
INSTITUTIONAL FACTORS INFLUENCING TIMELY COMPLETION OF ROAD PROJECTS IN RWANDA: CASE OF GOVERNMENT EXTERNALLY FINANCED PROJECTS.

Nduko Fred Nyasetia

Jomo Kenyatta University of Agriculture and Technology,
Kigali, Rwanda.
Email: nsetiafred@yahoo.com

Dr. Mbabazi Mbabazize

Jomo Kenyatta University of Agriculture and Technology,
Kigali, Rwanda.
Email : mbabazimbabazize@gmail.com

Dr. Jaya Shukla

Jomo Kenyatta University of Agriculture and Technology,
Kigali, Rwanda.
Email: js.jayashukla@gmail.com

Eng. Ephantus Ndirangu Wanderi

Jomo Kenyatta University of Agriculture and Technology,
Kigali, Rwanda.
Email: wanderiephans@yahoo.co.uk

ABSTRACT

Infrastructure is an important factor in the development of a nation through its direct and indirect contributions to economic growth. Despite the importance of infrastructure and the billions of dollars committed to it, projects are never completed on time. The general objective of this study was to evaluate the institutional factors that influence timely completion of infrastructure projects in the road sub-sector in Rwanda funded through government external financing with a focus on World Bank and AfDB funds. The study adopted descriptive research design. A structured research questionnaire was distributed to 175 respondents from World Bank and AfDB staff, Implementing Agencies (that is, RURA) and Ministry of Road officials out of the total population of 220. Data collected was analyzed through SPSS version 21 and presented through charts and graphs. This study sought to evaluate the influence of institutional factors in timely completion of infrastructure projects: A case of government externally financed infrastructure projects by World Bank and AfDB in the road sub-sector in Rwanda, these factors include; Condition precedent by the financing institution, funds disbursement procedures, procurement procedures and government procedures and practices. This study found out that increased condition precedent by the financing institution contributes more to completion of infrastructure projects, followed by procurement procedures and funds disbursement procedures, while government procedures and practices contributes the least to completion of construction projects. The researcher recommended further research to investigate the other factors that influence project completion.

Key words: Infrastructure projects, Institutional factors, Timely completion of projects

1. Introduction

Globalization of market economies has urged corporations in all sectors to concentrate on maintaining a sustainable competitive edge which is directly related to the upkeep of quality both in terms of services as well productivity. This is only possible if an organization engages in operations or produces products that are able to effectively compete in the market (Wanderi *et al*, 2015). Organizations implement new projects or undertake efficient operations in order to thrive in today's competitive environment. According to Stocks (2008), Projects begin with the end in mind. There must be a statement of objectives with priorities, required delivery dates, costs and quality targets.

Globally, infrastructure is an important factor in the development of a nation through its direct and indirect contributions to economic growth. According to a World Bank initiated study, by Ngesa *et al* (2012) the following three factors of infrastructure fosters economic growth: infrastructure directly or indirectly reduces costs in the production process, infrastructure induces structural change which influences production and consumption trends; and infrastructure contributes to sources of income and better income levels. The nature of the current market is characterized by ever stiffening competition and ever changing customer expectations and demand, an organization must come up with unique competitive strategies and produce goods and services that continuously meet and exceed these demand and expectations (Salaheldin, 2009). Along with quality, cost, delivery, and flexibility, customer focus is another competitive priority to adapt fitting operation strategies proactively in changing environments (Taddese & Osada, 2010). In modern business success it is widely accepted that customer satisfaction is of primary focus, thus companies must always put the customer needs in first place. This has resulted in the exercise of value creation. Therefore, with the concept of value, customer value has become a source of sustainable competitiveness.

