

ROLE OF PROJECT MANAGEMENT SKILLS ON PERFORMANCE OF CONSTRUCTION PROJECTS: A CASE OF SELECTED CONSTRUCTION FIRMS IN KIGALI RWANDA.

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ABSTRACT

Various construction firms have used project management skills and techniques as a means of bridging the gap between failure and success in implementation of projects. Despite this increased awareness of construction project management skills, by these construction firms, projects still fail. The objective of this study was to investigate the role of construction project management skills on performance of construction projects with reference to construction firms based within Kigali. The survey targeted selected construction firms within the Kigali province and especially the ones that deal with the major projects that have high impacts to the country economy currently being undertaken within the County. The specific objective was to determine to role of project Planning skills on construction projects in construction firms based within Kigali, to assess the role of communication skills on construction projects in construction firms based within Kigali, to assess the role of risk management skills on construction projects in construction firms based within Kigali. Lastly, the study sought to determine the role of monitoring and control skill on construction projects in construction firms based within Kigali. The study will be of benefit to the projects managers, sponsors, public & private sector, research organizations and scholars who would want to carry out further research in this area. The study adopted a descriptive research design with a target population of 111 staffs working at the construction firms in Kigali which generated a sample of 33 respondents. Questionnaires was the main data collection instruments. The study employed both quantitative and qualitative research in its data analysis. Data was presented using tables. The study found out that Projects are constrained by inadequate planning skills that are required for effective planning for project success; Project planning is complicated and risky, hence requires varying skills sets for successful project implementation and management; Increasing complexity in the projects with pressure of time and costs has led to the introduction of high quality software and hardware which requires skilled planning. The study concludes that Investing in adequate professional and technical skills required in project management is an important foundation for ensuring the success of each project. Proper project management practices such as planning, risk management, and monitoring and control seek to cushion the project against present and potential risks or failure. Poor project management skills may result in wastage of resources, time, and distortion in quality of the final product or even total project failure. The amount of time and effort dedicated to planning as an element of project management influences the success or failure of a project. The study recommends that construction firms at Kigali must ensure that adequate plans and resources exist to recruit, motivate, train and develop employees; Key risk management skills are needed to hedge projects against many uncertainties i.e. resource shortage, contractors' inability to meet completion dates and other types of risks communication at Kigali construction firms; should monitor and evaluate projects adequately, and develop monitoring mechanisms. Further research should be carried out to find out the hindrances to success in project management skills on Performance of construction projects in Rwanda.

Key words: *Project Planning skills, project communication skills, project risk management, project monitoring and control and Performance of Construction projects.*

1.1 Background to the study

Globally, construction industry accounts for 6-9% of the Gross Domestic Product (GDP) of many countries (Chitkara, 2011). In various construction firms, the rate of business failure is lack of skills and knowledge. There is vast scope for improving performance through project management skills in construction industry, where men, materials, machinery, money and management work together to build a facility (Hughes, 2012). The value of annual construction activity in the world exceeds one trillion dollars. The total annual cost of worldwide project failures alone is \$7.5 trillion dollars, according to Maylor, (2009).

According to Ika, Diallo and Thuillier (2012) projects remain the tools of choice for policy makers in international development. However, there are eight main reasons for the failure of government projects: inadequate planning; insufficient buy-in by senior management; failure to engage effectively with key stakeholders; a lack of technical skills; poor project monitoring and review; inadequate initial evaluation of the project; poor networking skills; and failure to integrate the disparate parties needed to deliver project success. All are issues that can be improved through training and development. Moreover, these reasons apply equally to projects in public and private-sector organizations (Gollenbeck, 2008).

