The Influence of Contract Administration on the Implementation of Construction Projects in Rwanda

Mugabe David Louis, Abednego Oswald Gwaya, Titus KivaaMbiti

Abstract- Rwanda has experienced a boom in the construction and real estate sector due to increased demand in residential houses, accommodation facilities for the needs of tourists and business travelers flocking the country. The boom is also precipitated by the need for implementing the Vision 2020 and the good security in the country, all of which have attracted a number of potential investors, encouraged by good security in the country (RDB, 2017). In spite of that, construction projects are not implemented as required by contract documents and this has become the most common problem for all companies. Construction projects also suffer from poor performance in terms of time delays, cost overruns and quality defects. What needs to be done to improve projects performance has been stated as a continuing and tricky problem in construction. The causes of poor performance have often been analyzed and recommendations have been given. However, few studies have addressed the influence of contract administration on construction projects success. This article explores the influence of contract administration on the success of construction projects in Rwanda. The study was conducted with real estate developers, contractors and consultants. The article argues that contract administration plays a major role towards project implementation and subsequently the overall success. Cost contract is presented as the most common form of contract administration.

Keywords: Contract, Contract Administration, Construction Project, Project Implementation.

I. INTRODUCTION

This article assesses the influence of contract administration on the implementation of construction projects in Rwanda. It explores project implementation in relation with the manner in which contracts are administered. This is done taking cognizance of the fact that indigenization of the construction industry is significant for sustainable development (Myers, 2013). The success of construction projects is an important issue for most of the countries, users and communities.

The level of performance in construction project development activities depends closely on the quality of the managerial, financial, technical and organizational performance of the respective parties, while taking into consideration the associated risk management, the business environment, and economic and political stability (Navon, 2005). Conventionally, a building project is considered successful if the building is delivered at the right time, price, and quality (Chan et all, 2002).

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Construction industry is a key sector and a potential driver of future economic growth in Rwanda. This is due to the high demand for residential and commercial buildings. It is expected that under Vision 2020 and the Economic Development and Poverty Reduction Strategy (EDPRS), 70% of the population will be living in rural grouped settlements and the remaining 30% will reside in urban areas. Rwandan housing market remains underserved, with an annual demand for an estimated 25,000 units of which 8,000 – 10,000 are in the country's Capital City, Kigali. Growth in the sector has been driven by population growth of 2.8% per year, an emerging and growing middle class, increased investment in Rwandan property markets and the government investment in infrastructure expansion and modernization of urban and rural infrastructure (RDB, 2012).

Construction projects are now much more complex and difficult, with the project teams facing unprecedented changes. Increasing uncertainties in technology, budgets and development processes create a dynamic and constantly changing construction industry. A well refined approach is important to deal with initiating, planning, financing, designing, approving, implementing and completing a project (Wang, 1994).

Construction contracts are an important part of the project implementation process as it guides the performance of the parties and therefore affects the performance of a project. The problem and challenge that Rwanda's construction industry is facing is high level of nonperformance in terms of cost, time and quality. According to the Auditor General reports, the construction scenery across Rwandan institutions reveals increased costs, significant delays in completion, lack of value for money, and failed and abandoned construction projects (AOG, 2015; 2014).

Contracting is an integral part of construction projects. Handling the contracts therefore is equally important for the success of any project process due to the involved multiple contracts. Contract administration deals with day-to-day contractual subjects in a contract execution and copes up with them in accordance with the progress of the whole project. An appropriate contract administration framework to ensure that the contracts are executed smoothly is vital.

Successful implementation of any given construction project requires stakeholders to have a clear understanding of the contract requirements. Going wrong becomes a common occurrence for all the construction projects. The stakeholders are not meeting the requirements as stipulated in the construction contracts. In practice, most stakeholders of the construction industry have fallen into the trap of using standard construction contracts where standard conditions that have been adopted are confident that they include all the clauses to deal reasonably

well with most of the eventualities, which parties to a contract may expect to experience (Rwelamila, 1995).

While studies have been conducted to determine how the goals can be achieved on every construction project, few studies have addressed the influence of contract administration in the implementation of construction projects. To properly address contractual matters as stipulated in the construction contract, it is significant to understand different types of contracts and what affects their implementation as planned.

This article explores the contract administration influence on the success of building projects in Rwanda. It identifies various types of contracts that are in use amongst construction projects in Rwanda; demonstrates how various contract clauses are instrumental in project implementation success (or failure), and proposes an appropriate contract administration framework for successful implementation of construction projects in Rwanda.

