

# Influence of Project Management Practices on Construction Projects in Rwanda

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**Abstract**—The construction industry is among the leading sectors in economic growth of Rwanda. Most of construction projects failed to maintain their schedules, and remain within budgetary costs; this despite there being knowledge of project management practices introduced in construction project. Generally this study aimed to investigate influence of project management practices on construction project in Rwanda. 99 survey questionnaires were administered to 99 active contractors and consultants registered in RPPA. It was found that 91.9 % of respondents confirmed that they applied project management practices in their daily assignments however 74.7 % got skills from experience, therefore majority in industry are not professional managers. Construction planning like risk plan, communication plan are not done satisfactory, 77.7% confirmed that risk plan analysis is less applied; few analysis done the top management involvement is not satisfactory, uncertainties contribute a lot in time and cost overruns. Other researches revealed that the best organization structure is project-based and matrix while it was found that in Rwanda 85.8 % confirmed the functional structure, the later was proved not suitable in multidisiplinary projects. The study concluded that industry has not professionals in management therefore less application of management practices. The contractors and consultants are recommended to encourage their engineers to go ahead management classes or profession trainings (PMI, PRINCE 2, AGILE....) to save the construction industry.

**Keywords**—Construction projects, organization structure, effective project manager and risk analysis.

## I. INTRODUCTION

The construction industry is one of the major industries contributing significantly to the socio-economic development growth (Choge&Muturi, 2014). Project management emerged because of the growing demand for complex, sophisticated, customized goods and services and the exponential expansion of human knowledge (Bakouros&Kelessidis, 2000).

Standish (2013), according to a recent Standish Group survey report, 61% of the projects either failed or was challenged to meet success criteria; and 74% faced schedule overruns.

Numerous researches have outlined the issue of poor time and cost performance of construction projects worldwide. In a study of 8,000 projects, found that only 16% of the projects could satisfy the three famous performance criteria: completing projects on time, within budgeted cost and quality standard, while in a global study on cost overrun issues in transport infrastructure projects covering 258 projects in 20 nations concluded that 9 out of 10 projects face cost overrun. Time and cost overrun has been reported as major problems globally (Aftab, Ismail, & Ade, 2012).

Rwanda has seen a significant rise in infrastructure developments in the recent past, especially in the fields of real estate development. However, many house construction projects have failed to achieve project success due to increase risk and uncertainty (Njagi, Mbabazi, & Kibachia, 2016). There are also various failed or abandoned projects which have denied beneficiaries envisaged facilities and services. Contracts for 78 projects worth Frw 126,052,898,036 delayed and were not completed within contract period. Out of these, 14 projects worth Frw 3,368,946,434 failed to proceed or contracts were abandoned after paying Frw 1,898,334,461 to the contractors (OAG, 2014). In addition, report on 8<sup>th</sup> July, 2016 by KT Press Team an editor in Kigali Today newspaper stated that Regional Convention Centre get opened after failing 3 times, Kigali convention centre is worth\$300 Million, commenced in 2009, was initially supposed to be completed and opened in 2011 but had to be postponed several times till 2016.

### 1.1 Statement Of The Problem

Most of construction projects failed to maintain their schedules, and remain within budgetary costs; this despite there being knowledge of project management practices introduced in construction project. According to Munns& Bjeirmi, (1996), the definition of project management suggests a shorter term and more specific context for success. The outcomes of project management success are many. They would include the obvious indicators of completion to budget, satisfying the project

schedule, adequate quality standards, and meeting the project goal. Construction managers plan, coordinate, budget, and supervise construction projects from development to completion. In spite of so many efforts, man hours and resources, we still find it very difficult to finish construction projects on time within budget and available resources (Pranam, Madhusudan, & Sudharshan, 2013). This brings to focus the effectiveness of the said project management practices introduced in construction sector.

## 1.2 Aim And Objectives

The aim of this study is to investigate the influence of Project management practices on construction project in Rwanda. The specific objectives are:

1. To describe the context of project management practices that are applied in Rwanda,
2. To identify the most required practices and characteristics of an effective project manager,
3. To develop a project management framework that will be used in construction project in Rwanda.

## II. LITERATURE REVIEW

The project management process is complex, usually required extensive and collective attention to a broad aspect of human, budgetary and technical variables (Salma, Abdul, Abdelnaser, & Mahyuddin, 2009). According to Drob, (2009), the appearance and development of the project management has occurred as a consequence of the need to adapt the theory and practice of management to the projects specific. In practice, the application of the tools and techniques of project management is facilitated by the use of specialized software for project management.