The construction industry is one of the key contributors to most economies (Mbamali & Okotie, 2012). The importance of the construction industry to the economy can be measured by its contribution to the Gross Domestic Product (GDP); its contribution to investment; and the volume of labour employed. Internationally, the construction industry contribution to GDP is from 3% to 10%; typically, lower in developing countries and higher in developed countries. Since early 1970s, the construction industry has played an important role in terms of the economic, social and cultural development of Indonesia. The industry contribution to the GDP increased from 3.9% in 1973 to 7.9% in 1996. This constitutes about 60% of gross fixed capital formation. Construction work from 1996 to 1999 was sharply reduced due to the Asian monetary crisis, but went into an upswing from 2000 to 2007. The construction sector's contribution to the country's total GDP increased from 5.5% to 7.7% in 2007 and this is set to expand to 7.8% in 2012. Despite this, the growth in construction activity has been slowing since mid-2008, according to Indonesia Economic Quarterly data (World Bank, 2009) but the slowdown has not been great and spending was still 6.3 percent higher in the first quarter of 2009 on a year earlier. Central Bureau of National Planning (Bappenas) projected the construction market of this country for the period of 2010 – 2014 to be about US\$180 billion (Directorate of Public-Private Partnership Development, 2009).

Construction activities and its output is an integral part of a country's national economy and industrial development. The construction industry is often seen as a driver of economic growth especially in developing countries. The industry can mobilize and effectively utilize local human and material resources in the development and maintenance of housing and infrastructure to promote local employment and improve economic efficiency (Anaman and Amponsah, 2007).

Field and Ofori (2008), stated that the construction makes a noticeable contribution to the economic output of a country; it generates employment and incomes for the people and therefore the effects of changes in the construction industry on the economy occur at all levels and in virtually all aspects of life (Rameezdeen, 2007). This implies that construction has a strong linkage with many economic activities (Rameezdeen, 2007), and whatever happens to the industry will directly and indirectly influence other industries and ultimately, the wealth of a country. Hence, the construction industry is regarded as an essential and highly visible contributor to the process of growth (Field & Ofori, 2008).

The significant role of the construction industry in the national economy has been highlighted by Turin (2009). On the basis of cross section of data from a large number of countries at various levels of development, Turin (2009) argued that there is a positive relationship between construction output and

economic growth. Furthermore, as economies grow construction output grows at a faster rate, assuming a higher proportion of GDP. (Turin, 2009).

In Rwanda, the construction industry plays significant role in the economy. Major construction activities account for about 80% of the total capital assets, 10 % of their GDP, and more than 50% of the wealth invested in fixed assets. In addition, the industry provides high employment opportunity, probably next after agriculture (Ofori, 2006). Despite the construction industry's significant contribution to 3 the economy of developing countries and the critical role it plays in that country's development, the performance of the industry still remains generally low. As (Idoko, 2008) noted, many projects in developing countries encounter considerable time and cost overruns, fail to realize their intended benefit or even totally terminated and abandoned before or after their completion. Moreover, the development of the construction industry in developing countries generally lags far behind from other industries in those countries and their counter parts in developed nations.

1.2 Statement of the Problem

Construction industry is the means through which a society realizes its goals of urban and rural development (Enshassi, Hallaq & Mohamed, 2006). It has a big impact on the economy of all countries. Construction projects are commonly acknowledged as successful when they are completed on time, within budget, and in accordance with specifications and to stakeholders' satisfaction. Owing to the technical and complex nature even with good designs and plans it is of paramount importance that they are well managed if they are to be successful.

Project management is rapidly becoming a standard way of doing business (Arain & Assaf, 2003). An increasing percentage of the typical firm's effort is being devoted to projects. The future promises an increase in the importance and the role of projects in contributing to the strategic direction of organizations (Arain, 2005b). Empirical data (Chamoun,2011) and (World Bank, 2009) shows project management skill as having the most significant impact on achieving project success which is equated to achieving project objectives. Cooke-Davies, (2010) consistently shows well-trained teams deliver more benefit to project management than undertrained teams.

