

Effect of Project Planning Process on Performance of Electricity Projects in Rwanda; A Case of Electricity Access Rollout Program (EARP)

Fred Ukwishaka¹, Dr. Patrick Mulyungi²

^{1,2}Jomo Kenyatta University of Agriculture and Technology, Kigali-Rwanda

Abstract: Planning is often cited as the most critical process of the management functions in determining the overall project performance. One of the main reasons of project failure in developing countries is lack of effective planning processes. At the start of the EDPRS 1 period in 2008, one of the main issues in the Rwandan energy sector was poor access to energy. Government then set ambitious targets to significantly increase the number of connections and identified the need for a dedicated roll out program to accelerate this electrification drive. The Electricity Access Rollout Program (EARP) was established in 2009 with a target of increasing electricity access connections from 130,000 (6%) to 350,000 (16%) by the end of 2012 with emphasis on connecting social infrastructures (100% of health facilities, 100% administrative offices, and 50% schools). However, by June 2014 EARP had not achieved its EDPRS 1 targets in respect of connecting social infrastructures; by then 56% of health centers, 57% of administrative units and 36% of schools had been connected by 2012. The study sought to assess the effect of project planning process on performance of electricity projects in Rwanda; with special focus on Electricity Access Roll out Program (EARP), specifically the study sought to assess the effect of Estimating resources, scope definition risk planning on EARP performance. The researcher used descriptive research; the target population for the study was forty six project staff of EARP. Since the target population of the study was a small number, the researcher preferred to use a census by considering the total population as sample. The researcher concluded a strong relationship between resources estimation and performance of Electricity Access Rollout Program as their p-value (0.006) is statistically significant at 5% level of significance. Furthermore; there is a significant relationship between defining scope and performance of EARP because their p-value (0.000) is statistically significant at 5% level of significance and there is also a strong correlation between risk planning and performance of Electricity Access Rollout Program. The researcher also concluded that the main reasons behind the failure of Electricity Access Rollout Program to connect off grid solutions to health centers, administrative offices and schools were: Most of the EARP project implementing team members (95.7%) did not participate in preparation of the project charter/ prospectus of (EARP); while 91.3% of EARP team did not refer to the project charter during the implementation of the project. EARP did not recruit the team responsible for implementation of off grid solutions and did not procure materials for off grid solutions. While EARP increased households connected to grid electricity they failed to connect health centers, schools and administrative offices using off grid solutions; the M&E team did not report the non-implementation of off-grid solutions. The researcher came up with the following recommendations: the project owners should involve the project implementation team in the preparation of the project charter so as to ensure the project implementing team understands well all components of the project; The project implementing team should always refer to the project charter during the implementation of the project and the M&E team should also read and understand all components of the project in order to alert the implementation team on what activities that are behind schedule.

Keywords: Project, Project planning process, Performance of Electricity projects

1. Introduction

All-over the world, planning is often cited as the most critical process of the management functions in determining the overall project performance. And it is also considered the most important and critical phase to the success of an organization in meeting its goal and objectives. Project performance is defined as the ability to complete the project according to desired specifications, within the specified budget, the promised time schedule, while keeping the customer and stakeholders happy. Greater project planning processes improves the overall project performance. Project planning defines project activities that will be performed; the products that will be produced, and describes how these activities will be accomplished and managed. It defines each major task, estimates the time, resources and cost required, and provides a framework for management review and control. It contains a set of plans which will help through execution and closure phases of the project (Harvey, 2012). The plans, which are done during this phase, will help the project managers to manage time, cost, quality, risk and related issues. It will also help the project team to deliver the project on time. For the effectiveness of project success

these processes should be properly planned. The result of the project plan will be an approved, comprehensive document that allows a project team to begin and complete the work necessary to achieve the project goals and objectives. The project plan addresses how the project team will manage the project elements. It provides a high level of confidence in the project team's ability to meet the scope, timing, cost, and quality requirements by addressing all aspects of the project (Aladwami, 2012).