Infrastructure is an important factor in development of any given nation. The Government of Rwanda has invested heavily and continues to invest in infrastructure in line with the vision, 2020. World Bank, AfDB and other development partners have also supported the country by committing large sums of money in infrastructure in forms of loans and grants. Despite the importance of infrastructure and the billions of dollars committed to it, these projects are never completed on time as planned. This unfortunate situation has a negative effect because delayed completion of projects results in time overrun, cost overrun, disputes, litigation and sometimes complete abandonment of important projects. Secondly, this delays ends up denying the project beneficiaries' enjoyment that could have been derived from improved standards accrued from timely completion of the project. In addition the reputation of the financial institution is also at stake as it is associated with such projects.

Rwanda has invested heavily in infrastructure and according to the Road Sector Investment Plan vision 2020 the Government of Rwanda has allocated significant resources toward improvement of transport infrastructure. September 2007 saw the Government of Rwanda launch the Economic Development and Poverty Reduction Strategy (EDPRS), which is a mid-term framework building upon the development aspirations of vision 2020 and the Millennium Development Goals (MDGs). The EDPRS has redefined the country's priorities and advocates a different way of doing things in Rwanda, in particular it argues for decentralization and greater government accountability.

In many developing countries lack of proper infrastructure curtails development and demotivates foreign investment. In the recent years the Government of Rwanda has endeavored to boost development

through improved infrastructure. Such development initiatives require large budget allocation, the money of which cannot be easily met through internal government financing. The government sources external financing majorly from World Bank, AfDB, IMF and other development partners to bridge the budget deficits; such funds have also supported the country by committing large sums of money in infrastructure. Despite the importance of infrastructure and the billions of dollars committed to it, projects are never completed on time. Unfortunately this has a negative effect because delayed completion of projects results in time overrun, cost overrun, disputes, litigations and sometimes complete abandonment of important projects. Secondly, project beneficiaries are deprived of the benefits that would have accrued from timely completion of the project. In addition the reputation of the financial institution is also at stake as it is associated with such projects.

2. Statement of the problem

Effective project delivery in Rwanda has been an issue with an ever increasing pushing forward of completion dates. According to the report posted on the business week newspaper on 1st January 2012 by Berna Namata, approximately 40 per cent of Rwanda's budget is donor funded and foreign tourists remain the biggest drivers of the country's tourism sector. The issue of completion of projects on stipulated time has become of great importance especially with the ever growing concerns and demands from various players in the market. This has been an ongoing issue, where projects are not implemented on timely delivery, (Higiro & Mbabazi, 2015). In Rwanda project delay has been an ongoing issue where proposed and ongoing projects are either delayed or postponed. An example is a top priority is the \$300 million Kigali Convention Centre, which was scheduled for completion in 2011 but has been delayed up to 2016. The government of Rwanda in 2011 sought \$600 million for the construction of a new airport Bugesera International Airport that was expected to be completed by 2016 whose inception has not even commenced.

The road projects funded by World Bank and AfDB are a matter of public interest and at times most of these projects are not completed on time. Some of the projects that have been funded by World bank in Rwanda Rehabilitation, Upgrading and Maintenance of Selected Feeder Roads to enhance all season road connectivity to agricultural market centers in selected District and Paved Road Rehabilitation and Maintenance (Ngesa, 2012). To be able to respond to institutional variables in a project environment that influence completion of road sector projects, it is instructive to investigate and understand how and to what extent these factors contribute to delays and costs increases. During a national dialogue on 23rd December 2015, the president of Rwanda ordered the construction of the 2km road stretching to Kabaya district hospital in Kabaya Sector, Ngororero. The order came after the public during the 13th National Dialogue council- Umushyikirano complained of the poor road that leads to the hospital which has made it almost impossible for cars to reach the hospital. Although the hospital received a facelift in 2013 with most of its buildings refurbished, people say that accessing it has been a challenge where they had to carry patients since cars could not reach the hospital premises. "The Rwanda Focus" report dated 27th March 2015 on construction project to renovate and asphalt the multinational road linking Rwanda and Burundi, the Gisiza-Rubavu Road was delayed prompting counter arguments between AfDB and Rwanda Transportation Development Agency.

