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# Effect of Project Managers' Skills on Performance of Government Construction Projects in Rwanda: A Case of Pfunda-Karongi Road Construction Project

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**Abstract:** ***Across the World; the rapid development of construction projects has effectively facilitated increase in road construction failures. Managers' skills and knowledge are found to be the major and most significant factors for the successful performance of any project. In Rwanda most of construction projects are commonly criticized for their delays, budget deviations and low product quality. In 2015; Rwanda Transport Development Agency declared that 51 % of road construction projects experience time, and cost overruns. Even if Rwanda has seen a significant rise in infrastructure development in the recent past years especially in the field of public infrastructure construction; most of road construction projects have failed to achieve their success due to lack of project managers' skills to cope with the increased risk and uncertainty in the construction industry. The general objective of this study was to assess the effect of project managers' skills on performance of government road construction projects in Rwanda. The study will focused on the skills of project managers and their effect on performance of government road construction project in western province of Rwanda in the districts of Rubavu, Rutsiro and Karongi and it considered the time frame between 2015 and 2017. The study used descriptive survey research design. Its target population equaled to 66 managers who are involved in the management of this Pfunda - Karongi road construction project. The study used questionnaires to collect first hand information. The researcher concluded a positive relationship between project managers' technical skills and performance of government construction projects in Rwanda since the results of correlation between project managers' technical skills and the performance of Pfunda-Karongi project was at 0. 713. The researcher furthermore concluded a significant relationship between project managers' human skills and performance of government construction projects in Rwanda as the results of correlation between project managers' human skills and the performance of Pfunda-Karongi project was at 0. 640. The study recommended that project managers' skills should be a key factor to consider when selecting the managers to manage a construction project since it requires skilled and experienced managers who are able to cope with a myriad of challenges and uncertainties associated with the road construction project. The researcher recommends to the government of Rwanda and the project owners to provide trainings for their project managers in order to upgrade their skills in managing construction projects since they are liable for uncontrollable factors. Finally; the project managers should continue and improve their ways of motivating their project staff, technicians and other employees involved in their projects since employee motivation has been seen as a key contributor to the performance of projects.***

**Keywords:** Project managers' skills, Performance of government road construction projects

## 1. Introduction

Managerial skills are ones of the performance factors for every project. Project managers must have the skills to help them for personnel management and technologies to ensure efficiency and effectiveness of activities under their supervision. On the other hands, managing construction projects is one of the most complex kinds of management. This is highlighted by the achievement of the builders of pyramids, the architects of ancient cities, the mason and craftsmen of Great Wall of China and other wonders of the World (Peter, 2011). However in whatever case is, the project manager is accountable for delivering project outputs. The project management literature found that project managers 'skills positively contribute to project performance. The studies of Besner and Hobbs (2008), Lester (2008); Zwikael and Globerson, 2004; Johnson et al., 2001; McManus, 2004) have shown that project managers' skills are considered to beamong project management critical success factors (CSFs). This means that the more the project managers are skilled, competent and experts in projects, the higher the level of project performance is.

## 2. Statement of the Problem

Across the World; the rapid development of construction projects has effectively facilitated increase in road construction failures (Kerzner, 2006). Zwikael (2008) found managers' skills and knowledge to be the major and most significant factors for the successful performance of any project. As suggested by Smidths (2011), lack of skilled and competent project managers at every stage of the project, always leads to a higher degree of risk associated with cost, time and quality overruns. In order to minimize and control these risks successfully, project managers have to develop and implement policies and strategies that may lead to project performance. In Rwanda like many other developing countries, most of construction projects are commonly criticized for their delays, budget deviations and low product quality (Rwanda Transport Development Agency, 2015).

In 2015; Rwanda Transport Development Agency declared that 51 % of road construction projects experience time, and cost overruns. These problems are largely due to the fact that project management is a complex activity which often leads to a high degree of uncertainty. That is particularly true in the construction industry since uncontrollable aspects, like meteorological conditions for instance, may result in significant changes in the execution of the project regarding

the original plan. Therefore, a very cautious management of several aspects is necessary for the performance of the project and this requires skilled, experts and competent project managers. Even if Rwanda has seen a significant rise in infrastructure development in the recent past years especially in the field of public infrastructure construction; most of road construction projects have failed to achieve their success due to the lack of project managers' skills to cope with the increased risk and uncertainty in the construction industry. Therefore this study seeks to analyze the effect of project managers 'skills on performance of government road construction projects in Rwanda.

## 3. Objectives of the Study

The general objective of this study was to assess the effect of project managers' skills on performance of government road construction projects in Rwanda.