2. Statement of the Problem

Nowadays, Rwanda is facing a host of project management challenges, especially in electricity generation and grid extension projects. The poor performance of project (cost overrun, time delay, quality deficiency) is rooted either in selection, planning, execution or control phase of the project and other factors. One of the main reasons of project failure is lack of effective planning processes. Similarly, some of the planning processes are neglected in Rwandan projects, and the execution of the project is often started without developing project plan (Godfrey, 2015). At the start of the EDPRS 1 period in 2008, one of the main issues in the

Volume 6 Issue 10, October 2017

www.ijsr.net

Licensed Under Creative Commons Attribution CC BY

energy sector was poor access to energy. Government then set ambitious targets to significantly increase the number of connections and identified the need for a dedicated roll out program to accelerate this electrification drive. The Electricity Access Rollout Program (EARP) was established to accomplish and drive this plan. The EARP was launched in 2009 with a target of increasing electricity access connections from 130,000 (6%) in 2009 to 350,000 (16%) by the end of 2012 with emphasis on connecting 100% of health facilities (53% on grid and 47% off grid), 100% of administrative offices (55% on grid and 45% off grid) and 50% of schools (26% of Secondary Schools and 3% of Primary schools were supposed to be connected using off grid solutions).

According to the Auditor General’s report of May, 2015 on EARP performance, “the program managed to achieve the EDPRS 1 target in respect of households by registering 359,143 cumulative household connections throughout the country by 2012. However, EARP did not meet its EDPRS 1 targets in respect to giving access to health and administrative centers and schools. Only 56% of health centers, 57% of administrative units and 36% of schools had been connected by 2012. By 30th June 2014 which is the time the program performance audit was carried out, the sub-project known as Energy Small and Medium Enterprises (ESME) which is responsible for implementing off grid solutions had not yet started working. By then, there was no detailed plan developed by EARP showing how the 22 % connection rate for off-grid customers will be achieved by

2017/2018. There is a high likelihood that the envisaged project objective of promoting off-grid access to 22% of households located away from the grid will be realized by the target date of 2017/2018”. Given the above situation; the poor planning process of EARP has led to poor performance as regards to connecting social infrastructures using off-grid solutions. Therefore, the study sought to assess why EARP failed to achieve its EDPRS target of connecting social infrastructures using off-grid solutions.

3. Objectives of the Study

The general objective of this study was to assess the effect of project planning process on performance of electricity projects in Rwanda;

Specific objectives

The specific objectives of this study were:

- 1) To examine the effect of estimating resources on performance of Electricity Access Rollout Program
- 2) To assess the effect of scope definition on performance of Electricity Access Rollout Program
- 3) To analyze the effect of risk planning on performance of Electricity Access Rollout Program

4. Conceptual framework

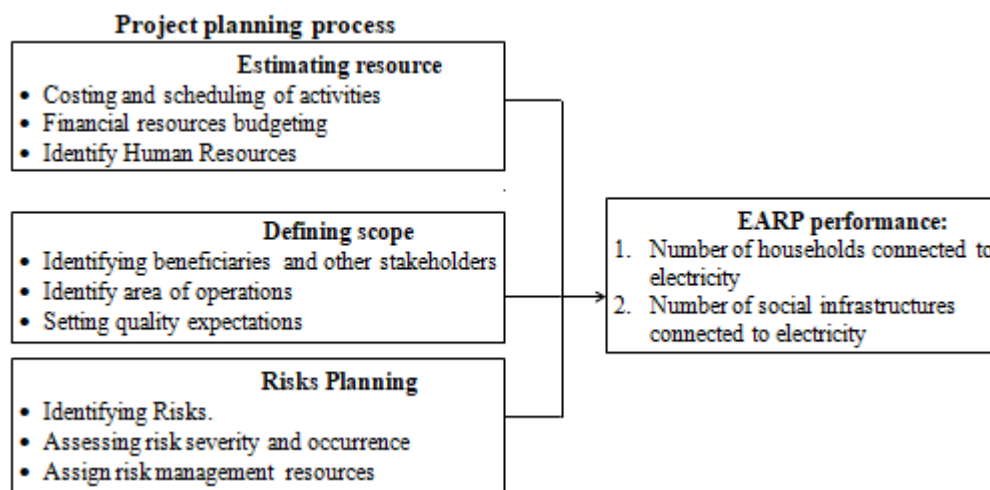


Figure 1: Conceptual framework of the study

5. Methodology

- **Research Design:** The researcher used descriptive research design where quantitative and qualitative methods of data collection and analysis were used.
- **Target Population:** The target population of this study was forty six project staff (employees) of Electricity Access Rollout Program.
- **Sample Size:** Since the target population of the study is a small number, the researcher preferred to use a census by considering the total population as sample.

