

Influence Of Contractor's Firm Structure On Completion Of Building Construction Projects In Nairobi City County, Kenya

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Abstract- The subject of project completion is of global concern to parties that are involved in construction of projects. Poor performance of completion of construction projects is usually characterized by production of low-quality projects, time and cost overruns. Success of a construction projects directly affects how a contractor is perceived since it's a contractor's responsibility to ensure that a construction projects is completed as that is how their performance is measured. Thus, the study research was on contractor's firm structure and its influence on completion of building construction projects. The study was anchored on agency theory and targeted registered contractors working on the on-going building projects in Nairobi City County. The descriptive, correlation and regression was conducted. Findings showed completion of construction projects was influenced by contractor's firm structure based on high score of ($M=3.92$ and $SD=.89$) from the descriptive analysis. Correlation analysis revealed strong and positive significance between the two variances since $r=.622$ and 71.2% of changes in completion of construction projects was due to firm structure. Regression coefficient was $\beta=.208$ for link between firm structure and completion of construction projects. The study concludes that firm structure helped in completing and delivering construction projects on time, as per the cost and budget estimate and meeting government standards. The study recommends that industry players to push for policies and regulations that can improve on quality of the completed building construction projects..

Index Terms- Communication, Defined work plans, Decision making process, Coordination amongst parties, Number of personnel, Completion of projects

I. INTRODUCTION

The construction industry, it accounts for millions of jobs worldwide, economic growth and development through linking economic entities and productivity of different sector player. The role of construction sector cannot be overemphasized, as noted by Sulieman and Adlan (2016) who noted that it plays a key in socio-economic development of people by providing

shelters, social amenity systems and facilities and employment opportunities. Momanyi and Kamau (2020) add that the construction industry activities affect all other sectors and industries in any economy.

The construction industry is multi-faceted as it has many players including clientele (private and public consumers), contractors, consultants, stakeholders and regulators. The sector faces challenges in terms of sourcing for adequate capital since it is a capital intensive industry, poor workmanship, incompetency of engineers, insufficient organization and unstable business environment (Asiedu & Adaku, 2019). It also suffers from unpredictable demand cycles, uncertain circumstances like change of weather and project-specific demands. But Cheng, Chang and Korir (2019) share that the role played by contractors is central for the success of projects due to their function of translating the plan into a completed structure.

The performance of contractors is an important measure in the construction industry as it determines, quality and delivery timelines of the projects, cost of completed of projects bearing in mind the construction projects are capital intensive. Komen and Juma (2018) measure the performance of contractors in terms of level and quality of projects delivered to clients. While Sulieman and Adlan (2016) talk of timelines in completion and delivery of construction to avoid many delays at each construction phase, as this will have a direct effect on the overall cost of the project. In general, contractor performance in the construction industry is based on three aspects, quality of the completed project, costs incurred in the construction project and delivery timeliness of the completed construction project (Cheng, *et al.*, 2019).

The structure of the firm is another aspect that plays a key role for measuring the contractor's performance. The structure can create an enabling environment for ease of delivery of the project objectives (Fernandez, Le Roy & Chiambaretto, 2018). The contractor's firm structure is based on the communication channels and systems that convey information and ensure synergy among the functional areas of the project, it is also about defining work plans and decision making processes that ensure all systems are coordinated and all teams work together to achieve the project goals. The structure of the contractor's firm also looks at number

of personnel, their skill-set and experience and which departments and work areas to assign them for complete utilization of their skills for the benefit of the project.

Kenya's building and construction sector has grown immensely over the last few years. A growth of 14.2% was reported over the period of 2006-2011 (G.O.K, 2014). Within that same period, the GDP had declined to 4.3% in 2011 and it was high of 6.33% in 2006 (G.O.K, 2014). The statistics from the central bureau show that the Kenyan construction industry contributes to the nation's GDP by 7%. But the industry suffers similar issues and problems that other developing nations face and in some instances the problems are severe. The fact that this industry is important to this country and most other developing countries, their poor level of performance should be looked into and a solution found. Since, contractors are at the major contributors of the construction industry; thus any changes should be centered on them as a means to improve the industry outcomes and delivery of contractors.

The construction sector has been strategic in creating job opportunities and it has worked to reduce unemployment especially amongst the youths. In Nairobi like in other cities around the world have many projects that are usually not completed on time leading to abandonment due to exceeding the estimated project costs. Some of the projects remain unfinished while few are eventually completed but very much later than the date agreed on the schedule and with a very highly inflated budget. Other reasons affecting majority of construction project performance in Nairobi Metropolitan area are dynamic economic conditions, cultural differences, political instability, inadequate infrastructure, lack of control and motivation for staff, inexperienced stakeholders and poor leadership structures in the industry.

