reliable since an instrument is said to be more reliable as the alpha value tends towards 1 (Moser and Kalton, 1999).

4. Results and Discussion

4.1 Background Information

The result from the analyses of the background information reveals that the 48.7% of the respondents are Consultants. This is Contractors follows next with 31.3% and Clients with 20%. Engineers and Quantity Surveyors with 37% and 32% are the most represented professionals, followed by Architects and Builders with 19% and 12% respectively. Most of the respondents sampled hold Bachelor of Science/ Bachelor of Technology degree (36.5%) and Masters of Science/Masters of Technology degree (35.8%), while 17.2%, 9.7%, and 0.8% possess Post Graduate Diploma (PGD), Higher National Diploma (HND) and Ph.D. respectively. In terms of years of experience, only 10% have below 5 years working experience with a better chunk of the respondents having from 6 years and above working experience. On the overall, an average of 12.7years was derived for the respondents' years of working within the construction industry. This high average year, in turn, influences the number of projects handled by the respondents as none have handled less than 6 projects throughout their professional career. On the overall, the average number of construction projects handled is 15. These findings reveal that the respondents are well equipped not only academically but also in terms of years of working experience, thus, making them capable to give reasonable and reliable answers to the question of the study.

4.2 Cost and Time Performance of Capital, IGR and TETFund Educational Buildings

The result in Table 1 shows the cost and time data gathered on 14 educational building projects funded using the capital project route. The analysis shows that 6 of these projects were completed within the estimated cost, while 6 experienced cost overrun and only 2 made savings as they were delivered below the estimated budget. An overall average of 4.4% budget overshoot was discovered on all the assessed projects. The analysis further shows that only 3 projects were completed on time, with the 11 others experiencing time overrun of within 50% to 380%%. Overall, an average of 120% time overrun was experienced on all assessed projects.

Table 1: Cost and time analysis for Capital Projects

S/n	Project Type	Final Cost (Mill. ₦)	Initial Cost (Mill. ₦)	Dev.	Percentage Dev.	Final Time (Weeks)	Initial Time (Weeks)	Dev.	Percentage Dev.
1	A	58.2	58.2	-0.1	-0.1	92	48	44	91.7
2	A	197.8	197.8	0.0	0.0	84	36	48	133.3
3	A	39.7	39.7	0.0	0.0	24	24	0	0.0
4	A	17.0	17.0	0.0	0.0	24	12	12	100.0
5	A	29.8	29.8	0.0	0.0	84	20	64	320.0
6	B	15.1	15.1	0.0	0.0	56	32	24	75.0

7	A	60.7	60.7	0.0	0.0	92	48	44	91.7
8	B	105.1	108.0	-2.9	-2.7	124	28	96	342.9
9	A	147.8	133.1	14.7	11.0	72	15	57	380.0
10	A	111.8	95.0	16.8	17.7	12	12	0	0.0
11	A	304.5	268.0	36.5	13.6	48	32	16	50.0
12	B	69.2	62.2	7.0	11.3	48	48	0	0.0
13	B	64.4	63.8	0.6	0.9	18	12	6	50.0
14	A	55.4	50.7	4.7	9.3	18	12	6	50.0
				5.5	**4.4**			**30**	**120.3**

Note: A = Academic Buildings, B = Social and Health Buildings, Dev. = Deviation, Mill. = Million

Result in Table 2 shows the cost and time data gathered on 14 educational building projects funded using the IGR route. The analysis shows that 4 of these projects were completed within the estimated cost, while 9 experienced cost overrun and only 1 was delivered below the estimated budget. An overall average of 5.3% budget cost overrun was discovered on all the assessed projects. The analysis further shows that only 2 projects were completed on time, with the 12 others experiencing time overrun of within 25% to 287%%. Overall, an average of 92% time overrun can be seen on all assessed projects.