- **Data Collection Instruments:** The primary data were collected through interviews and questionnaires.

6. Research findings

6.1 Effect of estimating resource on performance of Electricity Access Rollout Program

This section analyzes the project planning process, its effects on performance of Electricity Access Rollout Program and

the relationship between project planning factors and Electricity Access Rollout Program performance.

Table 1: Estimation of financial resources that were needed to perform each task

| | Frequency | Percentage | Cumulative Percentage |
|--------------|-----------|------------|-----------------------|
| SA | 28 | 60.9 | 60.9 |
| A | 18 | 39.1 | 100 |
| Total | 46 | 100 | |

Source: Field Data (2017)

The results in Table 1 show that 60.9% of respondents have strongly agreed that all financial resources that were needed to perform each task from start to completion have been well estimated while 39.1% of respondents agreed that all financial resources that were needed to perform each task from start to completion have been well estimated. The research findings also revealed that a total percentage of 100 confirmed that all financial resources that were needed to perform each task from start to completion have been well estimated.

Table 2: Putting in Place a well Detailed Work breakdown structure

| | Frequency | Percentage | Cumulative Percentage |
|--------------|-----------|------------|-----------------------|
| SA | 6 | 13 | 13 |
| A | 17 | 37 | 50 |
| N | 23 | 50 | 100 |
| Total | 46 | 100 | |

Source: Field Data (2017)

The results in Table above show that 13% of all respondents strongly agreed that during the planning process of Electricity Access Rollout Program a well detailed work breakdown structure has been put in place, 37% of all respondents agreed that during the planning process of Electricity Access Rollout Program, a well detailed work breakdown structure has been put in place while only 50% of respondents have been neutral on this statement.

Table 3: Estimation of human resources that were needed to perform all tasks of project

| | Frequency | Percentage | Cumulative Percentage |
|--------------|-----------|------------|-----------------------|
| A | 17 | 37 | 37 |
| N | 8 | 17.4 | 54.3 |
| SD | 11 | 23.9 | 78.3 |
| D | 10 | 21.7 | 100 |
| Total | 46 | 100 | |

Source: Field Data (2017)

According to the information from table above, 37% of all respondents agreed that all human resources that were needed to perform all tasks of project from start to end have been well identified, 23.9 % of all respondents strongly disagreed that all human resources that were needed to perform all tasks of project from start to end have been well identified; 17.4 % of all respondents were neutral on this statement while only 21.7 % of all respondents disagreed that all human resources that were needed to perform all tasks of project from start to end have been well identified. Therefore; there is a significant effect between estimation of human resources and performance of Electricity projects.

Table 4: Use of appropriate techniques for costing and scheduling of activities

| | Frequency | Percentage | Cumulative Percentage |
|--------------|-----------|------------|-----------------------|
| SA | 11 | 23.9 | 23.9 |
| A | 6 | 13 | 37 |
| N | 20 | 43.5 | 80.4 |
| D | 9 | 19.6 | 100 |
| Total | 46 | 100 | |

Source: Field Data

The findings in Table 4 revealed that 43.5% of respondents were neutral that costing and scheduling of activities has been done using appropriate estimation techniques, while 23.9% of all respondents strongly agreed that costing and scheduling of activities has been done using appropriate estimation techniques, 19.6% of all respondents disagree that costing and scheduling of activities has been done using appropriate estimation techniques while only 13% of all respondents were agree to this statement. Therefore there is positive effect between costing and scheduling of activities and performance of electricity projects in Rwanda.

