

The Influence of Completion Phase Principles on Project Performance within the Building Industry in Abuja, Nigeria

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Abstract

The building industry continues to occupy an important position in the nation's economy even though it contributes less than the manufacturing industries. It has continued to be a major player in the socio-economic development of many countries globally. However, recently, issues of quality, costs, reliability and human and environmental safety have emerged posing a challenge to the growth of industry. This is as a result poor completion phase principles in the building industry. However, poor project completion in the Nigerian Building Industry (NBI) was linked to its inability to deliver service effectively and efficiently; and these are barriers on the Nigerian economy. This study therefore sought to ascertain whether completion phase principles can improve project performance within the building industry in Abuja, Nigeria. Explanatory and descriptive approaches were used to

obtain data from completed projects files (three from both public and private sectors respectively) and professionals from the building industry. Stratified and purposive random samplings were used to select completed projects and qualitative data for the purpose of analysis. The results revealed that completion phase principles were not adopted due poor management of projects, unnecessary rush in project implementation, inadequate planning and budgetary provisions, costly project execution. However, the current traditional method is not working, however, if completion phase principles are employed, it will improve project performance and reduce cost and time overruns.

Keywords: Building Industry, Completion Phase Principles, Impact, Project Performance

Introduction

The building industries in the developed and some emerging economies were able to effectively contribute to socio-economic development through the creation of employments, provision of shelter to millions as well as the provision of basic infrastructure. Completion phase is the final step of building production. Project is completed successful when client is satisfied. Timely project completion is crucial to project delivery (Usman *et al*, 2014). However, Toor and Ogunlana (2010) in a related study in Thailand found that timely completion of projects carried more weight than other success criteria. The study revealed that projects differ and criteria for project delivery also differ, but timely completion and cost effectiveness are essential to the overall process.

According to Lam *et al* (2007) cost is a measure of project delivery due to its relationship between cost and time. While, Atkinson (1999) argued that in projects, where money is the major constraint, completing the project within budget is the overriding factor for project delivery. Whereas, Frodell *et al* (2008) opined that exceeding the budget may not be out of place as far as the results improve project delivery. However, completion within budget, time and quality standards is an achievement in project delivery.

Quality standards are described as the degree to which a set of inherent characteristics fulfils requirement (PMI, 2008; Sing and Tiong, 2006; Usman *et al*, 2010). However, Atkinson (1999) opined that quality is a principal benchmark above other criteria; this includes cost, time and linked to the organisational benefit of project goals and functional specifications. While Chanet *al* (2002),

considers quality as fundamental to project delivery. Hartman *et al* (2009), studies quality as a client benefit in which the building project must be achieved.

In spite of this, Toor and Ogunlana (2010) lamented that poor in building production can result to project delays, disputes and non-project delivery. Large projects are difficult to manage because it involves many stakeholders, each with different perceptions of success, discipline and skills as well as technology (Kolltveit & Gronhaug, 2002; Wang and Huang, 2006; Pheng & Chuan, 2006). Ofori (1994a) considers the role of transfer of technology to influence project performance in the building industry. In this regard, Ofori (1994b) proposed the need for building technology development. The effectiveness of the joint venture is evident in the transfer of technology in Singapore from foreign

The Life-Cycle Model

This study proposes to anchor the LCM model on these processes with a view to determining whether they have an effect on improving standards in the building industry in Abuja, Nigeria.

A successful project management process relies on two activities – planning and doing. These two sequential activities form the basis of every project life-cycle model, and can be expanded to suit the control requirements in every area of project management application (Asudani & Kloppenborg, 2008). The project life-cycle, characterized by a series of ‘indicators’ determines when the project starts, the ‘control gates’ through which it must pass, and when the project is finished. The project manager

Completion phase principles
Completion phase principles comprise the last stage of the LCM process. It is the closure of project activities. These activities include: decommissioning of the project, audit report, final report, handover of facility, reassignment of project team and project closure. The study sought to ascertain whether completion phase principles can improve project performance within the building industry. At the completion phase, projects are supposed to be decommissioned; however, projects B, D and F were not. Audit of these projects were not effectively carried out, yet the projects were handed over. According to NBC, projects must be decommissioned and audited (FRN, 2006). This leads to non-performance of projects on time, cost and quality standards.

contractors to their local counterparts (Ofori *et al*, 2001). It was found that the local contractors benefitted from the program.

In a similar study, Usman (2006) discovered that contractors who completed and delivered projects successful are more likely to achieve project targets in the future. Usman and Inuwa (2008) advocated that predictive performance of contractors can be determined by investigating contractors’ past performance. However, Khosrowshahi (1999) asserted that high priority is given to contractors past performance since delay in building performance have significant cost and quality implications on project delivery. Xiao and Proverbs (2003) added that contractors of high reputation and high past performance will improve clients confidence and raise the possibility of future business.

makes use of the life cycle concept as a valuable tool for better understanding of the stages of a project and the likely resources required for its successful implementation (Nwachukwu & Fedelis, 2011).