To respond to these postponements on the effective delivery of projects most organizations have resorted to adopt and implement operations management strategies that have been seen to work elsewhere in as much as quality management is concerned. However, this has not been successful (Salaheldin, 2008). Following the

challenges to the construction industry raised above, the Ministry of infrastructure has recommended projects to adopt and implement their contracts as stipulated, MININFRA (2015).

The researcher therefore wants to fill the gap by conducting a study to evaluate the institution factors that influence timely delivery of infrastructure projects in Rwanda and recommend possible ways to avoid any infrastructure project delays in future.

3. Research objectives

a. General Objective

The general objective of this study was to evaluate the institutional factors that influence timely completion of infrastructure projects in the road sub-sector in Rwanda funded through government external financing with a focus on World Bank and AfDB funds

b. Specific Objectives

This study was guided by the following three specific objectives:

- i. To establish the extent to which the conditions precedent of the financing institution influences delays in timely completion of government externally financed projects in road sub sector of Rwanda.
- ii. To assess the influence of funds disbursement procedures on the delays in timely completion of government externally financed projects in road sub sector of Rwanda.
- iii. To determine the influence of procurement procedures on the delays in timely completion of government externally financed projects in road sub sector of Rwanda.
- iv. To establish how government procedures and practices influences delays in timely completion of government externally financed projects in road sub sector of Rwanda.

4. Research Questions

1. To what extent does the conditions precedent of the financing institution influence delays in timely completion of government externally financed projects in road sub sector of Rwanda?
2. What is the influence of funds disbursement procedures on the delays in timely completion of government externally financed projects in road sub sector of Rwanda?
3. What is the influence of procurement procedures on the delays in timely completion of government externally financed projects in road sub sector of Rwanda?
4. In which way does government procedures and practices influence delays in timely completion of government externally financed projects in road sub sector of Rwanda?

5. Literature Review

5.1 Conceptual Framework

In this study the dependent variable is timely completion of projects while the independent variables are the institutional factors influencing timely completion of projects which are: condition precedent of the financing institution, funds disbursement procedures, procurement procedures and government procedures and practices. While the dependent variable is timely completion, these variables and their relationship are shown in the figure below:-