In every 10 building construction projects, only 2 are completed in time and within the budget, the other 8 suffer from delays in accessing drawing designs, non-availability of building materials, political interference and finances to cover costs for the entire project (Mwangi, 2016). The Nairobi City County has seen an increase in building construction projects especially with the growing population hence demand for residential and commercial premises and other social amenities. But the issue still remains in completion of projects in the stipulated timelines and within the set budgets. Since the success and completion of projects is the responsibility of the contractor, then it is thought that the solution to the challenges in completing projects will be found by looking at the performance of the project contractor.

Thus, this study investigated on the influence of contractor firm structure on completion of construction projects in building construction projects in Nairobi City County, Kenya.

The research question is:

- i. What is the influence of contractor's firm structure on completion of building construction projects within Nairobi City County?

II. LITERATURE REVIEW

Theoretical Literature

The Agency Theory

The theory was advanced by Alchian and Demsetz (1972) and later elaborated and expanded by Jensen and Meckling (1976)

and its key principal is on the correlation between the principal and agent. The theory works to ensure there is a proper working relationship between the principal and agent and interests of both parties are taken care of. Its focus is how to draft the contract between the principal –owners and shareholders of the firm and the agent –executioner of all activities in the firm, in light of differing views for realization of high performance. When the firm managers make decisions that align with their interests the principals feel outpaced and might resolve to sack the managers. Another issue is when the principal cannot authenticate the work and output of the agent due to lack of transparency.

The theory is based on these assumptions that conflicts of goals and interests between principals and agents may arise during the duration a contract is supposed to exist; this may be because one party might have more information about the contract than the other. Usually, most of the agents can take more risks as compared to the principals (Otundo, 2015). The theory exposes how firm structure and the inter-relation between the construction company and its client; and between the contractor and project manager. It shows how these stakeholders can create a good working relationship and coordinate activities through efficient communication systems. The structure will enhance completion rates of construction projects.

Empirical Literature

Sartipi (2020) investigated on organizational structure for construction entities that is based on cooperative. The construction entities just like other industry players must make changes to remain competitive and cooperate with other players in the marketplace. The study adopted the use of game theory that uses mathematical principles to evaluate decisions made by managers and improve chances of good outcomes. The contractors and project managers are market players that can improve performance through coordination and cooperation and positively influence the outcome of the construction entities. The cooperative game theory is based on coordination, cooperation and integration of different construction sector players based on the structure of the firm. The structure that enables resource sharing and equitable treatment of all players will benefit the entire construction sector.

Kuria and Kimutai (2018) conducted a study on the internal environment in firms and its effect on performance of projects for these constructing firms that are based in Nairobi City County, Kenya. The internal organizational environment was looked at through elements like communication system, training and development, reward and recognition system and shared values and practices and how they influence of project performance for the construction firms. The study collected data using semi-structured questionnaires from the 49 registered construction firms. The findings showed there association between the two elements were good and led to project performance in the construction firms that are based in Nairobi.

Omer, Adeleke and Moshood (2021) study was organizational structure and risk management based on mediating effect of the coercive pressures in the construction industry in Malaysia. The aim of the study was seeking risk management strategies to resolve the risks that have be-deviled the Malaysian construction industry. The researchers noted that an effective organization structure can mitigate some of the risks and lead to highly performing construction industry. Data was obtained from

G7 construction companies in the peninsular where findings showed that aspects of organization structure including specialization of assignments, centralization of authority and power and deployment of formal management structure led to reduced risks and highly performing construction firms.

Chepchieng and Siringi (2019) study looked at performance of donor-funded health projects as influenced by leadership styles, the structure of the firm and engagement of stakeholders. The focus of the study was a case study of health solutions in Kenya due to declining donor funding, wastage, un-satisfaction by project

stakeholders and economic loss from failing health projects. The study collected data from employees of health solutions center in Kenya and found that study elements worked to improve performance outcomes in the health projects in Kenya’s Center for Health Solutions. The transformational and transactional leadership styles and organizational structure based on formal relationships, hierarchy of authority, control held by managers and effective communication channels and systems; led to higher performing projects.