Table 5: Effect of resources estimation on performance of EARP

| | N | Mean | Std. Deviation |
|---|----|--------|----------------|
| Estimation of all financial resources that were needed | 46 | 1.3913 | 0.49344 |
| Putting in place a well detailed work breakdown structure | 46 | 2.3696 | 0.71051 |
| Identification of all human resources that were needed | 46 | 3.3043 | 1.19014 |
| Costing and scheduling | 46 | 2.8261 | 1.4024 |

Source: Field Data (2017)

According to findings in Table 5; the mean values for the first statement is 1.39 which is approximately equal to the code of Strongly Agree, the second statement is 2.36 is approximately equal to code of Agree level, the third and the fourth means are 3.3 and 2.8 respectively which are rounded off to 3 the code for Neutral. The standard deviation for the first statement is less than 0.5 meaning that respondents' answers were not far different from the mean, in other words; their views to the statement were relatively homogeneous/ similar to each other. On the other hand the standard deviation for the second; the third and fourth statements are above 0.5 meaning that respondents' answers on these statements were far different from the mean, in other words, their answers to the statement were heterogeneous.

Table 6: Correlation between resources estimations and EARP performance

| | | Resources estimation | EARP Performance |
|----------------------|---------------------|----------------------|------------------|
| Resources estimation | Pearson Correlation | 1 | .699** |
| | Sig. (2-tailed) | | 0 |
| | N | 46 | 46 |
| EARP performance | Pearson Correlation | .699** | 1 |
| | Sig. (2-tailed) | 0 | |
| | N | 46 | 46 |

Source: Field Data (2017)

According to findings in the Table6 above, the correlation between resource estimations and EARP performance was at the rate of 0.699 mean that resources estimation influences the performance of EARP at 69.9%. Therefore, the researcher concluded a strong relationship between resources estimation and EARP performance. By considering the level of significance which is 0.05, there is a significant relationship between resources estimation and EARP performance as their p-value (0.000) is statistically significant at 5% level of significance.

6.2 The effect of scope definition on performance of Electricity Access Rollout Program

Table 7: Identification of beneficiaries and other stakeholders

| | Frequency | Percent | Cumulative Percent |
|-------|-----------|---------|--------------------|
| SA | 20 | 43.5 | 43.5 |
| A | 26 | 56.5 | 100 |
| Total | 46 | 100 | |

Source: Field Data (2017)

The results in Table7 above show that 56.5% of respondents strongly agree that during EARP planning process, beneficiaries and other stakeholders have been well identified while 43.5% of respondents agree that beneficiaries and other stakeholders have been well identified.

Table 8: Understanding the interests of different stakeholders and their involvement

| | Frequency | Percent | Cumulative Percent |
|-------|-----------|---------|--------------------|
| SA | 14 | 30.4 | 30.4 |
| A | 30 | 65.2 | 95.7 |
| N | 2 | 4.3 | 100 |
| Total | 46 | 100 | |

Source: Field Data (2017)

The findings in Table8 revealed that 65.2% of the respondents agreed that the interest of different stakeholders have been understood during EARP planning process, 30.4% strongly agreed that the interest of different stakeholders have been understood during EARP planning process while 4.3% of all respondents were neutral on this statement.

Table 9: Identification of areas of operations during EARP planning process

| | Frequency | Percentage | Cumulative Percentage |
|-------|-----------|------------|-----------------------|
| SA | 15 | 32.6 | 32.6 |
| A | 25 | 54.3 | 87 |
| N | 6 | 13 | 100 |
| Total | 46 | 100 | |

Source: Field Data (2017)

The findings in Table 9 revealed that 54.3% of respondents agreed that the areas of operations have been well identified during EARP planning process, 32.6% of respondents strongly agreed that the areas of operations have been well identified during EARP planning process while 13% of all respondents were neutral to this statement.

Table 10: Clarification of quality expectations during EARP planning process

| | Frequency | Percentage | Cumulative Percentage |
|-------|-----------|------------|-----------------------|
| A | 16 | 34.8 | 34.8 |
| N | 10 | 21.7 | 56.5 |
| D | 20 | 43.5 | 100 |
| Total | 46 | 100 | |

Source: Field Data (2017)

Based on the above findings in Table 10; the researcher find out that, during EARP planning process, the quality expectation have been set and clarified at a disagree level according to 43.5% of all respondents. 34.8% of all respondents reported that the quality expectation have been set and clarified at agree level during the EARP planning process while 21.7% of all respondents confirmed that the quality expectation have been set and clarified at a neutral level.