II. UNDERSTANDING CONSTRUCTION CONTRACTS AND THEIR ROLES

All over the world, the business environment within which construction organizations operate continues to change rapidly. Companies do not adapt and do not respond to the complexity of the new environment tend to experience survival problems (Lee et al. 2001). (Lee et al. 2001).With the increased contract requirements and limited resources on one side, and high competition for construction business marketplace on the other side, contractors have to be able to continuously strategize their working styles (Samson and Lema 2005).

The rate of the economic growth of any nation can be measured by the development of the physical infrastructure such as buildings, roads and bridges (Takin and Akintoye, 2002). Construction projects are considered successful implemented only when they are finished on time, within budget, in accordance with specifications and to stakeholders' satisfaction (Yaman, 2007).

According to the Federation International Des Ingenieurs-Conseils(FIDIC, 2006, 1999, 1992), projects are constructed at particular places at designated prices and delivered within a designated time horizon. All these various aspects of the contract and how they relate to the parties to the contract are described and defined in the conditions of contract. The conditions of contracts are therefore necessary to unambiguously define the rights and obligations of the parties to a contract so that the employer receives a project precisely as required and expected. The contractor on the other hand receives a satisfactory commercial return for his completed work. The construction contract administration is all about the interpretation and application of the conditions of contract.

Further, any conditions of contract is established to define various components and aspects of the contract and the project to be undertaken. The contract describes the stakeholders and their roles, responsibilities, obligations and rights including the consequences that may arise from the default of any parties is particularly important. The expected quality of works, its measurement and control tests and the method of payment thereof, must also be clearly defined. Finally, it defines the mechanism for dispute resolution (FIDIC, 1999).

The role of the contract is to define the scope of works; establish the rights, duties, obligations and responsibilities of parties; allocate risks between parties; and provide for dispute resolution. Once a contract is awarded, a variety of problems may emerge during the course of work, including the quality of work, responsibility for delays, and appropriate payments due to changed conditions (Hendrickson, 2000). As such, the mechanism for contract dispute resolution should be specified in the contract.

III. THE PROJECT PLAYERS

The main players in any construction project are the owner, the designers (architects and engineers), and the contractor. Although these three parties are always involved in a project, the alignment and contractual relationships among them will vary depending upon the project delivery system utilized to deliver the project. Each of these parties provides distinct services and has specific accountabilities necessary to fulfill the building objectives.

No construction would ever be accomplished without owners. They are the driving force behind the construction industry. Their requirements for housing, commercial facilities, industrial products, and infrastructure are the chief motivation to build.

Two types of professional designers are engaged in the construction process, and each deals with different parts of the project design. Architects deal with the function, life safety issues, and aesthetics of the building, and engineers deal with the systems. They normally work together to complete the design assignment with one or the other taking the lead, depending on the type of design under consideration.

The main contractor enters into a contract with the owner to deliver the construction project in accordance with the contract.

Construction management firms, general contractors, architects, engineers, owners, or specialty contractors may employ construction managers. The primary responsibility of the construction manager is to organize the project team to perform the construction management function that is the topic of this entire book.

Specialty contractors are often referred to as subcontractors because they perform their work under a contract with another contractor (typically the general contractor) to do a portion of the contractor's work, as opposed to contracting directly with an owner. These subcontractors, in turn, may engage other subcontractors. Consequently, there can be main subcontracting to the main contractor.

The building trades are the are skilled and semi-skilled workers that work as the plumbers, electricians, ironworkers, and so on. They are the construction industry's most valuable asset, although they are rarely recognized for their immense contribution. The level of influence among the project players is illustrated in figure 1 below.

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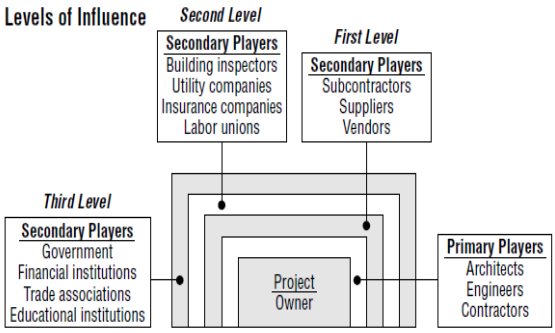

Figure 1 Levels of influence of projects players
Source: Barbra (2010)

IV. PROJECT SUCCESS AND FAILURE IN THE CONSTRUCTION INDUSTRY

As any other business activity, success should be the prime goal in order for construction industry to survive. Previously, a number of practitioners and academics tried to understand and specify the factors of project failure or success (Jari, 2013). Misunderstandings arise as to the measurements of project success and failure as different parties in the project perceive the concept differently. Besides, success and failure factors vary in literature and practice and they have increased to include the teamwork, communication and leadership, which affect the project objectives directly (Han et al., 2012).How to deconstruct these factors in the context of parties in key to successful administration of construction contracts.