Well trained and knowledgeable project managers and staff aggressively seek ways to control cost and to effectively reduce risks to projects by carefully selecting the most appropriate technologies, hiring the most affordable and experienced consultants, and using sophisticated management practices to ensure functional success. A project's level of embedded skill will affect project outcome regardless of project complexity. The likelihood of project success is proportional to the skill level of the team working on it (International Labour Organization, 2001). Stated bluntly, the risk of a project failing to meet its objectives rises when the project team does not have the skills to do the job. Indeed, when these private projects fail to achieve the set objectives, the basic project constraints are usually advanced as reasons for the same. However, this would have been avoided or reduced if the project sponsors and managers were more skilled in the application of prudent project management policies and practices. Thus, this research study sought to examine the role of project management skills on Performance of construction projects with reference to construction firms based within Kigali.

1.3 Objectives of the study

1.3.1 General objective

The general objective of the study was to investigate the role of project management skills on Performance of construction projects with reference to construction firms based within Kigali.

1.3.2 Specific objectives

The following research objectives guided this study:

1. To determine the role of Project Planning skills on performance of construction projects in construction firms based within Kigali Rwanda.
2. To examine the role of project communication skills on performance of construction projects in construction firms based within Kigali Rwanda.
3. To assess the role of project risk management skills on performance of construction projects in construction firms based within Kigali Rwanda.
4. To determine the role of project monitoring and control skills on performance of construction projects in construction firms based within Kigali Rwanda.

1.4 Research questions

The following research questions guided the study:

1. To what extent does the role of Project Planning skills contribute to construction projects undertaken by construction firms based within Kigali Rwanda?
2. What is the role of project communication skills on construction projects undertaken by construction firms based within Kigali Rwanda?
3. How does the project risk management skills affect construction projects in construction firms based within Kigali Rwanda?
4. What is the role of project monitoring and control Skills on construction projects undertaken by construction firms based within Kigali Rwanda?

2.0 Conceptual Framework

Mugenda and Mugenda (2013), define a conceptual framework as a hypothesized model identifying the concepts under study and their relationships. A conceptual framework is a tool researcher use to guide their inquiry; it is a set of ideas used to structure the research, a sort of a map (Kothari, 2012). It is the researcher's own position on the problem and gives direction to the study. It may be an adaptation of a model used in a previous study, with modifications to suit the inquiry. Aside from showing the direction of the study, through the conceptual framework, the researcher can be able to show the relationships of the different constructs that he wants to investigate. The conceptual framework below, which depicts the relationship between the dependent and independent variables, guided this study.