Table 11: Descriptive statistics on defining Scope

| | N | Mean | Std. Deviation |
|---|----|--------|----------------|
| Beneficiaries and other stakeholders | 46 | 1.5652 | 0.50121 |
| The interests of different stakeholders | 46 | 1.7391 | 0.53478 |
| The area of operations | 46 | 1.8043 | 0.65386 |
| The quality expectation | 46 | 3.5217 | 1.36201 |

Source: Field Data (2017)

From Table above, the mean values for the first, second and third statements are 1.56; 1.73 and 1.80 respectively which are rounded off to 2 the code for agree. This means that in general respondent agreed that during EARP planning process, beneficiaries and other stakeholders have been well identified, the interest of different stakeholders and their involvement and the area of operations has been well identified and the last mean value is 3.5 which is rounded off to 4 the code for strongly disagree to mean that during EARP planning process, the quality expectation have been set and clarified respondent. The standard deviation for the first and second statements are less than 0.5 meaning that respondents' answers were not far different from the mean, in other words; their views to the statements were relatively homogeneous/similar to each other. On the other hand the standard deviation for the third and the fourth statements are above 0.5 meaning that respondents' answers on these statements were far different from the mean, in other words, their answers to the statement were heterogeneous.

Table 12: Correlation between Defining scope and performance of EARP

| | | Defining scope | EARP performance |
|------------------|---------------------|----------------|------------------|
| Defining scope | Pearson Correlation | 1 | .642** |
| | Sig. (2-tailed) | | 0 |
| | N | 46 | 46 |
| EARP performance | Pearson Correlation | .642** | 1 |
| | Sig. (2-tailed) | 0 | |
| | N | 46 | 46 |

Source: Field Data (2017)

The Table 12 revealed that, the results of correlation between defining scope and performance of EARP was at 0.

642 meaning that defining scope affect performance of EARPat the level of 64.2% which prove the strong relationship between defining scope and EARP Performance. If the researcher considers the level of significance which is 0.05, there is therefore a significant relationship between defining scope and performance of EARP because their p-value (0.000) is statistically significant at 5% level of significance.

6.3 The effect of risk planning on performance of Electricity Access Rollout Program

Table 13: Identification of all known and unknown risks associated with the program

| | Frequency | Percentage | Cumulative Percentage |
|--------------|-----------|------------|-----------------------|
| SA | 21 | 45.7 | 45.7 |
| A | 20 | 43.5 | 89.1 |
| N | 5 | 10.9 | 100 |
| Total | 46 | 100 | |

Source: Field Data (2017)

According to the information from Table 13; 45.7% of all respondents strongly agree that during EARP planning process, all known and unknown risks associated with the program have been well identified, 43.5% of all respondents agree that during EARP planning process, all known and unknown risks associated with the program have been well identified. The research findings also revealed that only 10.9% of all respondents were neutral to this statement.

Table 14: Assessment of risks in terms of severity of impact, likelihood of occurrence and controllability

| | Frequency | Percentage | Cumulative Percentage |
|--------------|-----------|------------|-----------------------|
| SA | 25 | 54.3 | 54.3 |
| A | 19 | 41.3 | 95.7 |
| D | 2 | 4.3 | 100 |
| Total | 46 | 100 | |

Source: Field Data (2017)

The findings in Table 14 revealed that 54.3% of all respondents strong agree that during the EARP planning process the risks in terms of severity of impact, likelihood of occurrence and controllability have been well assessed, 41.3% of all respondents agree that during the EARP planning process the risks in terms of severity of impact, likelihood of occurrence and controllability have been well assessed while 4.3% of all respondents disagree that during the EARP planning process the risks in terms of severity of impact, likelihood of occurrence and controllability have been well assessed.