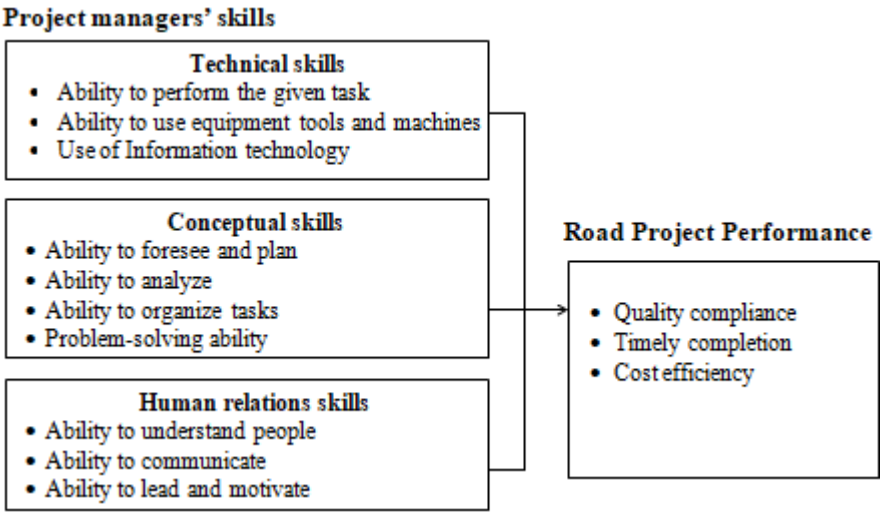
### 3.1 Specific objectives

1) To assess the effect of technical skills on performance of Pfunda-Karongi road construction project
2) To determine the effect of conceptual skills on performance of Pfunda-Karongi road construction project
3) To analyze the effect of human relations skills on performance of Pfunda-Karongi road construction project

### 3.2 Research questions

1) What is the effect of technical skills on performance of Pfunda-Karongi road construction project?
2) What is the effect of conceptual skills on performance of Pfunda-Karongi road construction project?
3) What is the effect of human relations skills on performance of Pfunda-Karongi road construction project?

## 4. Conceptual Framework




## 5. Methodology

- **Research Design**: This study adopted a descriptive research design
- **Target Population**: As the figures from the management of Pfunda - Karongi road construction project show, there are 66 managers who are involved in the management of this Pfunda - Karongi road construction project and they were the ones considered as target population of the present study
- **Sample size:** Because it wasn't easy to collect data from all people in the project as it was time consuming and costly the researcher used Yamane formula, to calculate the sample sizes: $n = \frac{N}{1+N(e)^2}$ .Where: n= sample size, N= target population, e= level of precision which is equal to 0.05 and confidence level is 95%. Using this formula n = 66/1+66 (0.05)2 = 56 respondents
- **Data processing and analysis:** The collected data were captured in Microsoft Excel, checked for completion and coded. Then data were analyzed quantitatively using percentages, frequencies and using linear regressions. Descriptive and inferential statistics were used to find out the impact of project managers' skills on performance of government road construction projects in Rwanda specifically in Pfunda-Karongi road construction project. Statistical Package for Social Scientists has been used to execute multiple linear regressions. The results were presented using tables for ease of understanding.

## 6. Research findings

### 6.1 Assessment of the effect of managers' technical skills on project performance

To assess the effect of project managers' technical skills on performance of Pfunda-Karongi road construction project, respondents were asked to highlight how project managers' technical skills affect performance of road construction project.

**Table 4.1:** Correlation between Technical skills and project performance

| | | Technical skills | Proje-performance |
|---|---|---|---|
| Technical skills | Pearson Correlation | 1 | .713** |
| | Sig. (2-tailed) | | .000 |
| | N | 56 | 56 |
| Project performance | Pearson Correlation | .713** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 56 | 56 |

**Source: Primary Data (2018)**

The findings in Table1 revealed that, the results of correlation between technical skills and the performance of Pfunda-Karongi project was at 0. 713 mean that technical skills were at the level of 71.3% which prove a significant relationship between technical skills and project performance. If the researcher considers the level of significance which is 0.05, there is therefore a significant relationship between them because their p-value (0.000) is statistically significant at 5% level of significance.

### 6.2 Determination of the effect of conceptual skills on performance of projects

**Table 2:** Correlation between managers' conceptual skills and project performance

| | | Managers' Conceptual skills | Project Performance |
|---|---|---|---|
| conceptual skills of managers | Pearson Correlation | 1 | .495** |
| | Sig. (2-tailed) | | .000 |
| | N | 56 | 56 |
| Proj perf | Pearson Correlation | .495** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 56 | 56 |

**Source: Primary Data (2018)**

The results of correlation between conceptual skills and the performance project were at the level of 49.5%. Therefore there is a significant relationship between conceptual skills of managers and performance of Pfunda-Karongi project. On the other hand, by considering the level of significance which is 0.05, hence the managers' conceptual skills have a significant effect on project performance because their p-value (0.000) is statistically significant at 5% level of significance hence a positive correlation between them.

### 6.3 Analysis of the effect of managers' human relations skills on performance of projects

**Table 3**: Correlation between Project Managers' Human Skills and project performance

| | | Human skills | Project Performance |
|---|---|---|---|
| Human skills | Pearson Correlation | 1 | .640** |
| | Sig. (2-tailed) | | .000 |
| | N | 56 | 56 |
| Proj perf | Pearson Correlation | .640** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 56 | 56 |

**Source: Primary Data (2018)**

According to findings in the above table, correlation between project managers' human skills and project performance was at the rate of 0. 640 mean that the relationship between project managers' human skills and project performance was at the level of 64%. Therefore, the researcher concluded a strong relationship between human skills and projects performance. By considering the level of significance which is 0.05, there is a significant relationship between human skills and projects performance as their p-value (0.000) is statistically significant at 5% level of significance.