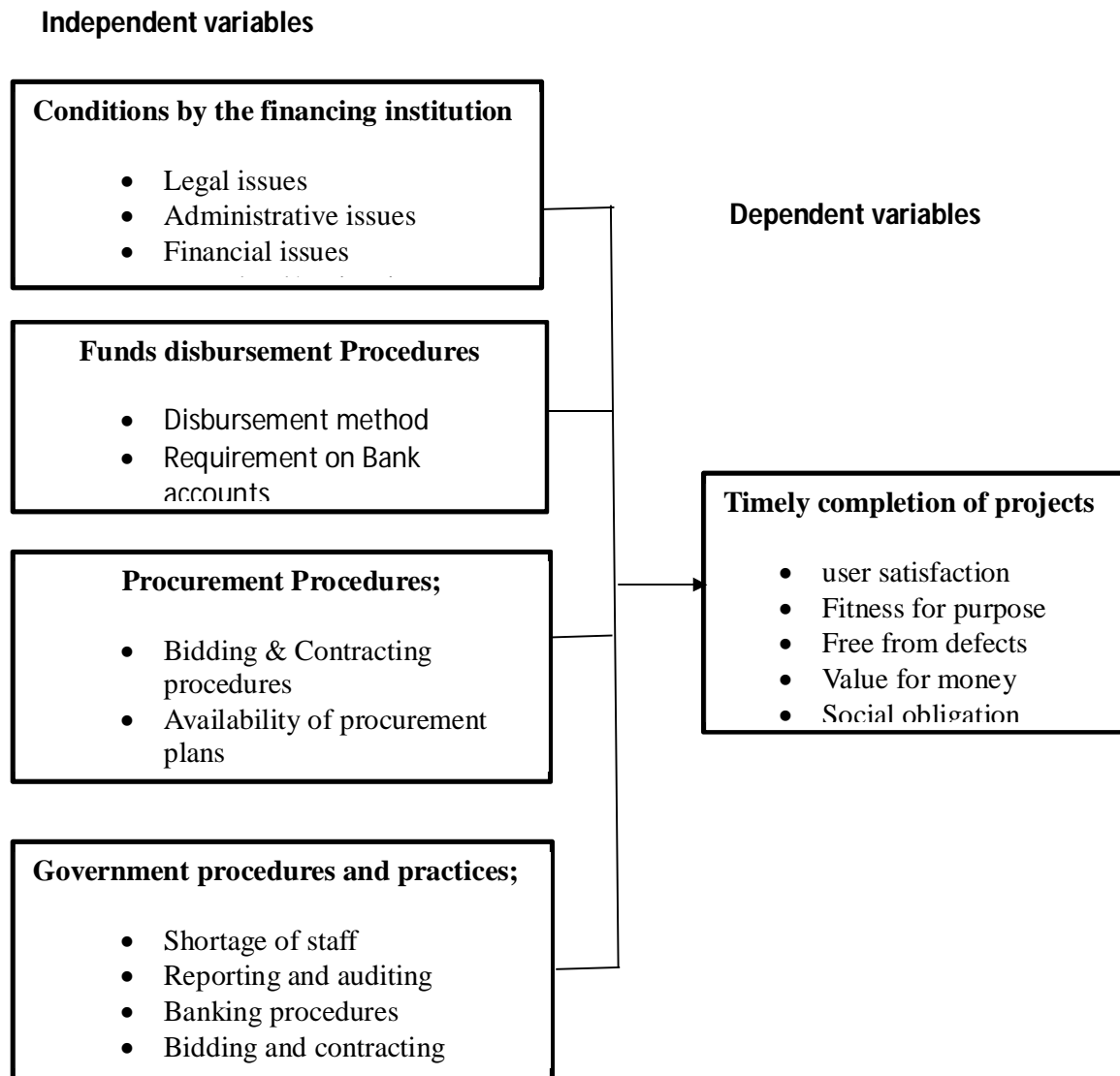


Figure 2: Conceptual Framework

6. Research design.

This study adopted a descriptive research design. A descriptive study is a study concerned with describing the characteristics of a particular individual or of a group (Kothari, 2004). The study sought to establish the institution factors that influence timely completion of projects. It adopted a case study survey. A case study involves careful and complete observation and analysis of a unit in its relationship to any other unit in the group (Kothari, 2004). A survey design is associated with a guided and quick collection, analysis and interpretation of observation (Mugenda & Mugenda, 1999).

6.1 Target population.

The population of interest in this study consisted of World Bank and AfDB Staff, Project Implementing Agencies (RURA) and the Ministry of infrastructure staff as shown in Table 1. The researcher targeted this population because they are knowledgeable in the area under study.

Table 29: Target Population

Target population	Total Population
World Bank Staff	55
AfDB Staff	45
Implementing Agencies (RURA)	100
Ministry of Infrastructure (Transport dept.)	20

6.2 Sample size determination.

The sampling design used for the study was purposive, stratified and simple random where the population will be divided into homogenous strata of World Bank staff, Implementing Agencies and Ministry of infrastructure as indicated in Table 2. Thereafter simple random sampling method was used to select the required sample in order to give every member of the population an equal chance of being selected and therefore avoiding biasness. The sample size was established using the Slovin's formulae $n=N/(1+Ne^2)$ using a confidence level of 95% where: n is the sample size, N is the total population and e is the error tolerance.

Table 30: Sample size

Target population	Total Population	Sample size $n=N/(1+Ne^2)$	Sampling procedure
World Bank Staff	55	49	Simple random
AfDB Staff	45	41	Simple random
Implementing Agencies (RURA)	100	80	Purposive
Ministry of Infrastructure (Transport dept.)	20	20	
Total	220	175	

7.0 RESEARCH FINDINGS AND DISCUSSION

7.1: Demographic characteristics of the participants

The study targeted World Bank Staff, Implementing Agencies and Ministry of infrastructure staff. As such the results on demographic characteristics of these respondents were investigated in the first section of the questionnaire. Socio demographic characteristics of the respondents such as age, gender, educational level, type of organization occupational level, and the number of years of worked on project were important variables in this study.

