



Cover Page



EFFECTS OF PROJECT RISK MANAGEMENT PRACTICES ON PROJECT PERFORMANCE: IN CASE OF SELECTED PROJECTS IN ETHIOPIA

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ABSTRACT

The main objective of this study is to examine the effects of project risk management practices on project performance in west Guji zone selected projects in Ethiopia. The researcher has employed both quantitative and qualitative research approach and descriptive and explanatory research design are used. After making the populations stratified based on the sectors/clients/, the researcher used simple random sampling to get sample from the strata. From non- probability sampling purposive sampling, convenience sampling and quota sampling has been used by the researcher for this research purpose. Purposive sampling had engaged to get relevant data from most appropriate individuals who have more experience and relation to the projects. Purposive sampling technique was used. The collected data were analyzed using descriptive and inferential analysis by using IBM SPSSv20 and STATA14/SE software's. The analysis of data accordingly shows project risk management practices have positive effect on project performance of the selected projects in the west guji zone. Qualitative risk analysis and quantitative risk analysis have no significant effect and only rarely practiced. Project risk monitoring has high level of positive effect while qualitative risk analysis has low effect followed by quantitative risk response. Depending up on the analysis and findings the researcher suggested some recommendation to the stakeholders and concerned bodies. The researcher recommends increasing project risk monitoring and to use scientific ways of planning and identification is will increase the performance of selected projects in the area. Moreover, another research can be applied by other scholars for the areas that are not included by this researcher.

Keywords: Project Risk Management, Project Risk Monitoring, Project Risk Management Plan, Project Risk Identification, Project Risk Response Plan.

1. INTRODUCTION

Project risk management is the process of identifying, analyzing and responding to any risk that arises over the life cycle of a project to help the project remain on track and meet its goal. Risk management isn't reactive only; it should be part of the planning process to figure out risk that might happen in the project and how to control that risk if it in fact occurs, (PMI, 2017). The process includes conducting risk management planning, risk identification, risk analysis, risk response planning, risk response implementation, and monitoring risk on a project. The objectives of project risk management are to increase the probability and/or impact of positive risks and to decrease the probability and/or impact of negative risks, in order to optimize the chances of project success (PMI 2017). Elements in PRM are Risk strategy which describes the general approach to managing risk on project. Roles and responsibilities indicates the lead, support, and risk management team members for each type of activity described in the risk management plan, and clarifies their responsibilities. Funding identifies the funds needed to perform activities related to Project Risk Management. Timing defines when and how often the Project Risk Management processes will be performed throughout the project life cycle, and establishes risk management activities for inclusion into the project schedule. Risk categories provide a means for grouping individual project risks. A common way to structure risk categories is with a risk breakdown structure (RBS), which is a hierarchical representation of potential sources of risk. (ibid).

2. Statement of the Problem

A statement by Mohammed depicted that Project risk management process shows a wide gap between theory and practice. The theory focuses on learning the techniques, planning methods, and formalities of project management while unintentionally overlook the nontraditional soft approach of management (Muhammed, 2020). This indicates that there is problem in application of project risk managements. The government of Ethiopia (GOE) has been working to enhance the capacity of Ethiopian domestic contractors (EDCs) over the past three decades. The most significant risk events namely, shortage of cash, inadequate planning, lack of access to foreign currency, delay in possession of site, frequent breakdown of equipment, delay in delivery of material and equipment, financial failure, inflation, delay in payments and poor commitment and coordination within the contractors' team.(Worku, et.al. 2021).

As evidence from Gudeta, (2018) in the projects taken as a sample, project risk management is not practiced to the level needed and gap is seen between what should be theoretically applied and what is being practiced in the projects. Research by Eshetu (2017)



Cover Page



found that the lack of joint risk management practices by stakeholders and shortage of knowledge on road construction risk management practices were the most common barriers, and in the life cycle of road projects, critical risks at the planning and design stages are mostly allocated to the client or consultant while at the construction stage a high percentage of critical risk is allocated to contractors. As of Firehiwot (2019) founded that Lack of suitable project management methodology and lack of project management practices are the major challenges that the organization faced off during the assessment. Contextual gap: many of the research were done on the effect of risk management practices on project performance, but still no research is done on west guji zone context projects while from the characteristics of project each project is different from the other in time, requirement, quality, scope and place.