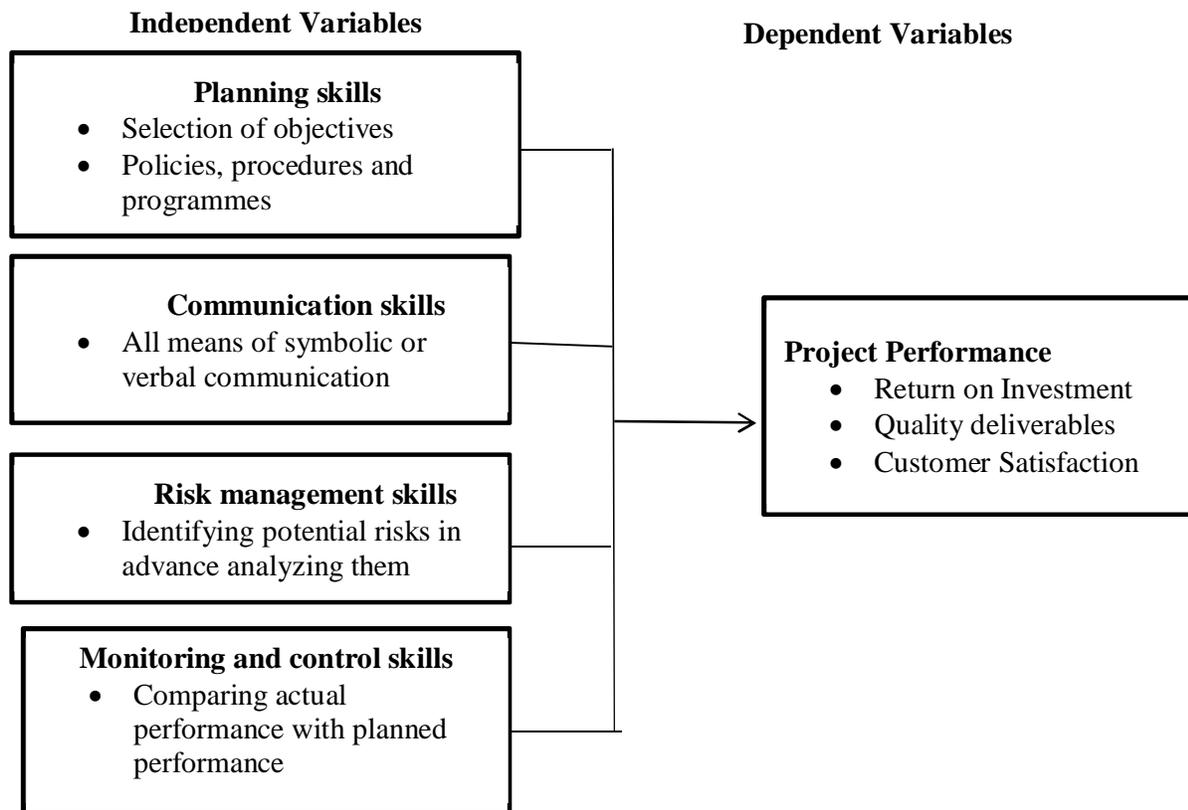


Figure 2: Conceptual framework

3.0 Research design

This study employed a descriptive survey research designs. A descriptive research design was used in preliminary and exploratory studies to allow researchers to gather information and summarize, present and interpret data for the purpose of clarification (Orodho, 2009). According to Mugenda and Mugenda, (2008) the purpose of descriptive research is to determine and report the way things are and it helps in establishing the current status of the population under study. Borg and Gall, (2009) note that descriptive survey research was intended to produce statistical information about aspects of a study that interest policy makers. Gay, (2007) says that surveys are self-report study that requires the collection of quantifiable information from the sample. They are useful for describing, explaining or exploring the existing status of two or more variables (Mugenda and Mugenda, 2008).

3.1 Target population

Target population is the specific population about which information is desired. According to Kombo & Tromp, (2009) a population is a well-defined or set of people, services, elements, events, group of things or households that are being investigated. The population of interest of this study was the staff working with the construction firms based within Kigali. The management staff working with the construction firms based within Kigali was the respondents. The target respondents included 110 constructions firm's heads, assistant construction firm's heads and lower construction firms cadre staffs like the supervisors from the head office of the construction firms in Kigali. All working in the construction firms based in Kigali Rwanda. Mugenda, (2008) explains that the target population should have some observable characteristics, to which the researcher intends to generalize the results of the study.

Table 1 Sampling Frame

Area of Operation	Population
Project managers	35
Construction managers	15
Engineers	14
Project team	30
Technicians	16
Total	110

4.0 Regression analysis

Regression analysis was done to determine the relationship between the role of project management skills on Performance of construction projects with reference to construction firms based within Kigali.

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.542 ^a	.306	.268	.130

a. Predictors: (Constant), (project planning skills, project communication skills, project risk management, project monitoring and control)

Table 2 shows that the coefficient of determination R square is 0.306 and R is 0.542 at 0.05 significant level. The coefficient of determination indicates that 30.6% of the variation in the dependent variable performance of construction projects is explained by the independent variables (project planning skills, project communication skills, project risk management, project monitoring and control).