7.2 Institutional factors on timely completion of projects

The study further sought to establish the extent to which various factors cited influence delays in road construction projects. A scale of 1 to 5 was provided such that 5= Very high, 4 = High, 3 = Medium, 2 = Low and 1 = Very Low.

7.2.1: Financing institution Condition

Table 3. Financing institution Condition

	Great extent	Medium	Low extent	No extent
Financing institution Condition precedent				
Administrative issues	23(19%)	45(38%)	38(32%)	14(12%)
Financial issues	34(28%)	39(33%)	47(39%)	
Legal opinion and issues	12(10%)	44(37%)	59(49%)	5(4%)
Procedural/project issues	34(28%)	39(33%)	47(39%)	

Table 3 indicate that 19% indicated that administrative issues affected the completion of projects to a very high, 38% high, 32% low extent while 12% indicated to no extent. Financial issues were considered by 28% to have affected project completion to a great extent, 33% stated medium extent while 39% felt that the effect was only to a low extent. Influence of Legal opinion and issues on timely completion of project was stated by 10% of the respondents to be to greater extent, 37% medium extent, 49% stated low extent while 4% stated to no extent. Procedural or project issues influenced timely completion of project to a great extent as indicated by 28% of the respondents, 33% indicated medium extent while 39% indicated low extent.

7.2.2 Funds Disbursement Procedures

Table 4: Funds Disbursement Procedures

Institutional Factors	Very high	High	Medium	Low
Funds Disbursement Procedures				
Disbursement method	10(8%)	63(53%)	47(39%)	
Bank accounts	10(8%)	62(52%)	44(37%)	4(3%)
Currency conversion	22(18%)	58(48%)	40(34%)	
Auditing	7(5%)	62(52%)	40(33%)	6(5%)
Project management requirements	28(23%)	57(48%)	35(29%)	

Table 4 indicate that Majority of the study respondents (53%) ranked Disbursement method high among the factors that affect timely completion of projects, 8% ranked this factor as very high while 39% ranked the factor as moderate. Banks accounts were ranked very high by 8%, high by 52%, medium by 37% while 3% stated low. Currency conversion as a factor that influence timely completion of projects was ranked very high by 18%, high by 48% and medium by 34%. Auditing as a factor that influence timely completion of projects was ranked very high by 5%, high by 52%, medium by 33% and low by 5% of the respondents. Project management requirements as a factor that influence timely completion of projects was ranked very high by 23%, high by 48% and medium by 29% of the respondents.

7.2.3 Procurement Procedures

Table 5: Procurement Procedures

Institutional Factors	Very high	High	Medium	Low	Very Low
Procurement Procedures					
Tying Aid	12(10%)	60(50%)	40(33%)	6(5%)	2(2%)
Bidding and contracting procedures	20(17%)	65(54%)	35(29%)		
Timing of disbursements	24(20%)	39(35%)	35(25%)	10(8%)	12(10%)

Table 5 indicate that Tying Aid was ranked very high by 10%, high by 50%, medium by 33%, low by 5% and very low by 2%. Bidding and contracting procedures as a factor that influence timely completion of projects was ranked very high by 17%, high by 54% and medium by 29%. Timing of disbursements as a factor that influence timely completion of projects was ranked very high by 20%, high by 35%, medium by 25%, low by 8% and very low by 10% of the respondents

7.2.4 Government procedures and practices

Table 6: Government procedures and practices

Institutional Factors	Very high	High	Medium	Low	Very Low
Government procedures and practices					
Approvals	29(24%)	39(33%)	47(39%)	5(4%)	
Shortage of staff	15(23%)	57(48%)	47(39%)	1(1%)	
Reporting and auditing	19(16%)	57(48%)	44(37%)		
Project management	3(3%)	64(53%)	42(35%)	4(3%)	7 (6%)
Banking procedures	15(12%)	52(43%)	33(28%)	1(1%)	19(16%)