West Guji Zone, despite of its enormous business activities center, and high economic area, only a few projects are being implemented. Project management of these projects has to be undertaken in an effective manner so that the stakeholders and society as a whole were benefitted from the project. Different risks are arising from different factors and it also results in society grievance due to delays. This paper identifies project risk management practices and the effects of project risk management practices on project performance in West Guji Zone selected projects.

3. Objectives of the Study

- i. To identify the project risk management practice implemented in West Guji Zone selected projects.
- ii. To examine the relationship between project risk management practices and project performance in West Guji zone selected projects.
- iii. To analyze effect of project risk management practices on performance of project in West Guji Zone selected projects.

4. Empirical Literature

According to Andualem (2019) the critical risks were mainly unforeseen site conditions, improper design, incomplete contract documents, inflation, lack of timely and poor contract administration. Juniorl and Carvalho (2015) suggested that adopting risk management practices has a significant positive impact on project success. Alsaadi and Norhayatizakuan (2021) suggest practicing risk management improve the performance of construction project significantly. Tahir and et.al (2019) concluded and the theory have been reinforced that an effective risk management system must comprise of a method of risk identification, a strategy for risk assessment and a mechanism for prioritizing risk response. Gitau (2019) concluded that risk prevention significantly affected project performance. (Voetsch et al., 2014) found that adequate resource allocation and staff training for project risk management are less pronounced than risk visibility in organizational policymaking. Teferi (2020) concluded that a complete understanding and identifying of risk factors could enable the practitioners to execute early responses to possible risks.

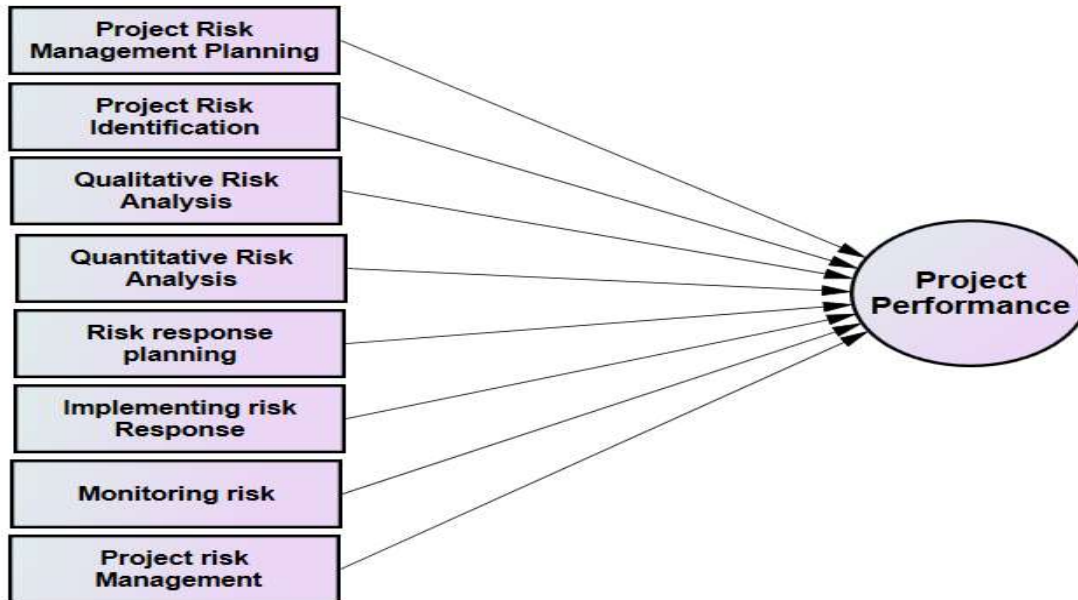
Yejimawork (2020) showed that in building constructions risk of cash flow shortage is most certain to likely happen with high negative impact on the projects, and risk of price inflation was almost certain and with moderate negative impact. Yisakor(2020) identified that Unplanned expenses, project delays, project failure, loss of profits, cost overgrowth are the major risk impacts identified while improper use of labor, materials scarcity, inadequate project accountability can be classified as the minor construction risk impacts identified in this work.