Table 15: Putting in place the risk management resources

| | Frequency | Percentage | Cumulative Percentage |
|--------------|-----------|------------|-----------------------|
| SA | 15 | 32.6 | 32.6 |
| A | 26 | 56.5 | 89.1 |
| N | 2 | 4.3 | 93.5 |
| D | 3 | 6.5 | 100 |
| Total | 46 | 100 | |

Source: Field Data (2017)

According to the research findings in the Table; 56.5% of all respondents agree that during EARP planning process, risk management resources have been put in place, 32.6% of respondents strong agree that risk management resources

have been put in place, 6.5 % of all respondents while only 4.3 % of all respondents were neutral to this statement.

Table 16: Putting in place a risk mitigation plan

| | Frequency | Percentage | Cumulative Percentage |
|--------------|-----------|------------|-----------------------|
| SA | 20 | 43.5 | 43.5 |
| A | 25 | 54.3 | 97.8 |
| N | 1 | 2.2 | 100 |
| Total | 46 | 100 | |

Source: Field Data (2017)

Based on the findings in Table 16; the researcher find out that 54.3 % of all respondents agree that during EARP planning process a risk mitigation plan has been put in place, 43.5% of all respondents strong agree that a risk mitigation plan has been put in place while only 2.2% of all respondents were neutral on the statement

Table 17: Descriptive statistics on risk planning

| | N | Mean | Std. Deviation |
|--------------------------------|----|--------|----------------|
| All known and unknown risks | 46 | 1.6522 | 0.67387 |
| The risks in terms of severity | 46 | 1.587 | 0.88383 |
| Risk management resources | 46 | 1.913 | 0.98491 |
| A risk mitigation plan | 46 | 1.587 | 0.54062 |

Source: Field Data (2017)

The findings reveals that during EARP planning process, all known and unknown risks associated with the program have been identified, the risks in terms of severity of impact, likelihood of occurrence and controllability, risk management resources have be put in place and risk mitigation plan have been put in place at the means of 1.65; 1.58; 1.91 and 1.58 round of to the code of 2 of agree. Looking at results in the above table the standard deviations are great than 0.5 far different to the mean.

Table 18: Correlation between risk planning and EARP performance

| | | Risk planning | EARP performance |
|------------------|---------------------|---------------|------------------|
| Risk planning | Pearson Correlation | 1 | .675** |
| | Sig. (2-tailed) | | 0 |
| | N | 46 | 46 |
| EARP performance | Pearson Correlation | .675** | 1 |
| | Sig. (2-tailed) | 0 | |
| | N | 46 | 46 |

Source: Field Data (2017)

The results of correlation between risk planning and performance of EARP was at the rate of 0.675 meaning that risk planning affect performance of EARP at the level of 67.5%. Therefore there is a significant relationship between risk planning and performance of projects. On the other hand, by considering the level of significance which is 0.05, hence risk planning has a significant effect on the performance of projects because their p-value (0.000) is statistically significant at 5% level of significance hence a strong correlation between risk planning and performance of EARP.

6.4 Performance of Electricity Access Rollout Program

In order to assess the performance of Electricity Access Rollout Program, respondents were asked to give their

points of views on connecting households, health centers, schools and administrative offices.

Table19: Performance of Electricity Access Rollout Program

| | N | Mean Std. | Deviation |
|---|----|-----------|-----------|
| EARP increased household connected to electricity | 46 | 1.2391 | 0.43127 |
| EARP connected the health centers to off grid electricity | 46 | 4.4565 | 0.50361 |
| EARP connected the schools to off grid electricity | 46 | 4.4783 | 0.50505 |
| EARP connected administrative offices to off grid electricity | 46 | 4.3913 | 0.64904 |

Source: Field Data (2017)

From Table, the mean values for the second, third and fourth statements are 4.45; 4.47 and 4.39 respectively which are rounded off to 4 the code for strongly disagree. This means that in general respondents have strongly disagreed that EARP connected the health centers to off grid electricity, the schools and administrative offices were not connected to off grid electricity and the first mean value is 1.23 which is rounded off to 1 the code for strongly agree to mean that EARP increased household connected to electricity and completely failed to connect health centers, schools and administrative offices. The standard deviation for the first, second and third statements are less than or equal to 0.5 meaning that respondents' answers on these statements were not far different from the mean, in order words, their answers to the statement were homogenous.