Table 2: Cost and time analysis for IGR Projects

S/n	Project Type	Final Cost (Mill. ₦)	Initial Cost (Mill. ₦)	Dev.	Percentage Dev.	Final Time (Weeks)	Initial Time (Weeks)	Dev.	Percentage Dev.
1	A	4.2	4.2	-0.0	-1.0	12	12	0	0.0
2	A	11.8	11.8	0.0	0.0	56	48	8	16.7
3	A	43.9	43.9	0.0	0.0	28	12	16	133.3
4	A	10.0	10.0	0.0	0.0	60	48	12	25.0
5	C	90.4	87.8	2.6	3.0	48	32	16	50.0
6	A	101.7	100.0	1.7	1.7	56	22	34	154.5
7	A	116.7	116.7	0.0	0.0	124	32	92	287.5
8	A	55.4	52.6	2.8	5.3	48	48	0	0.0
9	A	64.3	55.9	8.4	15.0	60	48	12	25.0
10	A	45.7	39.8	5.9	14.8	48	32	16	50.0
11	A	448.2	445.6	2.6	0.6	56	22	34	154.5
12	A	112.3	100.2	12.1	12.1	64	32	32	100.0
13	C	9.2	8.0	1.2	15.0	48	28	20	71.4
14	B	172.6	160.2	12.4	7.7	48	15	33	220.0
				4.0	**5.3**			**23**	**92.0**

Note: A = Academic Buildings, B = Social and Health Buildings C = Residence, Dev. = Deviation, Mill. = Million

For TETfund sponsored educational buildings, result in Table 3 shows that 9 of the 14assessed projects were completed within the estimated cost, while 4 experienced cost overrun and only 1 made savings as it was delivered below the estimated budget. An overall average of 2.4% budget overshoot was discovered on all the assessed projects. The analysis further shows that only 2 projects were completed on time, with the remaining 12 experiencing time overrun of within 66% to 860%%. Overall, an average of 199% time overrun was experienced on all assessed projects.

Table 3: Cost and time analysis for TETfund Projects

S/n	Project Type	Final Cost (Mill. ₦)	Initial Cost (Mill. ₦)	Dev.	Percentage Dev.	Final Time (Weeks)	Initial Time (Weeks)	Dev.	Percentage Dev.
1	A	20.9	18.8	2.1	11.2	144	15	129	860.0
2	C	118.1	118.1	0.0	0.0	124	36	88	244.4
3	C	99.9	99.9	0.0	0.0	56	22	34	154.5
4	A	191.7	191.7	0.0	0.0	68	41	27	65.9

5	A	111.8	111.8	0.0	0.0	124	32	92	287.5
6	A	56.0	56.0	0.0	0.0	48	48	0	0.0
7	A	102.3	102.3	0.0	0.0	92	48	44	91.7
8	A	12.2	12.2	0.0	0.0	28	12	16	133.3
9	A	11.8	11.8	0.0	0.0	48	48	0	0.0
10	B	51.1	51.1	0.0	0.0	24	12	12	100.0
11	A	119.6	119.8	-0.2	-0.2	48	26	22	84.6
12	A	131.8	131.5	0.3	0.2	72	36	36	100.0
13	A	84.6	79.3	5.3	6.7	124	24	100	416.7
14	C	93.0	80.0	13.0	16.3	124	36	88	244.4
				1.5	**2.4**			**49**	**198.8**

Note: A = Academic Buildings, B = Social and Health Buildings C = Residence, Dev. = Deviation, Mill. = Million

A look at the summary of the projects on Table 4 shows that the cost overrun is lesser in projects funded through TETfund, while the highest overrun is evident in IGR projects. Paired samples t-test analyses conducted to ascertain the significant difference in the initial cost and final cost of construction using a 95% confidence level, reveals that there is no significant difference between the initial and final cost of construction of these assessed projects. A significant p-value of above 0.05 (Capital = *0.075, IGR =0.895 and TETfund = 0.155*) was derived for all three funding options.

Table 4: Summary of the cost performance of educational buildings including the paired samples t-test

Funding Mode	Overall Deviation (Million ₦)	Overall % Deviation	Std. Deviation	Std. Error Mean	T	Df	Sig. (2-tailed)
Capital	5.5	4.4	10.68	2.85	1.937	13	0.075
IGR	4.0	5.3	4.43	1.18	1.131	13	0.895
TETfund	1.5	2.4	3.63	0.97	1.508	13	0.155

The summary on Table 5 shows considerable time overrun in the educational building projects funded via the three assessed funding schemes. The percentage overrun almost doubled the initial estimated time for IGR projects, while in the case of TETfund and capital projects, the time overrun experienced is way above double of the initial estimated time. This result points to the fact that that there is a poor performance in the delivery of educational buildings in general with respect to time. Paired samples t-test analyses conducted to ascertain the significant difference in the initial time and final time of construction using a 95% confidence level, reveals that there is a significant difference between the initial and final time of construction of these assessed projects. A significant p-value of above 0.05 (Capital = *0.002, IGR =0.002 and TETfund = 0.001*) was derived for all three funding options.