V. METHODOLOGY

A cross sectional research design was used in collecting and analyzing data for assessing the influence of contract administration on construction projects implementation in Rwanda. The design was useful in the evaluation of different insights from the key players in the industry and reviewing the annual reports, previous research and other available documents. The study was conducted within Kigali, Rwanda's Capital City.

The study population comprised representatives of stakeholders impacting the construction industry in Rwanda namely: consultancy firms, contractors, and client-real estate developers. The Rwanda Public Procurement Authority (2019) enlists 1889 as the current number of all registered companies operating in the construction industry under various categories. The categories enlisted includes consulting, contacting and specialized construction works. The study population was drawn from 1889 companies as enlisted by RPPA.

Random selection of the companies was used, with the focus being the contract administration and the way projects are implemented with a keen interest on what approach can be best suited to foster project success. These formed a finite part of a statistical population whose properties are studied to gain information about the whole (Webster, 1985). The final sample size was determined from the population of 1189 companies using Slovin's Formula. From Slovin's Formula, the inputs are denoted as; the sample size (n), the population size (N) and a margin of error (e). It is computed as n = N / (1+Ne2). In using the formula, the study took into account confidence levels and margins of error. The confidence level agreeable to this study is 92%. This gives the margin of error at 0.05.

Both primary and secondary data was used. Primary was collected through questionnaires and interviews. In both methods, a formal set of questions were designed to gather the information from the respondents. While questionnaires used structured or closed ended questions to allow for quantitative data, interviews were unstructured or open ended to allow for in-depth qualitative data. Secondary data included literature reviews from related reports, books, journals, newspaper and other resources obtained from internet.

Quantitative data was analyzed using frequency analysis with Microsoft excel; while qualitative data from the interviews was analyzed through data reduction, display, conclusion creation, and identification of trends. All the results were analyzed against the literature reviewed so that the similarities and/or differences could be drawn, discussed and interpreted in order to deduce conclusions and recommendations.

VI. TYPES OF CONTRACTS

To understand the types of contract issued, it is imperative to understand the types of projects undertaken. A major proportion of the projects undertaken are residential and commercial buildings and structures at 50.72%. Public projects and private projects take an almost equal share at 50/50 which demonstrates the people and the government have a concerted effort towards nation building and personal development and progress. Figure 2 demonstrates this reality.

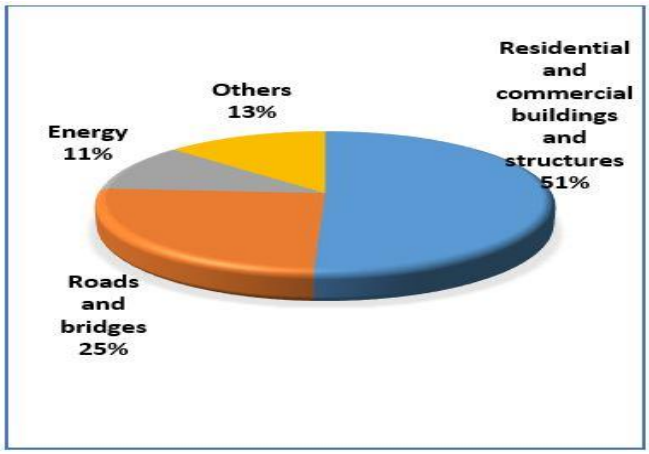

Figure 2: Types of Projects Undertaken
Source: Field survey 2019

Residential and commercial buildings are the most dominant projects at 51%, followed by roads and bridges at 25%, a paltry 11% in energy and 13% of other projects. Statistics are consistent with the country's focus on national and individual development and progress.

The types of contracts issued in running of the projects are summarized in Figure 3 below.