6.4.1 Estimate parameters between estimating resources needed to perform tasks and project performance

Table 20: Model Summary

| Model | R | R Square | Adjusted R Square |
|-------|-------------------|----------|-------------------|
| 1 | .727 ^a | 0.528 | 0.495 |

- a. Predictors: (Constant), Independent variable
- b. Dependent variable: EAPR Project performance

Table 21: ANOVA^b

| Model | Sum of Squares | df | Mean Square | F | Sig. | |
|-------|----------------|-------|-------------|-------|--------|-------------------|
| 1 | Regression | 4.421 | 3 | 1.474 | 15.676 | .000 ^a |
| | Residual | 3.948 | 42 | 0.094 | | |
| | Total | 8.37 | 45 | | | |

- a. Dependent variable: EAPR Project performance
- b. Predictors: (Constant), Independent Variable

Table 22: Coefficients^a

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | |
|-------|-----------------------------|------------|---------------------------|-------|-------|-----|
| | B | Std. Error | Beta | | | |
| 1 | (Constant) | 0.129 | 0.208 | | 0.62 | 0.5 |
| | Independent variables | 0.564 | 0.133 | 0.645 | 4.251 | 0 |
| | | 0.101 | 0.139 | 0.117 | 0.723 | 0.5 |
| | | 0.106 | 0.057 | 0.217 | 1.872 | 0.1 |

Source: Field Data (2017)

According to the information from table above, if: Y= EAPR Project performance and X= project planning process (resources estimation, scope definition and risk planning) the positive coefficient of determination indicates that there is positive correlation between project planning process and project performance. The $\beta_1, \beta_2, \beta_3$ of EARP performance are 0.564; 0.101 and 0.106 with a statistically significant ($p = 0.000$). Therefore, the model equation derived was: $y = 0.129 + 0.564x_1 + 0.101x_2 + 0.106x_3 + e$. The positive coefficient further demonstrates that a 1% increase in the performance of project in term of household electricity is attributed to 0.564improvement in EARP performance and the high t-statistic value (4.251) indicates that the effect is statistically significant at 95% confidence level. An increase of 1% on the performance of project in terms of connecting electricity to households will increase the EARP performance given by 0.101 at the high t-statistic value(0.723) indicates the effect is statistically significant at 95% confidence level while a positive coefficient demonstrates a 1% increase in the performance of project in terms of connecting electricity to households is attributed to 0.106 improvement in EARP performance and the high t-statistic value (1.872) indicates the confidence level of 95%, the effect is statistically significant. This demonstrates that project performance exhibited in terms of project planning are exhibited and executed excellently.

6.4.2 Point of views of respondents in relation to failure of off grids solutions

Table 23: The reasons behind the failure of EARP to connect off grids solutions to health centers, administrative offices and schools

| Reasons | N | Mean | Std. Deviation |
|--|----|--------|----------------|
| EARP did not recruit the team responsible for implementation of off grid solutions and didn't procure materials for off grid solutions | 46 | 3.0435 | 1.39772 |
| EARP team did not refer to the project charter during the implementation of the project' activities and was not involved in preparation of project charter | 46 | 3.1522 | 1.42933 |
| The M&E Team did not report the non-implementation of off-grid solutions | 46 | 3.0435 | 1.33261 |

Source: Field Data (2017)

The findings revealed that the mean values for the first, second and third reasons are 3.04; 3.15 and 3.04 from the point of views respondents on the reasons behind the failure of EARP to connect off grids solutions to health centers, administrative offices and schools. This means the main reasons behind that failure are: EARP did not recruit the team responsible for implementation of off grid solutions and didn't procure materials for off grid solutions, EARP team did not refer to the project charter during the implementation of the project' activities and was not involved in preparation of project charter and finally the M&E team did not report the non-implementation of off-grid solution

7.1 Conclusions

According to the interpretation of collected and analyzed data during the course of this study; the researcher came up with the following conclusions:

The researcher concluded that the project implementing team did not refer to the project charter/ prospectus during the implementation process of activities of Electricity Access Rollout Program as it has been revealed by 91.3% of all respondents, the majority (78.3%) of the project team were not part of the planning team during the execution of project. The researcher concluded a strong relationship between resources estimation and performance of Electricity Access Rollout Program as their p-value (0.006) is statistically significant at 5% level of significance. Furthermore; there is a significant relationship between defining scope and performance of Electricity Access Rollout Program because their p-value (0.000) is statistically significant at 5% level of significance and there is also a strong correlation between risk planning and performance of Electricity Access Rollout Program.