**Table 4:** Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .909[a] | .827 | .817 | .300 |

**Source: Field Data (2018)**
a. Predictors: (Constant), Independent variables
b. Dependent variable: Project performance

**Table 5:** ANOVA[a]

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 22.317 | 3 | 7.439 | 82.929 | .000[b] |
| | Residual | 4.665 | 52 | .0.90 | | |
| | Total | 26.982 | 55 | | | |

**Source: Field Data (2018)**
a. Predictors: (Constant), Independent variables
b. Dependent variable: Project performance

**Table 6:** Coefficients[a]

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 0.452 | 0.24 | | 1.881 | 0.066 |
| | Independent variables | 0.463 | 0.042 | 0.964 | 11.066 | 0 |
| | | -0.035 | 0.089 | -0.05 | -0.398 | 0.692 |
| | | -0.025 | 0.115 | -0.028 | -0.218 | 0.828 |

**Source: Field Data (2018)**
a. Predictors: (Constant), Independent variables
b. Dependent variable: Project performance

According to the information from table above, if: Y= Project performance and X= Project managers' skills and performance of Pfunda-Karongi road construction project (Technical skills, Conceptual skills and Human skills). The positive coefficient of determination indicates that there is positive correlation between project managers 'skills and project performance. The $\beta_1$, $\beta_2$, $\beta_3$ of project performance are 0.463; -0.035 and -0.025 with a statistically significant ($p = 0.000$). Therefore, the model equation derived was: $y = 0.452 + 0.456x_1 - 0.035x_2 - 0.025x_3 + e$. The positive coefficient further demonstrates that a 1% increase in the performance of project in term of technical skills is attributed to 0.456 project managers' skills and the high t-statistic value (11.066) indicates the effect is statistically significant at 95% confidence level. An increase of 1% on the project performance in term of conceptual skills will decrease the project managers' skills given by -0.035 at the high t-statistic value (-.398) indicates the effect is differently significant at 95% confidence level while a negative coefficient demonstrates a 1% decrease on the project managers' skills in term of conceptual skills is attributed to -0.025 and the high t-statistic value (-.218) indicates the confidence level of 95% the effect is differently significant.

## 7. Conclusions and Recommendations

### 7.1 Conclusions

According to the first research objective; the researcher concluded a positive relationship between project managers' technical skills and performance of government construction projects in Rwanda since the results of correlation between project managers' technical skills and the performance of Pfunda-Karongi project was at 0. 713 meaning that project manager' technical skills influence the performance of government construction projects in Rwanda at the level of 71.3%. Then if the researcher considers the level of significance which is 0.05, there is therefore a significant relationship between project managers' technical skills and performance of government construction projects because their p-value (0.000) is statistically significant at 5% level of significance.

For the second research objective; the researcher concluded a significant relationship between project managers' conceptual skills and performance of government construction projects in Rwanda as the results of correlation between project managers' conceptual skills and the performance of Pfunda-Karongi project was at 0. 495 meaning that project manager' conceptual skills influence the performance of government construction projects in Rwanda at the level of 49.5 %. Then, by considering the level of significance which is 0.05, hence the managers' conceptual skills have a significant effect on performance of government construction projects because their p-value (0.000) is statistically significant at 5% level of significance hence a positive correlation between project managers' conceptual skills and performance of government construction projects in Rwanda.

For the third study objective; the researcher concluded a significant relationship between project managers' human skills and performance of government construction projects in Rwanda as the results of correlation between project managers' human skills and the performance of Pfunda-Karongi project was at 0. 640 meaning that project manager' human skills influence the performance of government construction projects in Rwanda at the level of 64.0 %. By considering the level of significance which is 0.05, there is a significant relationship between project managers' human skills and performance of government construction projects in Rwanda as their p-value (0.000) is statistically significant at 5% level of significance.

Finally, the researcher concluded that the delay of Pfunda-Karongi project was not based on the issues of project managers as it was proposed by the supervising firm rather the delay of project's activities was due to the fact that project management is a complex activity which often leads to a high degree of uncertainty and other uncontrollable factors. The researcher may link this project delay to several factors like meteorological conditions, delay of procurement process, delay of funds and scope creep among others.

### 7.2 Recommendations

The Study made the following recommendations based on its findings and conclusion:

The study recommended that project managers' skills should be a key factor to consider when selecting the managers to manage a construction project since it requires skilled and experienced managers who are able to cope with a myriad of challenges and uncertainties associated with the road construction project. The researcher recommends to the government of Rwanda and the project owners to provide trainings for their project managers in order to upgrade their skills in managing construction projects since they are liable for uncontrollable factors. Finally; the project managers should continue and improve their ways of motivating their project staff, technicians and other employees involved in their projects since employee motivation has been seen as a key contributor to the performance of projects.

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