Table 5: Summary of the time performance of educational buildings including the paired samples t-test

Funding Mode	Overall Deviation (Weeks)	Overall % Deviation	Std. Deviation	Std. Error Mean	T	Df	Sig. (2-tailed)
Capital	30.0	120.3	29.56	7.90	3.769	13	0.002
IGR	23.0	92.0	22.97	6.14	3.780	13	0.002
TETfund	49.0	198.8	41.86	11.18	4.392	13	0.001

The implication of these results is that educational building projects funded through capital projects, IGR and TETfund have a considerable good cost performance as no significant difference was identified between the initial and final cost of completion. Looking at their percentage deviation, projects executed through TETfund (2.4%) falls within the 2 to 3% acceptable deviation for an initial estimated cost from the final cost of completion stated by the National Institute of Building Science (2013). This implies that these projects have performed well in terms of cost. Projects executed through capital (4.4%) and IGR (5.3%) had a percentage deviation of a bit above the stated acceptable percentage. However, when compared to Omoregie and Radford (2006) 14% minimum cost overrun in public projects in the country, an appreciable improvement in cost performance of construction works in the country can be seen. Memon *et al.* (2012) submitted that construction projects in a southern part of Peninsular Malaysia face cost overrun between 5-10. Findings of this study agree with this submission as a 5.3% deviation was recorded for IGR funded projects.

Findings show that there is a significant difference exist between the initial and final time of the assessed educational building projects. A percentage deviation of 120.3%, 92%, and 198.8% were recorded for the three funding schemes. This result implies that educational buildings in the country irrespective of the funding scheme used are performing woefully in terms of time. This unhealthy situation is rather disheartening considering the nature of educational building projects where time is always of the essence and buildings need to be completed in time to meet up with the high influx of students every year.

Odeyinka and Yusif (1997) earlier discovered a 70% overrun in terms of time on construction projects in Nigeria. Omoregie and Radford (2006) also discovered an increased time overrun of 188% which is about 118% different from the submission of Odeyinka and Yusif (1997) carried out 9 years earlier. The finding of this study, however, shows a similar trend of increased time overrun. The delay in construction projects delivery within the industry is too high especially for those delivered though TETfund. If not properly checked, the confidence of clients and other stakeholders in the construction industry might reduce due to the industry's inability to deliver projects within schedule. This finding further affirms Akindoyin (1988) and Ogunsemi (2015) assertion that in Nigeria and indeed the world at large, most construction projects are completed longer than initially planned. In similar studies elsewhere, Al-Momani (2000) found delays in 106 (82%) projects out of 130 public projects assessed in Jordan. Frimpong *et al.* (2003) found 70% of projects in Ghana were delivered behind schedule. This means that the issue of poor time performance is not only synonymous with Nigeria construction industry alone, but to most countries around the world as observed by Ogunsemi (2015).

4.3 Measures for Increasing Performance of Educational Buildings

Having determined the performance of educational building projects, assessing the possible measures towards increasing their performance was assessed. Some measures were identified from the literature review and were presented to the respondents for them to rate based on their level of significance using a Likert scale of 1 to 5. The rating of this measures was ranked and Kruskal-Walis H-test which is a non-parametric test used in determining the significant difference in the view of three or more categories of respondents was employed in determining consistency in the opinion of the three sets of construction participants (Clients, Consultants, and Contractors). Using a 95% confidence level, the result of Kruskal-Walis test in Table 6 reveals that there is no significant difference in the view of all the respondents as regards the identified measures for increasing the performance of educational buildings as a significant p-value of above 0.05 was recorded for all assessed measures.

Result in Table 6 also reveals that the assessed possible measures have a mean score of well above the average of 3.0. This implies that to a considerable extent if all the identified measures are taken into consideration, a significant increase in the performance of educational buildings can be expected. However, chief of these measures are prompt payment for executed works with a mean value of 4.52 and making allowance for market price fluctuations with a mean value of 4.47. Odediran *et al*. (2012) and Ogbu (2017) has submitted that most contractors in Nigeria are small-medium size contractors, who cannot in most cases finance projects independently prior to client's financial contribution. Therefore, the prompt payment for jobs completed by these contractors is very important as most of them rely on these payments to run their day to day activities. On the other hand, fluctuation in price is a common phenomenon in Nigeria, due to the economic instability within the country (Sanusi, 2010). Its impact on the delivery of construction project is no stranger to professionals in the built environment. Adequate measures must, therefore, be put in place for such occurrence during estimation of quantities. This finding is in line with Abu-Shaban (2008), Ameh *et al.* (2010) and Memon *et al.* (2012).