The researcher also concluded that the main reasons behind the failure of Electricity Access Rollout Program to connect off grid solutions to health centers, administrative offices and schools were: The EARP project implementing team were not involved in preparation of Electricity Access Rollout Program (EARP). Electricity Access Rollout Program implementing team did not refer to the project charter during the implementation of the project and did not recruit the team responsible for implementation of off grid solutions. The team did not procure materials for off grid solutions, and the M&E team did not report the non-implementation of off-grid solutions.

7.2 Recommendations

After analysis and interpretation of data, the researcher came up with the following recommendations:

- 1) The project owners should involve the project implementation team in the preparation of the project charter so as to ensure the project implementing team understands well all components of the project
- 2) The project implementing team should always read and refer to the project charter during the implementation of the project' activities
- 3) The project monitoring and evaluation (M&E) team should also read and understand all components of the project in order to alert the implementation team on what activities those are behind schedule.

7.3 Areas for future studies

Based on the findings of this study, the researcher suggests that future studies to be carried out in the following areas:

Factors affecting success of electricity projects in Rwanda, Effect of monitoring and evaluation practices on performance of projects and impact of project team participation in elaboration of project charter on success of diverse projects.

References

- [1] Aladwami, A. (2012). IT project uncertainty, planning and success. An empirical investigation from Kuwait. *Journal of Information Technology*, 210-216.
- [2] Albert, L. (2013). Project Planning and Control (4th ed). *International Journal of Project Management*, 205-211.
- [3] Atkinson, R. (2009). Project management: Cost, time and quality, two best guesses and a phenomenon, it's time to accept other success criteria. *International Journal of Project Management*, 34- 39.
- [4] Chen, Z. (2007). *Managing the environment*. Gower Handbook of Project Management. Gower Publishing.
- [5] Dinsmore, P. (2013). *The AMA handbook of Project Management*. New York: AMACOM.
- [6] Donnelly, J. (2008). *Fundamentals of Management (10th ed)*. Chicago: Richard D.Irwin
- [7] Gerald, M. (2010). *Complete Project Methodology and Toolkit*. Taylor & Francis Group, LLC.
- [8] Gray, C. (2008). *Project Management: The Managerial Process. 4th ed*. Singapore: McGraw-Hill Education.
- [9] Godfrey. (2015). Effect of project planning process on performance of non-government organizations projects: A survey of compassion international Rwanda funded projects in Kigali city. *European Journal OF Business and Social Sciences*, 88-109.
- [10] Guru. (2008). Projects and their managements. *International Journal of Business and Management*, 58-66.
- [11] Harvey, A. (2002). *Practical Project Management tips, tactics and tools*. John & Wiley Sons, Inc.
- [12] Joseph, H. (2012). *Fundamentals of Project Management (4th ed)*. American Association of Management.
- [13] Kerzner, H. (2009). *A System Approach to Planning, Scheduling and Controlling*. John Wiley & Sons.
- [14] Martin, M. (2012). *Project Plannings as the primary management function*. Project Management Quarterly.
- [15] Par, K. (2011). *Project Management in Sweden and Ethiopian Potential improvements in Project Management methods*.
- [16] Rad, P. (2005). *Project planning techniques, Management concepts*. Vienna.
- [17] Robert, K. (2014). *Project Management Process Improvement*. Artech House Inc.
- [18] Slevin, D. (2009). The project implementation profile: new tool for project managers. *Project Management Journal*, 57-70.
- [19] Tekalign. (2014). *The role of project planning on performance of projects in Ethiopia*. Adis Abeba.