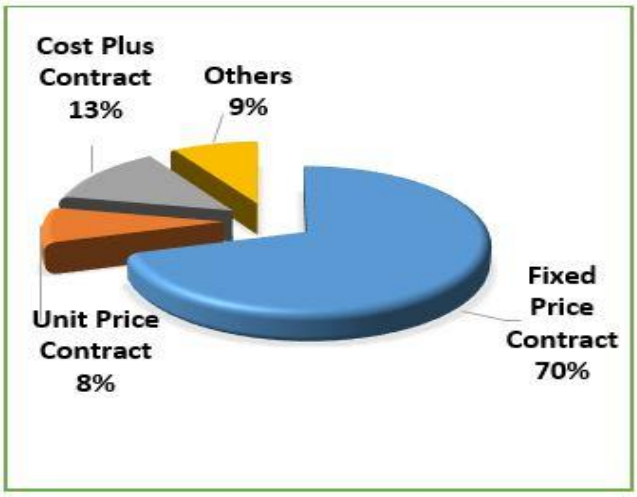

Figure 3: Type of Contract Issued

Source: Field survey, 2019

The most common form of contract preferred by the contracting entities is the Fixed Price Contract, indicated by a large percentage at 70.29%. The rest of the other contracting forms only take about 30% of the chances by preference. Fixed Contracts are preferred because clients are interested in the outcome; but also since bidding is open and therefore assumed that the bids submitted must be within competitive market rates.

VII. CONTRACT CLAUSES AND THE SUCCESS OF PROJECT IMPLEMENTATION

Contracts are essential to the success or failure of projects. Each clause in a contract is designed to provide a guidance towards a certain key aspect regarding to a project. Each clause or article in the contract describes the circumstances and manner in which the parties will relate and the expectations for all the concerned players. The influence of a contract in accordance to key themes and clauses was extremely vital to the study.

To illustrate this, the influence of a contract in accordance to key themes and clauses was examined. A range of issues including risk distribution, costs incurred, efficiency and the effectiveness of a certain contract are considered. Results indicate the Engineer Section with a relative importance index (RII) of 0.84, the Contractor with RII of 0.809, the Tests on Completion with RII value of 0.78, the Insurance with RII of 0.778, and General Provision with RII value of 0.753 as the five areas that the contractors, consulting or construction management firms have keen interest in.

The relative importance index is as depicted on the curve below figure 4 on each item examined.

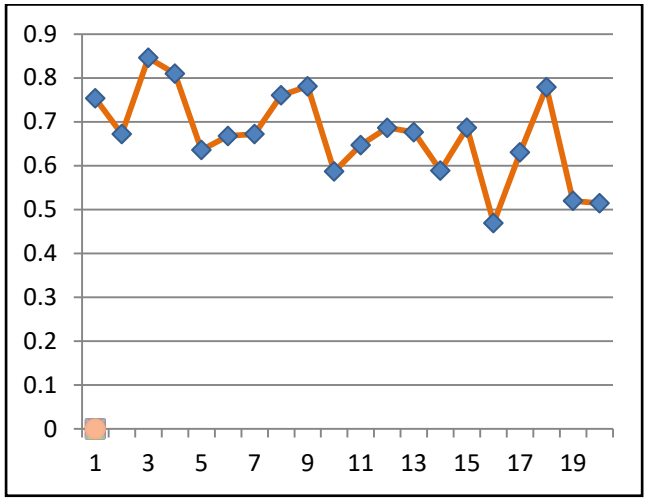

Figure 4: Standard Contract Clauses (RII)

Source: Field Survey 2019.

The least popular item is suspension and termination by contractor with a score of RII of 0.4692. For whatever reason, termination by Employer scores RII 0.68659. The contract price and payment is rated average, on the contrary perhaps this is due to the nature of works scope, tight deadlines and the compensations are fairly fair and earnings are hard earned after tremendous works full of risks and pressure.

VIII. CONTRACT ADMINISTRATION FRAMEWORK FOR SUCCESSFUL IMPLEMENTATION OF CONSTRUCTION PROJECTS IN RWANDA.

The bottom line to project success lies in the manner in which the contract is administered. A project can be implemented successfully or even end up in failure, this depends on how keenly one follows on factors that are crucial to project success. It was deemed useful to establish some of the key factors that influence contract administration. These are depicted in table 1 below.

Table 1: Factor influencing Contract Administration

Factors influencing the contract Administration	5	4	3	2	1	Total	Weight
Nature of the work	65	24	9	15	25	138	503
Type of contract	31	43	19	35	10	138	464
Experience of the personnel involved	33	24	35	22	24	138	434
Commitment of the personnel involved.	31	11	62	17	17	138	436
Others (if any)	12	16	32	60	18	138	358

Source: Field Survey 2019

It is clear in the table that the nature of work largely influences contract administration. The type of the contract is also key having a weight of 464. Others items, although not specified, bear some weight as a consideration. This is possibly other factors beyond the researchers' mention that is possibly motivation on the part of the contract administrators. More importance is attached to the formation of the contract at 574 by weighting against involving the contract administrator at the formation of the contract with a weighting of 310.