The third significant measures are client's involvement in the planning and design phase, and construction professional's involvement at the initial stage of the project as they both have the same mean value of 4.39. In the case of educational buildings, the "client" of a structure can be seen as those for which the structure is being built. The dean of the faculty in the case of an academic building or even the head of departments can represent the client as they have a clear idea of the need for the departments in the faculty. Involving these set of people at the early stage will help in avoiding frequent design changes and change in scope of the project when it finally commences. Also, the role of construction professionals cannot be overemphasised in the delivery of successful construction projects. Their involvement from the early stage of the project is crucial for successful project delivery.

According to Fisk (1997) in order to control cost and achieve appreciable cost performance, two measures need to be adopted. These are the application of value management concept, and providing comprehensive and error-free designs and specifications. Although the use of value management concept is ranked the least on the table, it still has a mean value of 3.76 which is well above average. This means that although the measure is ranked the least

respondents still believe it is significant enough to alter the performance of building projects. The reason for its low ranking in this study can be attributed to its low usage in the construction industry as observed by Aghimien and Oke (2015). The finding of this study agrees with Fisk (1997) suggestion as providing clear project brief and thorough detail design are seen to be among the top-rated measures for improving performance. This is also in confirmation of Memon *et al.* (2012) submission that design change is one of the most occurring causes of poor cost performance, and according to Gkritza and Labi (2008), the more time spent on correction of design during construction, the more likely the occurrence of cost overrun and by extension, time overrun. To, therefore, ensure effective cost and time performance Odediran *et al*. (2008) suggested that it is necessary to provide comprehensive and error-free designs and specifications in order to avoid misinterpretations by the contractor and its associated cost implication.

Table 6: Possible measures for increasing performance of educational buildings

	Overall		Kruskal-Walis	
Measures	MIS	Rank	Chi-Sq.	Sig.
Ensuring prompt payment for executed works	4.52	1	1.03	0.597
Making allowance for market price fluctuations	4.47	2	1.232	0.540
Client's involvement at the planning and design phase	4.39	3	0.554	0.758
Construction professional's involvement at the initial stage of project	4.39	3	0.209	0.901
Providing clear and thorough project brief	4.33	5	1.178	0.555
Ensuring thorough detailing of designs	4.31	6	3.417	0.181
Conducting comprehensive site investigation	4.26	7	0.228	0.892
Ensuring the use of project scheduling/management techniques	4.22	8	0.418	0.811
Specifying only readily available materials	4.20	9	0.168	0.920
Avoiding wastage of materials	4.08	10	0.338	0.845
Accuracy in the calculation of quantities	4.04	11	0.857	0.651
Good communication and coordination system between parties	4.02	12	0.692	0.708
Adoption of good and applicable construction methods	4.01	13	0.771	0.680
Granting mobilization advance to contractors	3.95	14	1.472	0.479
Having knowledge of previous projects	3.85	15	2.166	0.339
Involvement of contractor at planning and scheduling stage	3.83	16	2.626	0.269
Use of technology to improve and speed up project process	3.76	17	0.074	0.963
Adopting value management at initial stage of project	3.76	17	1.174	0.556

5. Conclusion

This study assessed the performance of selected funding schemes used in delivering educational buildings in Nigeria. Using a study of selected educational building projects, the study determined the cost and time performance of three different funding options. It also determined the possible measures for improving the performance of educational building projects in the country. Based on the findings, the study concludes that educational building projects funded through the capital project, TETfund and IGR have good cost performance as no significant difference exists between their initial cost and the final cost of construction. However, better cost performance was experienced for TETfund (2.4%) projects than those of capital projects and IGR. In terms of time performance, educational buildings delivered through these funding schemes have a general poor performance. To remedy this situation and increase the performance of educational buildings, measures such as; prompt payment for executed works, making allowance for market price fluctuations, client's involvement at the planning and design phase, construction professional's involvement at the initial stage of project, providing clear project brief and thorough detail design, should be given due consideration.

Findings of this study will help those responsible for the delivery of educational buildings across the country, to deliver buildings within estimated budget and schedule. It will also assist those responsible for the monitoring of the performance of these funding schemes to adequately monitor and improve the performance of funds being allocated for building projects within tertiary institutions. The major limitation of this study is in the use of few cases for each of the funding schemes. Thus, further study can be carried out by increasing the scope of the reach in a bid to get more projects executed using these funding options. Also, a similar study can be carried out on other types of

constructions aside buildings within public higher institutions to compare the result of the different types of constructions being executed within the education sector.

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