Uneb&Raza(2018) conducted a study dedicated towards finding out the perceptions regarding factors related to project failures in the construction industry of Pakistan. It was observed that organizational structure plays a lot. Sarfo (2007) in his study reported that the organizational structure adopted for management of building projects is an important area to consider for the success of projects. Hyvari (2006), results of his study indicated that organizational design is associated with project management effectiveness. For example, they indicate that project matrix and project team-based organizations are the most effective.

Ahmed et Al. (2013), stated that the essential leadership and managerial knowledge, skills, competencies and characteristics ensure successful completion of projects through right decisions at right time and by employing right people at right places. Nguyen, Ogunlana, & Lan, (2004), carried a research to assess factors affecting project success in Vietnam. They acknowledged the complex nature of construction projects. They divided the success factors into 4 major categories; comfort, competence, commitment and communication. They concluded that the factors which were ranked higher by the professionals were all human related. They also claimed that the results of their study can be applied construction sectors of other Asian countries.

Hwang et l. (2013) carried out a research and results show that scheduling and planning management is the most significant knowledge for the construction project while cost, quality, human resource and communication management are the second most competencies in the construction project. Patanakul et al. (2010) concluded that by using appropriate tools and techniques in the right way will have direct impact on the delivery of a successful project. Hwang et. Al. (2013), in their study in Singapore, they determined the allocation of project risk factors for infrastructure projects involving public – private partnerships. Their study area was Singapore in which this project delivery method has been commonly used for infrastructure projects. The important success contributing factors were found to be “well-organized public agency”, “appropriate risk allocation and sharing” and “strong private consortium”.

## III. RESEARCH METHODOLOGY

This study aims to investigate the influence of Project management practices on construction project success in Rwanda. Therefore the research is designed to investigate the information from documentations, consultants and contractors. The study adopts both quantitative design (exploratory and descriptive); and qualitative design (explanatory). Explanatory design is used during a collection of insights and ideas about research problem and variables through literature and pilot interview while descriptive design helps in a collection of data describing the situation, set of events or the characteristics of a particular individual, or of a group through questionnaires. This entailed collection of data on more than one respondent at any one selected case so as to collect a body of data related with more than one variable. In fact this study applies triangulation to increase the reliability and validity of the study or to increase the comprehensiveness of the study. According

to Munhall (2001), research triangulation is a term that refers broadly to the research practice of combining methods within a single tradition (quantitative or qualitative) or across those traditions.

The target population for the research is contractors and consultants who are registered by RPPA. In the period of 2018, RPPA published the categorization lists 2018-2019. Both contractors and consultants are categorized basing on construction types and the value of bid to tender (Project cost).

A total of 99 questionnaires will be distributed to sampled contractors and consultants. According to Zikmund (1994), the choice of the method for statistical analysis depends on the type of questions to be answered, the number of variables and the scale of measurement. In this research, all data will be coded and analyzed using frequency and regression tool in the statistical software, namely, Statistical Package of Social Science (SPSS) 22.0.

#### **IV. RESEARCH RESULTS AND FINDINGS**

##### **4.1 Reality insurance of results**

Most of failed projects are governmental funded projects, having 75.8 % of respondents participated in public constructions ensures the reality of information, the gotten information were grounded as only 5.1% of respondents had less than 5 years of experience, while others had more than 5 years, having information from experienced people provide insurance of ground reality.

##### **4.2 Application of management practices**

The aim of this study was to assess the influence of project management practices on Rwanda project, in this research it was much needed to know if the personnel of construction industry applied management practices, 91.9 % of respondents confirmed that they apply project management practices in their daily assignments. There are numerous researches confirmed that application of management practices imply successful completion of project (Lock (2004), Bayani et Al. (2015) .etc.), applying those practices in Rwanda on rate of 91.9% can guarantee only success whilst cost and time overruns are experienced in several projects. This result confirmed application of management practices brought an attention of how they apply them and assessing if the main practices are applied, at which rate?

Majority of respondents 74.7 % applying management practices in their daily works did not acquire management skills from schools (education) or professional training, their management skills increase with experience. Due to complexities of construction projects there are much managerial skills to be acquired from school and professional training that you cannot have by experience. In conclusion majority of managers in Rwanda construction industry are not professional managers but the experienced engineers become managers.

##### **4.3 Project planning and scheduling & Management tools and technique**

It was found that detailed planning is not fully covered in Rwandan constructions, only project planning (outlining the activities, tasks, dependencies and timeframes), resource plan (listing the labour, equipment and material required), financial plan (listing the labour, equipment and material costs) are applied in Rwanda on average majority, 68.7%, 63.7%, 52.6% respectively. Other construction planning like risk plan, communication plan are not done satisfactory, while quality plan, acceptance plan are also considered on average majority of 63.6% and 68.6% respectively. The use of planning and scheduling tools in Rwandan constructions is not satisfactory; the only tool applied on average majority is Gnatts charts (bar charts), either critical path diagrams, primavera, PERT are applied on unsatisfactory rate in Rwanda. Reference is made to literature review, the project managers who don't apply at maximum the management tools and techniques cannot deliver a complex project successful. Earned value management is less considered where 76.6% of respondents disapprove its application in Rwandan construction; EVM is applied to predict the future of project.