The life cycle is used to pictorially explain organisational phases in building and the production line and sales life cycle of a product. It is also one of the instruments that help managers conceptualize work and budgetary requirement of the project. The basic life cycle concept holds for all project and systems and is useful because it reflects different management requirements at various stages. However, project performance can be improved by adopting completion phase principles.

The factors that could account for the poor completion process include lack of proper monitoring and control, lack of cash flow, inadequate manpower, inadequate materials, and non-adherence to construction plan, non-compliance to budgetary provisions, poor allocation of resources to project activities, poor implementation and lack of skilled labor among others. Another challenge is project decommissioning. For instance in Table 2, projects A, C and E were commissioned while; projects B, D and F were not commissioned. Yet the NBC states clearly that all projects must be commissioned before takeoff (FRN, 2006). It was also discovered that projects B, D and F were not commissioned because of lack of approval due to major contract variations. So these projects cannot be decommissioned because it was not commissioned in the first place and lacks statutory requirements. This is a form of unethical practices in the building industry.

METHODOLOGY

The study was carried out using both quantitative and qualitative techniques. The qualitative design provides a descriptive analysis of the impact of completion Phase Planning within the building industry in Abuja, Nigeria. The quantitative analysis provides statistical information and figures with regard to whether completion phase principles can improve project performance within the building industry. Stratified and Purposive random sampling was used for case study and qualitative data respectively. The sample size was 210 comprising 35 Architects, 35 Builders, 35 Engineers, 35 Quantity Surveyors, 35 Urban and Regional Planners, and 35 Contractors respectively. Statistical Package for Social Sciences (SPSS) version 17 was used to analyze the data; reliability test conducted using Cronbach's alpha, significance test, ANOVA and descriptive statistics. The results show that the Cronbach's alpha is 0.994. The Cronbach's alpha value was > 0.70 , which means its adequate proof for consistency.

DATA ANALYSIS

Test for hypothesis on completion phase principles

Table 4.9.16: Summary of Chi-square tests for Hypothesis on Completion Phase Principles

Professionals	χ^2	Df	Sig.	Decision
Architects	140.000	16	0.000	Reject
Builders	119.583	16	0.000	Reject
Contractors	83.139	16	0.000	Reject
Engineers	118.839	16	0.000	Reject
Quantity Surveyors	84.482	16	0.000	Reject
Urban and Regional Planners	124.141	16	0.000	Reject

Author, 2014

H₀: Completion phase principles cannot improve project performance within the building industry in Abuja.

Chi-square results show that $p\text{-value } 0.000 < 0.05$ at 95% level of confidence.

Decision

Since the $p\text{-value}$ is less than the chosen alpha ($0.000 < 0.05$), Null hypothesis was rejected. It means that there is a significant difference between project

performance and the completion phase principles. This shows that completion phase principles can improve project performance within the building industry.

The response rate 70% found to be better than other studies 59% (Inuwa *et al.*, 2014); 55.5% (Usman *et al.*, 2012); 47% (Ibrahim, 2008); 35% (Adams, 1997). The study was carried out in Abuja the Federal Capital Territory of Nigeria. The territory is located north of the Niger and Benue Rivers. It is bordered by the States of Niger, Kaduna, Nasarawa, and Kogi, lying between latitude 8.25 and 9.20 north of the equator and longitude 6.45 and 7.39 east of the Greenwich Meridian (Jibrin, 2006). Abuja is located in Central Nigeria. The Federal Capital Territory covers an area of approximately 7,315 km², and Abuja occupies 275.3 km² of it with a population of 1,568,583. It is situated within the Savannah region with moderate climatic conditions. The territory is made up of six Local Councils: Abuja, Abaji, Gwagwalada, Kuje, Bwari and Kwali. The Local Government Authorities are controlled by the Federal Capital Development Authority, Abuja.

Table 2: Case study analysis of some completed projects

Project	Initial Period (Months)	Final Period (Months)	Period Variation (Months)	Initial Cost (million USD)	Final Cost (million USD)	Cost Variation (million USD)	Sector
A	28	60	32	0.91448	0.91618	0.0017	Private
B	24	64	40	1,133.75	1,165.5	31.75	Public
C	26	47	21	0.49265	0.49412	0.00147	Private
D	24	56	32	0.44718	0.45371	0.00653	Private
E	30	76	46	0.60668	0.64308	0.0364	Public
F	28	64	36	0.35477	0.41136	0.05659	Public

Source: Field Survey, 2013

ANOVA results indicate that $F = 809,045$; $P = 0.05$; $df = 4, 206$. Thus, there is significant difference between completion phase principles and project performance within the building industry. The study therefore established that project performance depends on how effective the adoption of completion phase principle is. Completion phase principles can improve project performance within the building industry; but in Nigeria the reverse is the case, projects are completed with high cost and time overruns due to lack of proper completion phase principles; as a result, project are rarely completed within quality standards, cost and time schedules.