Table 3: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.575 ^a	3	.192	11.388	.000 ^b
	Residual	1.379	82	.017		
	Total	1.953	85			

a. Dependent Variable: Performance of construction projects

b. Predictors: (Constant), Project planning skills, Project communication skills, Project risk management, Project monitoring and control

Table 3 presents the results of Analysis of Variance (ANOVA) on project management skills versus of construction projects. The ANOVA results for regression coefficient indicate that the significance of the F is 0.00 which is less than 0.05. This implies that there is a positive significant relationship independent project management skills variable and of construction projects and that the model is a good fit for the data

Table 4: Coefficient

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.396	.231		1.973	.106
	Planning skills	.118	.009	.444	1.815	.009
	Communication skills	.182	.050	1.231	3.616	.036
	Risk management skills	.254	.017	1.075	3.159	.025
	Monitoring and control skills	.266	.240	.230	.850	.028

From the data in the above table the established regression equation was

$$Y = 0.396 + 0.118 X_1 + 0.182 X_2 + 0.254 X_3 + 0.266 X_4$$

From the above regression equation, it was revealed that holding project planning skills, project communication skills, project risk management, project monitoring and control to a constant zero, performance of construction projects would be at 0.396. A unit increase on project planning skills would lead to increase in performance of construction projects by a factor of 0.118, a unit increase in project communication skills would lead to increase in performance of construction projects by a factor of 0.182, a unit increase in project risk management would lead to increase in performance of construction projects by a factor of 0.254 and unit increase in project monitoring and control would lead to increase in performance of construction projects by a factor of 0.266.

5.0. Conclusions

The study concludes that Investing in adequate professional and technical skills required in project management is an important foundation for ensuring the success of each project. Proper project management practices such as planning, risk management, and monitoring and control seek to cushion the project against present and potential risks or failure. Poor project management skills may result in wastage of resources, time, and distortion in quality of the final product or even total project failure. The amount of time and effort dedicated to planning as an element of project management influences the success or failure of a project. The more effort and time applied, the higher the probability that the project will achieve its set objectives.

Due to the risky and complex nature of projects, it is important for the project management team to incorporate the use of hardware and software available in the market to handle such complexities by conducting skilled planning. Such software helps in the managing of multiple tasks in projects which might pose challenges if handled manually. In project risk management, risk identification and mitigation is an essential skill required by every project manager. Adequate risk management strategies are vital in identifying uncertainties in a project and employing mechanisms to respond to such risks. Practices such reviewing past projects would provide vital information on the possible areas of uncertainty in a current project.

Project Monitoring and controlling skills can be used to provide feedback between project phases, check the linkages for flow and consistency in order to implement corrective or preventive actions to bring the project into compliance with the project management plan. Project monitoring and control skills contribute least to the construction project management skills required in performance of construction firms based in Kigali. This is closely followed by project communication skills and project risk management skills, while project planning skills have the highest role in performance of construction projects in the case of construction firms in Kigali Rwanda.

5.4. Recommendations

The study recommends that construction firms at Kigali must ensure that adequate plans and resources exist to recruit, motivate, train and develop employees; Key risk management skills are needed to hedge projects against many uncertainties i.e. resource shortage, contractors' inability to meet completion dates and other types of risks communication at Kigali construction firms; should monitor and evaluate projects adequately, and develop monitoring mechanisms. It is essential that all organizations that are involved in projects, trains its project management team so as to raise the standards of results emanating from every project. Government agencies, parastatals, non-governmental organizations and corporate, community and faith-based organizations should ensure that their project teams have the necessary skills such as planning, communication, risk management, and monitoring and control so as to cushion the project against failure. Investing in high quality hardware and software compliments the planning skills of the project management team. Project management software are necessary when handling complex projects as it can determine the shortest and longest period the project can be implemented at the same time showing activities that can be undertaken together. Sometimes the total project duration can be reduced in what is referred to as 'crashing' by increasing the resources needed to carry out an activity. Research should also be carried out on the effect of training project planning, risk management, and monitoring and control in sector-specific projects especially in Rwanda. This information would be important for increasing the rate of success in projects within these sectors

5.5. Areas for further research

The study investigated the role of project management skills on Performance of construction projects with reference to construction firms based within Rwanda. Further research should be carried out to find out the hindrances to success in project management skills on Performance of construction projects in Rwanda.

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