Table 6 indicate that Approvals were ranked very high by 24%, high by 33%, medium by 39% and low by 4%. Shortage of staff as a factor that influence timely completion of projects was ranked very high by 23%, high by 48% and medium by 39% and very low by 1%. Reporting and auditing as a factor that influence timely completion of projects was ranked very high by 16%, high by 48% and medium by 37%. Project management as a factor that influences timely completion of projects was ranked very high by 3%, high by 53% medium by 35%, low by 3% and very low by 6% of the respondents. Banking procedures as a factor that influence timely completion of projects was ranked very high by 12%, high by 43% medium by 28%, low by 1% and very low by 16% of the respondents

7.3 Inferential Analysis

Inferential analysis is utilized in this study to determine if there is a relationship between an intervention and an outcome, as well as the strength of that relationship. The inferential statistics analysis aimed to reach conclusions that extend beyond the immediate data alone between the independent variables in this study. The study conducted inferential analysis to establish the relationship between the independent variables and the dependent variable of which involved a coefficient of determination and a multiple regression analysis.

The independent variables in this study included: Condition precedent by the financing institution, funds disbursement procedures, procurement procedures and government procedures and practices while the dependent variable was timely completion of projects.

7.3.1 Coefficient of Determination

The coefficient of determination is a measure of how well a statistical model is likely to predict future outcomes. The coefficient of determination, r^2 is the square of the sample correlation coefficient between outcomes and predicted values. As such it explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (timely completion of infrastructure projects) that is explained by all the four independent variables (Condition precedent by the financing institution, funds disbursement procedures, procurement procedures and government procedures and practices).

Table 7: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the estimate
1	0.792(a)	.627	.303	.125

Predictors (a): (Constant), Condition precedent by the financing institution, funds disbursement procedures, procurement procedures and government procedures and practices.

The four independent variables that were studied, explain only 62.7% of the completion of projects as represented by the R^2 . This therefore means the four independent variables only contribute about 62.7% to the completion of projects while other factors not studied in this research contribute 37.3% of the completion of projects. Therefore, further research should be conducted to investigate the other factors (37.3%) that influence project completion.

4.3.2 Multiple Regression Analysis

In addition, the researcher conducted a multiple regression analysis so as to determine the influence of institutional factors on completion of infrastructure projects financed by the World Bank and AfDB in the road sub-sector in Rwanda. Multiple regression is a statistical technique that allows us to predict a score of one variable on the basis of their scores on several other variables. The main purpose of multiple regressions is to learn more about the relationship between several independent or predictor variables and a dependent or criterion variable.

Table 8: Multiple regression analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.455	.231		1.973	.106
	Condition precedent by the financing institution	.016	.009	.444	1.815	.009
	Funds disbursement procedures	.182	.050	1.231	3.616	.036
	procurement procedures	.153	.017	1.075	3.159	.025
	government procedures and practices	.204	.240	.230	.850	.028

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

$$Y = 0.455 + 0.016 X_1 + 0.182 X_2 + 0.153 X_3 + 0.204 X_4$$

From the above regression equation it was revealed that holding all factors: condition precedent by the financing institution, funds disbursement procedures, procurement procedures and government procedures and practices to a constant zero, delays in timely completion of projects would be at 0.455. The data findings analyzed also shows that taking all other independent variables at zero, a unit increase in condition precedent by the financing institution would lead to increase in delays in timely completion of projects by a factor of 0.016, a unit increase funds disbursement procedures would lead to increase in delays timely completion of projects by a factor of 0.182, a unit increase in procurement procedures would lead to increase in delays timely completion of projects by a factor of 0.153 and unit increase in government procedures and practices would lead to increase in delays in timely completion of projects by a factor of 0.204.

These results infer that increased government procedures and practices contributes more to delays in timely completion of road projects, followed by funds disbursement procedures and procurement procedures , while condition precedent by the financing institution contributes the least to delays in timely completion of road projects.