Conceptual Framework

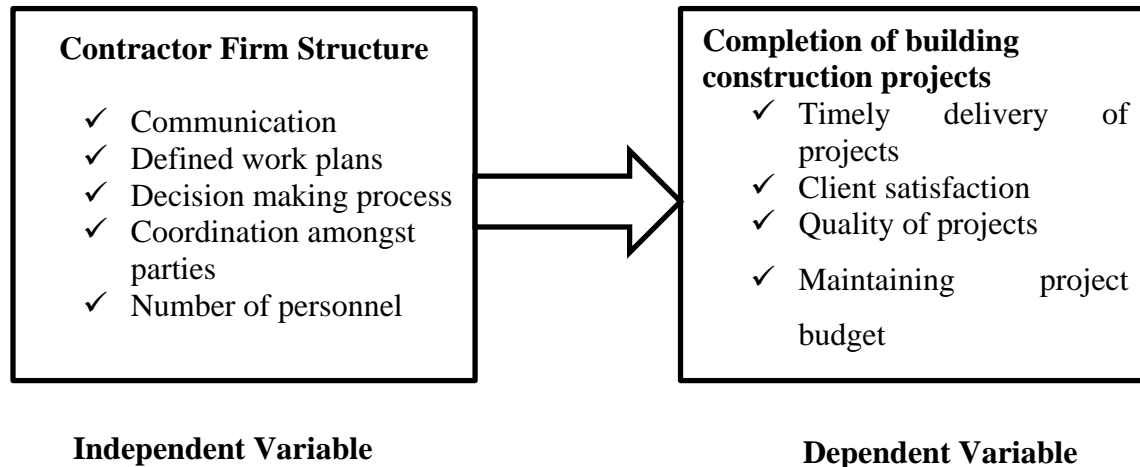


Figure 1: Conceptual Framework

III. RESEARCH METHODOLOGY

The study design is the blueprint that guides researchers in all activities they undertake to answer the research questions (Bryman, 2016). The study employed a descriptive and explanatory design and the choice was based on giving information without any manipulation and explaining the focus of the study. This study targeted registered contractors with the National Construction Authority that are working in the 764 ongoing building projects in Nairobi City County. Through the adoption of the Kothari (2004) formula a sample size of 255 contractors formed the sample size of the study.

Primary data was collected using questionnaire and copies were made and distributed to the respondents. The questionnaire

used a five point Likert Scale and it was arranged in sections and the scale showed the weight and degree in intensity to agreements that were made on each statement. The 12 contractors were those registered by the NCA as building works contractors within the Nairobi City County. The pilot testing was done to check if the instrument is valid and reliable. The Cronbach alpha results at an average score of .840 indicated that the instrument was reliable and confirmed its fitness for use in the study. The quantitative data was coded and entered into SPSS where descriptive; correlation and regression analysis was conducted.

IV. FINDINGS

Descriptive Analysis

Table 1: Contractor’s Firm Structure

Statement	Mean	SD %	D %	UD %	A %	SA %	STD. DEV.
There is smooth flow of communication in the contractor firm.	3.97	0	26.7	14.7	45.3	12	1.116
Throughout the firm, there are defined work plans which are duly followed by everyone.	3.81	11.4	24	20.2	30	14.2	.945

The decision-making process involved in the firm is done properly.	4	8.7	18.6	13.6	38.2	20.7	.872
There is coordination amongst all the parties in the contractor firm.	3.72	15.3	19.1	10.9	37.7	16.0	.904
The contractor has enough personnel to work with during the construction process.	3.96	3.8	6	5.4	39.3	45.3	.872
The structure allows staff to learn from each other leading to successful project	4.04	0	5.4	13.6	34.4	46.4	.636
Total	3.92	9.8	16.63	13.06	37.48	25.76	.89

In general, contractors' firm structure and effect on completion of construction projects had an overall mean score of 3.92 and standard deviation of .89. Aggregate scores were such that 9.8% of respondents strongly disagreed, 16.63% disagreed and 13.06% wavered between both sides; while 37.48% and 25.76% agreed and strongly agreed respectively. The findings are also echoed by Chepchieng and Siringi (2019) who concluded that adopted leadership style, control measures, hierarchy of authority and effective communication led to higher project performance. In addition, Kuria and Kimutai (2018) noted internal environment of the firm such as communication system influenced performance of projects and Sartipi (2020) shared that success of projects relied on cooperation, coordination and integration of all construction sector players.