Cover Page



5. Conceptual Framework



6. Research Gap

Author	Study topic	Study findings	Study gaps
Owis Tahir (2019)	Effects of Risk Management Practices on Project Success in the Construction Industry of Pakistan	practicing risk management improve the performance of construction project significantly	It has contextual gap since it has been done in Pakistan
Darance&Veera (2017)	Effects of risk management practices on it project success	Risk identification practice has the highest influence on product performance and IT project success.	The research was conducted on IT projects. Out of Ethiopia
Peter Gitaw (2019)	Risk management practices and performance of projects in Nairobi city county, Kenya	The study concluded that risk prevention significantly affected project performance.	The research was conducted out of Ethiopian context
EshetuAdugna (2017)	A comparative study on risk management practices between international and local contractors in the Ethiopian roads construction industry	the lack of joint risk management practices by stakeholders and shortage of knowledge on road construction risk management practices were the most common barriers.	Comparative, methodological gap
AlemTeferi (2020)	Risk management in building construction projects in Addis Ababa	A complete understanding and identifying of risk factors could enable the practitioners to execute early responses to possible risks	Focused on risk identification only Contextual gap and conceptual gap
Gudeta Kuma (2018)	The Role of Project Risk Management Practices for Project Success: The Case of Projects in the Commercial Bank of Ethiopia	project risk management (proper risk identification) should be practiced throughout project life cycle and should involve project team members.	All the mentioned researches were done on projects with project managers, but this paper, on projects without managers.



Cover Page



7. RESEARCH METHODOLOGY

7.1 Research Design, approach and sample size

Both descriptive and explanatory research design was used in this paper. Research approach that the researcher used for this paper was both qualitative and quantitative approach. Workers under each contractor will also be targeted in the data collection. Total target population for this research are 561 from different sectors, contractors, project team, woreda administrators, west Guji construction office staff members and workers on the site.

The sampling techniques apply to this study was both probability and non - probability sampling techniques. From probability sampling, the researcher used stratified sampling and simple random sampling techniques for this study purpose. Since the projects in the study are heterogeneous, stratified method of sampling is best for the process of grouping the heterogeneous elements to homogenous.

7.2 Sample Size Determination

In order to get adequate representation from the total population, the sampling size was determined by applying Yamane's (1967) statistical formula.

$$n = \frac{N}{1 + N(e)^2}$$

$$n = \frac{N}{1 + N(e)^2} = \frac{561}{1 + 561(0.05)^2} = 233$$

7.3 Reliability

Table 1: Cronbach alpha value of variables

Variables	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	Result
PRMP	0.716	0.693	Reliable
PRI	0.704	0.701	Reliable
QLRA	0.722	0.724	Reliable
QTRA	0.754	0.763	Reliable
PRR	0.736	0.703	Reliable
IRR	0.718	0.699	Reliable
MPR	0.757	0.749	Reliable
PP	0.726	0.696	Reliable
Overall	0.823	0.830	Reliable

Source: author's own survey, 2022. Based on SPSS v 20. Result.

8. Spearman Correlation Analysis

Table 2: Spearman's correlation result of PRM practices

Spearman's Correlations									
Spearman's rho		PRMP	PRI	QLRA	QTRA	PRR	IRR	MPR	PP
PP	Correlation Coefficient	.636**	.638**	.297**	.040	.614**	.621**	.696**	1.000
	Sig. (2-tailed)	.000	.000	.000	.549	.000	.000	.000	.
**. Correlation is significant at the 0.01 level (2-tailed).									

Source: Computed by SPSS, Source: Author's Computation from own survey data, 2022

From the above correlation table it can be seen that there is moderate correlation between project risk management plan and project performance which have correlation coefficient of 0.636 and P value of 0.000. Project risk identification practices also have positive correlation with project performance.



Cover Page



DOI: <http://ijmer.in.doi/2023/12.02.06>

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9. Regression Diagnostics

Table3: Correlation coefficient result of the variables

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficient	T	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error				Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	-2.503	1.415		-1.769	.078	-5.292	.286		
PRMP	.194	.049	.204	3.959	.000	.097	.291	.922	1.085
PRI	.213	.059	.190	3.632	.000	.097	.328	.956	1.047
QLRA	.009	.036	.010	.237	.813	-.062	.080	.969	1.032
QTRA	.052	.038	.053	1.359	.176	-.023	.127	.935	1.070
PRR	.063	.051	.081	1.240	.216	-.037	.164	.939	1.065
IRR	.244	.055	.223	4.429	.000	.135	.352	.966	1.035
MPR	.409	.056	.383	7.354	.000	.299	.518	.947	1.055

Dependent Variable: PP

Source: coefficient statics from SPSS, v 20, 2022,

Based on our assumption there is no multicollinearity problem in variables. Also based up on Pearson's correlation coefficients, there is no existence of multicollinearity. The result from pearson's correlation shows that correlation is significant at the 0.01 level (2 tailed).