The impact of the completion phase principles Completion phase is essential to the overall project performance; it's non - adoption unfavorably affects project performance. Completion phase principles include decommissioning of project, audit report, final report, and handover of facility, reassignment of project team and project closure. For instance, if project decommissioning, audit, final report, hand over and reassigning of project team are not carried out correctly. This may affect other project completion processes; and the possibilities of the building completion delays become high. Although the completion phase is vital in project processes, it was observed that this important step is not properly adopted due to bureaucracies, poor project implementation, lack of competent personnel, poor supervision, monitoring and control, unethical professional practices, corruption and lack of budget implementation which seriously affect project performance.

The NBC stipulates that within 3 months of completion, projects should be decommissioned. However, for the case study (Table 2); only projects A, C and E were decommissioned. Projects A, B and F were audited; whereas, projects C, D and E were

A chi- square test to determine whether there is a significant difference between completion phase principles and project performance within the building industry in Abuja was conducted. The following values were obtained; of $\chi^2 = 140.000$, $P = 0.05$; $df = 16$ for Architects, $\chi^2 = 119.583$ $P = 0.05$; $df = 16$ for Builders, $\chi^2 = 83.139$ $P = 0.05$; $df = 16$ for Contractors, $\chi^2 = 118.839$ $P = 0.05$; $df = 16$ for Engineers, $\chi^2 = 84.482$ $P = 0.05$; $df = 16$ for Quantity Surveyors and $\chi^2 = 124.141$ $P = 0.05$; $df = 16$ for Urban and Regional Planners was obtained respectively. It means that project performance can be improved if completion phase principles are strictly adhered to in project delivery.

not audited. This delay impacted on time by extending the duration of the project schedule. The costs of these projects were found to be higher than planned. Worst of all, quality is compromised because contractors try to make up; this has adverse effect on project performance. For instance, projects A, C and E were decommissioned while; projects B, D and F were not decommissioned. Yet the NBC states clearly that all projects must be commissioned before takeoff (FRN, 2006). It was also discovered that projects B, D and F were not decommissioned because of lack of compliance to laws and regulations; lack of approval due to major contract variations.

In a study, Ofori (2014) found that Tanzania and Singapore experienced tremendous changes in the BI in terms of performance. In Ghana BI was threatened by socio-cultural and historical factors, non - availability of skills, high cost and poor quality of materials. Ofori (2007) notes that the absence of accurate and detailed information especially during the completion phase of a project in developing countries constitutes an obstacle to improving project performance. Ofori (2014) argues that the experience in Singapore is a lesson to be learned in terms of

project performance. Ofori (2007) pointed out that the need to improve project performance is to alleviate poverty, illiteracy, high infant mortality and other socio-economic development challenges.

This study found that little delays have serious implications on time and cost overruns which eventually affects quality standards. For instance, public projects B, E and F (Table 2) were completed at \$1,165.5 million, \$0.64308 million and \$0.41136 million. The potential role of completion phase principles on project delivery

Adoption of completion phase principles is expected to improve project performance. However, due to

Conclusion

Despite LCM's successful use in the building industry worldwide, its use in Nigeria is yet to be adequately exploited. The study concludes that right from the initiation to completion phases, project processes have been faulty and so project cannot be delivered on time, within the budget and quality standards. The parameters for measuring project performance are cost, time and quality standards. Clients usually demand for a better value from their investments. As such, they want projects to be completed on time, within cost and with the right quality (Rashid *et al*, 2006). All of the projects studied, were completed at a higher cost and time overrun. This could be attributed to delays in release of funds; funds are not issued as at when due which results into inflation and unethical professional practices.

In conclusion, the current project delivery system is not working. There is need to adopt LCM to help

Recommendation

Basing on the findings of this study, the following recommendations are envisaged to help in the improvement of project delivery in Abuja. There is need to improve the adoption of the completion phase principles within the building industry in Abuja, Nigeria, it is recommended that

million as against \$1,133.75 million, \$0.60668 million and \$0.35477 million respectively. These projects were completed at a period of 40, 46 and 36 months higher than scheduled. The findings indicate that the adoption of completion phase principles is a noteworthy factor of project performance. From the analysis, completion phase principles must therefore be taken into account for improvement of project performance and service delivery to clients.

poor/improper initiation, planning, implementation and poor service delivery, it has not been realized. Projects are completed with high cost and time overruns due to lack of proper implementation.

improve project performance, especially in the reduction of cost and time overruns. The study has established that the building industry in Abuja, Nigeria is unable to deliver projects efficiently and effectively; and there are several reports of poor management of projects, the unnecessary rush in project implementation, inadequate planning and budgetary provisions, time and costly project execution, inefficient service delivery and abandoned or non-functional facilities and collapsed buildings.

Similarly, this study revealed that LCM application has not been applied in the delivery of projects; however, traditional methods are mostly practiced (Inuwa *et al*, 2013). Idoro (2012) observed that traditional method of project procurement must be improved because of time and costs overrun in its delivery. It is against this background that the recommendations below are made.

- ❖ Ensure the adoption of completion phase principles
- ❖ More research should be focused on completion phase principles because most buildings are occupied without completion certificate; hence, houses are not inspected.
- ❖ Project should always be decommission
- ❖ Ensure project audit after completion
- ❖ Ensure client satisfaction

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