8.1 Conclusion

The research identified the key institutional factors influencing timely completion of infrastructure projects in the road sub-sector funded by the World Bank. The study concludes that the construction stage cannot on its own, be the only determining stage to projects being delivered on time. It is important to note that: client briefing and quality of design have an impact on the speed of construction; and client commitment to the project success has an impact on the construction stage of a project. The contributions of the client towards the project success are in terms of commitment to an appropriate procurement system, such as the pre-qualification of contractors / sub-contractor / supplier i.e. sourcing for TQM contractors.

From the findings, the study established that procurement procedures in the government, poor procurement documentation and absences of procurement plans are highly significance in contributing to delays in timely completion of road construction projects in Rwanda. Further, lack of motivation of workers negatively influences productivity and has a resultant effect on project delivery time; economic aspects such as interest rates, inflation, materials and plant availability negatively affect construction project delivery time; the quality of management during construction such as the level of supervision, activity sequencing and ineffective coordination of resources negatively affects completion time of projects; site access conditions in term of congestion negatively affect projects delivery time; site ground conditions such as a high water table and underground discovery negatively affect construction speed, in turn affecting delivery time; lack of constructability review of designs negatively affects project delivery time. Other aspects include socio-political conditions such as strikes and riots negatively affect project delivery time; the quality of management during design has a great influence on construction processes and project delivery time, and physical environmental conditions such as rainfall, high and low temperatures negatively affect delivery time of projects.

The study deduces that the management style employed in the delivery of the project does significantly influence project delivery time. The following factors are good indicators of the effect of management style on project delivery: setting time lines; specifying specific goals people are to achieve, and providing specific direction. The economic policies do significantly influence project delivery time. The factors that strongly support this this statement are: insolvencies and bankruptcy of either the client or the contractor; a lack of materials and equipment; trade / operative availability; supervision / management of staff availability, and the indirect impact of interest rates / inflation.

8.2 Recommendation

From the findings and conclusions, for a project to be successful there must be an improved appreciation of the role of project management within projects, and this role must be placed within the context of a wider project alongside other outside criteria and long-term expectations.

The study also recommends that integrating technology into project management process could be one of the best ways that contribute to project success. When team members see their test results and work progress immediately, they are more likely to be interested and motivated towards the outcome.

There should be stringent monitoring and evaluation at all stages of project implementation including concept and design stages, thorough project feasibility studies, formulation of policies to minimize political interference in the project life cycle, monitoring of procurement process, adequate and proper design of projects, proper specialization of duties, tasks and responsibilities, transparency and accountability of workers, proper financial planning and capacity building for staff.

This study further makes the following recommendations that will enhance timely completion of road construction projects in Rwanda.

World Bank and government to streamline procurement procedures, Ensure government counterpart funds are available upfront, Adopt contract watch mechanisms to ensure satisfactory completion of contracts. Contract management should be done from the time of drawing of contracts, signing and to the execution of the contract. Projects coordinators to be empowered to make take decisions as they are the key project implementers, Hold frequent procurement and financial management and disbursement clinics for project teams to build capacity. This should be specific and targeted. The Bank teams to work closely with the implementing agencies for clarity on the procurement documentation requirements with the aim of reducing the back and forth communication which causes delays. The government to reduce the number of reviews required for documentation before approval especially where there is no value add. Electronic systems can be introduced capture information and made available to anyone interested in viewing the status of documentation without physically having the documentation. Development partners to harmonize their approval and reporting requirements at the inception of the projects to avoid complexities during the implementation of the project.

8.3 Area for further study

This study gave attention to the key institutional factors that influence timely completion of infrastructure projects in the road sub-sector funded by the World Bank. The study could not exhaustively cover all these factors and therefore there is need for more research in this area.

The study recommends the inclusion of additional players in the sector namely, the government officials in the ministries of finance and transport as these were not reached due to time constraints as well as limited resources.

The study also recommends research in the involvement of the private sector in financing infrastructure projects through public private partnerships.

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