Table 2: Completion of Construction Projects

Statement	Mean	SD %	D %	UD %	A %	SA %	STD. DEV.
The client needs were met (socially, economically and environmentally)	3.77	2.1	13.1	10.3	43.1	31.1	1.161
The project was completed on time.	3.64	15.8	8.7	22.4	28.4	24.5	1.024
Project was completed within the scope.	4	0	10.9	0	37.7	51.3	.793
The completed project was of high standards.	3.85	6	18.5	15.8	30	29.5	.731
Project was completed within the budget.	3.89	10.3	21.8	6	33.8	27.8	.86
Project met the required government standards.	4.18	13.1	20.2	14.2	22.9	29.5	.594
Total	3.88	9.46	15.53	13.74	32.65	32.28	.86

Table 2 indicates that in general, completion of projects as affected by contractor performance management had high mean scores of 3.88 and standard deviation of .86. The results indicate that 9.46% strongly disagreed with the statement, 15.53% disagreed and 13.74% had undecided on which side to lie with. There were 32.65% who agreed and another 32.65% strongly agreed with the statement. Cheng, *et al.* (2019) stated that in general construction projects are said to be successful based on quality of the completed project, cost and timeliness. It is also about high satisfaction rates for owners, investors and consumers of the completed construction project. As echoed by Komen and Juma (2018) who noted that successfully completed projects are those whose quality of work is high and Beste (2020) added that project designs help in saving time and increases delivery as per the work plan and schedule. Sulieman and Adlan (2016) mention that timelines of completed projects is another indicator of its success similar to the opinion of Oyieyo (2020) arguing that timeliness is a performance measure for projects.

Table 3: Correlation Analysis

		Completion of Construction Firm Structure Projects	
Completion of Construction Projects	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	183	
Firm structure	Pearson Correlation	.622*	1
	Sig. (2-tailed)	.000	
	N	183	183

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Contractors' firm structure had positive and strong significance to completion of the construction projects in Nairobi City County. The correlation analysis results found $r = .622$ and $p < 0.05$ an indication that elements of firm structure such as staffs learning from each other, proper decision making procedures, smooth communication flow and having sufficient number of personnel influenced the completion of construction projects in Nairobi City County, Kenya.

Regression Analysis

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.874 ^a	.717	.712	.51056

a. Predictors: (Constant), Contractors' Firm Structure

Results showed that the correlation coefficient of R is .874 implying that contractor firm structure had strong and positive effect to completion of construction projects in Nairobi City County, Kenya. The overall regression model is fit based on obtained coefficient of determination based on R square of .717. The adjusted R square at .712 shows that 71.2% changes in completion of construction projects is based on contractor firm structure.

Table 5: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	326.239	1	326.239	110.477	.000 ^b
	Residual	534.430	181	2.953		
	Total	860.669	182			

a. Dependent Variable: Completion of Construction Projects

b. Predictors: (Constant), Contractors' Firm Structure

The ANOVA test findings indicate that model is fit for use and there is correlation between predictor variable of contractors' firm structure and the response variable of completion of construction projects. The F ratio calculated is at 110.477 showing variance between the groups and it is higher than F critical calculated at 3.893. The F calculated ratio is what is the error term and the test findings show fitness of the model and p-value is less than the standards set at 0.05, thus showing significant effects between the contractor firm structure elements and completion of construction projects.

Table 6: Regression Coefficient

	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
(Constant)	1.619	1.048			1.544	.001
Contractor's Firm Structure	.251	.130	.208		1.922	.045

a. Dependent Variable: Completion of Construction Projects

The resultant regression equation took this form:

$$Y = 1.619 + .208X_1$$

Y = Completion of Construction Projects

X₁ = Contractors' firm structure

The results showed positive and significant effect between contractors' firm structure and completion of construction projects in Nairobi City County based on beta results where $\beta = .208$; $p = .045 < 0.05$.

V. CONCLUSION AND RECOMMENDATIONS

The study found that contractors' firm structure strongly influenced completion of building construction projects. Therefore, conclusions were made that firm structure with elements including allowing staff to learn from each other, having sufficient number of project personnel, coordination and integration of activities and communication that eases decision making improve completion of projects. The study concludes that firm structure helped in completing and delivering construction projects on time, as per the cost and budget estimate and meeting government standards.

The study recommends to the Nairobi City County and the building construction industry to commit sufficient resources in the training and development of contractors. Focusing on the contractors who include project managers, engineers, architects and designers will result in completing projects as per the scope, design, standards of quality, time and cost. The industry players are also advised to push for policies and regulations that can improve on quality of the completed building construction projects.

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