Contract Administrators are traditionally introduced after the formation of the contract by the Employer and the Contractor. The contract administrator comes in to enforce a contract that has already been fixed and has no powers to annul or modify it.

Effective and efficient project implementation is key to project success. Contract administration plays a key role in ensuring that the project is successfully implemented. The key concern of a contract administrator is the Quality. Factors for successful project implementation are presented in Table 2 below.

Table 2: Factors in Project Implementation

The factors to the implementation of construction projects	5	4	3	2	1	Total	Weight	Rank
Clearly defined goals	51	21	46	17	3	138	514	2
Competent project team members	32	23	33	22	28	138	423	3
Top management support	22	24	35	33	24	138	401	6
Sufficient resources allocation	31	20	42	11	34	138	417	5
Adequate communication channels	4	8	22	24	33	91	199	4
Control mechanisms	32	11	18	32	47	140	369	8
Feedback capabilities	20	21	42	22	33	138	387	7
Responsiveness to client	73	12	10	29	14	138	515	1

Source: Field Survey, 2019

Responsive to client was ranked first having a weighting of 515. Having clearly defined goals is the other most important factor to implementation with a weight of 514 and ranked position two. Competency project team members is third with 423 weighting. The last item to do with control mechanisms is rated lowest.

It is worth noting that poor implementation can lead to project failures. Public projects can end up losing huge capital, whether it is organizational or individual project, concerns as to whether a project will succeed is key. Whether a project is implemented successfully or not depends on how keenly one follows on factors that are crucial to project success. The table 3 below describes the criteria and respondents' perceptions on critical factors that are responsible for the success or failure for the project.

Table 3: Construction Project Success Criteria

Construction project success (or failure) criteria	5	4	3	2	1	Total	weight	RII
Cost/budget	35	33	27	27	16	138	458	0.66376812
Time/schedule	42	12	34	22	28	138	432	0.62608696
Top management support	22	24	33	35	24	138	399	0.57826087
Sufficient resources allocation	18	32	45	9	34	138	405	0.58695652
Quality	42	22	37	4	33	138	450	0.65217391
Safety	29	12	22	28	47	138	362	0.52463768
Stakeholders' satisfaction	27	21	33	24	33	138	399	0.57826087
Other (please specify)	73	12	5	30	18	138	506	0.73333333

Source: Primary Data (2019)

It should further be noted that projects might not always be successfully implemented. Results indicate top ten reasons that can lead to project failure. They include selection of unsuitable consultant, change of mind by client, unclear scope, lack of project risks identification, lack of stakeholders' identification and management of their expectations, lack of doing enough feasibility due to speeding of project start, poor cooperation among parties, delays in information to be supplied by the client, delay in approvals, and selection of the lowest tender price as a bidding winner.

The relative importance index is 0.760869565, 0.734782609 ,0.71884058, 0.698550725, 0.668115942, 0.665217391, 0.663768116, 0.663768116, 0.663768116, 0.662318841, 0.657971014 beginning with selection of unsuitable consultant up to selection of the lowest bidder in that order respectively.

The other issue that appears to generate curiosity is the last item in the list. The least issue considered is Government Influence with a relative importance index of 0.5782. meaning the Government promotes and advocates for project success and not a catalyst for failure of the projects.

The analysis of each category was key in determining where the biggest concerns could be as we broadly cross-examine what can bring down a project to its knees.

IX. RECOMMENDATIONS

1. Given the dominance of the residential and commercial buildings, government should offer subsidies toprivate actors to maximize their potential and benefits. An environment conducive for sustainable growth of this subsector is vital.

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2. Different contracting parties to promote project success and minimize failures should ease administration of contracts. Clause in a contract should provide adequate guidance on all the specific aspects of the project. Each clause in the contract should clearly describe the circumstances and manner in which the parties will relate as well as the expectations for all the concerned players.
3. Ensuring cost effectiveness in project implementation requires a blend of the various contracts with focus on what is most likely to bring better outcomes in line with the nature of the project and other risk factors.
4. Bearing in mind that projects may not always be successfully implemented, it is imperative for project parties to take cognizance of and leverage factors for effective and efficient implementation of construction project, while at the same time mitigate factors responsible for the failure of the projects. Having an inventory of risk factors and close monitoring of each to minimize its effect on project failure should be a best practice that project parties should always willing to implement.
5. A framework for effecting close collaboration among the parties in the construction projects to harmonize their interests and accelerate project success is paramount. This takes both policy and administrative dimensions. Public and private actors should work together to ensure that such a framework is established and operationalized at institutional and/or client level.

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