##### **4.4 Organizational Structure & Leadership style**

The dominated organization structure is functional, 85.8 % of the respondents confirmed this type of organization structure in their companies. This is contrary to literatures where, they indicate that project matrix and project team-based organizations are the most effective. Sarfo (2007) in his study reported that the organizational structure adopted for management of building projects is an important area to consider for the success of projects. No leadership styles is a dominant in Rwanda, the average majority of respondents 50.5% agreed the existence of situational leadership style where no single style can be applied on all projects.

#### 4.5 Risk analysis

It was found that risk plan does not done in Rwandan construction with average percentage of 77.7%. Where 15.2 % of respondents agreed the application of risk planning, 7.1% had no idea about risk planning referred as highlighting potential risks and actions taken to mitigate them. Lack of risk plan confirmed the lower risk analysis, 66.7% disagreed the existence of room for risk management, 13.1 % were neutral, while 20.2% agreed, there for risk management is less assessed and handled suitably, the few risk done, top management involvement is low. Uncertainties contribute significantly in construction project failures.

#### 4.6 Appreciated qualities of an effective project manager

The qualities of an effective project manager appreciated by respondents were dominated by motivation, decision making and flexibility where majority of the respondents agreed them on rates of 81.2%, 70.6% & 74.8% respectively.

### V. CONCLUSION AND RECOMMENDATIONS

This study used literature review and questionnaire survey methods, to achieve its aim of investigating the influence of Project management practices on construction project in Rwanda. The study concludes that there is a lot that the construction industry itself can do to improve the performance in construction project management. The weakness of construction project management is a key cause of most of project failures like lack of professional managers. The generalization of this study can be applied on entire population as the sample data used was efficient. The results of this study are the paramount academic reference and mainstay resource for construction management practitioners.

The project management participants are not academically qualified in management; there is also much weakness in organization structures in companies. Here below are list of recommendations and proposed construction project management framework:

- The contractors and consultants are recommended to encourage their engineers to go ahead management classes or profession trainings like PMI, PRINCE 2, AGILE, etc. to have all required skills of an effective project manager.
- The contractors are recommended to introduce project based management or matrix from functional structure that seems outdated.
- It is recommended to work out risks plan, and involvement of top management is merely mandatory.

It is recommended to follow the following proposed project management framework, where project management should work on two areas organization and project, the project should be managed as parallel organization with its budget, all management planning must be fully covered such as work break down structure, organization breakdown structure, resources, financial, risk analysis, quality standards, acceptance standards, and communication planning. Risk management is mandatory for project performance.

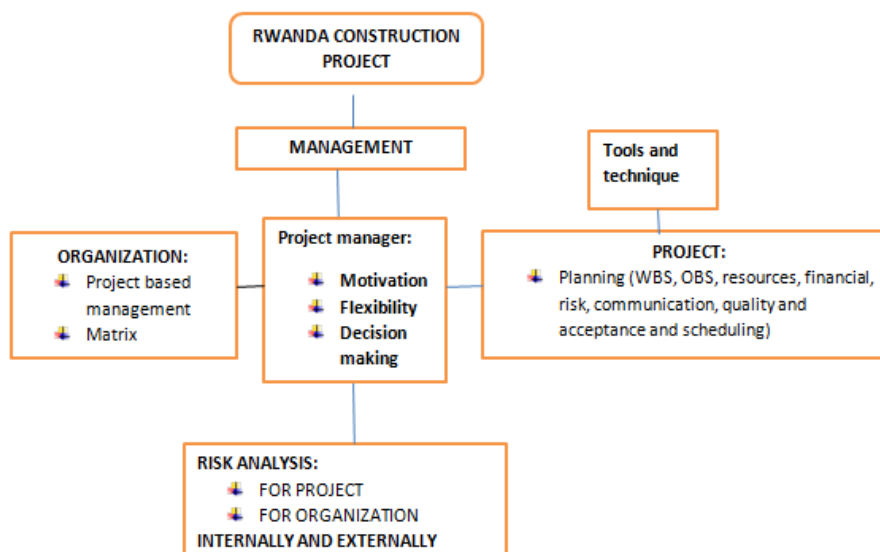


FIGURE 1: Proposed construction project management framework  
Source: Researcher 2020

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