10. Test for model specification

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Table 4: Ramsey Reset test for omitted variables

Ho: Constant variance	
Variables: PP MPR PRI QLRA QTRA PRR IRR	
chi2(7) =	27.84
Prob> chi2 =	0.0002

Source: own survey 2022, Computed by Stata 14,

The model specification refers to the description of the process by which the dependent variables is generated independent variable. Thus, it encompasses the choice of independent and independent variables, as well as the functional form connecting the independent variable to the dependent.

11. Econometrics Analysis

Table 5: Regression results of PRM practices effect on PP calculated by STATA 14.

Source	SS	df	MS	Number of obs = 223
Model	2008.711	7	286.958715	F(7, 215) = 71.47
Residual	863.226217	215	4.01500566	Prob> F = 0.0000
Total	2871.93722	222	12.9366541	R-squared = 0.701
				Adj R-squared = 0.6896
				Root MSE = 2.0037

PP	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
PRMP	.1584267	.0510589	3.10	0.002	.0577867	.2590668
PRI	.223096	.058172	3.84	0.000	.1084355	.3377565



Cover Page



DOI: <http://ijmer.in.doi/2023/12.02.06>

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QLRA	.0039456	.0357375	0.11	0.912	-.0664951	.0743864	
QTRA	.0628412	.0380362	1.65	0.100	-.0121305	.1378129	
PRR	.1237385	.0546597	2.26	0.025	.0160009	.231476	
IRR	.2027428	.0574769	3.53	0.001	.0894525	.3160331	
MPR	.3673526	.0580141	6.33	0.000	.2530034	.4817019	
cons	-2.961138	1.416357	-2.09	0.038	-5.752862	-.1694139	

Source: Author's Computation from own survey data, 2022; STATA version 14

Accordingly, the result of the Multiple Linear Regression model revealed that the overall significance and fitness of the model can be checked with the value of Prop>F=0.0000 shows that the model result is statistically significant at less than the percent significance level. This suggests that the model has strong explanatory power. The result of R-squared is equal to 0.701 which implies that 69.9% of changes in performance of the selected projects are explained by the explanatory variables included in the model. Among the 8 explanatory variables hypothesized in the Multiple Linear Regression model, seven (7) explanatory variables namely: monitoring project risk response is found to be significantly affecting the projects preformed in the study area at appropriate significance level.

From this regression analysis of the variable the estimated linear function for this study was presented as:

Performance of construction building (pp) $Y_i = 2.96 + 0.158PRMP + 0.223RI + 0.003QLRA + 0.062QTRA + 0.123PRR + 0.202IRR + 0.367MPR$

12. Hypothesis Testing

Table 6: hypothesis decision resulted from P value

	Hypothesis	P value	Decision
1	There is statistically significant relationship between planning project risk management and project performance	0.002	Accept Ha
2	. There is statistically significant relationship between project risk identification and performance.	0.000	Accept Ha
3	There is no statistically significant relationship between quantitative project risk analysis and project performance.	0.912	Accept H0
4	There is no statistically significant relationship between qualitative project risk analysis and project performance.	0.100	Accept H0
5	There is statistically significant relationship between risk response planning and project performance.	0.025	Accept Ha
6	There is statistically significant relationship between implementing risk response and project performance.	0.001	Accept Ha
7	There is statistically significant relationship between monitoring risk and project performance.	0.000	Accept Ha
8	There is statistically significant relationship between project risk management practices and project performance.	0.038	Accept Ha

Source: Authors own computation by SPSS v 20.

13. Conclusion

This section concludes the finding of the study. The conclusion arrived in this section is based on the research questions set in Chapter One of the study and answered by the analysis made in Chapter Four. The summary given above in this chapter also concentrates the description made in the chapter to facilitate conclusion of the findings given below. Projects play an important role in development of country. This is true only when the performance of projects is performed at a given time at appropriate quality and at balanced cost. To perform efficiently and effectively the project risk management is more important determinant. Appropriate project risk management practices generate proper performance of projects. And when project risk management practices are not accurate there exist risks unsolved and results in project delay, cost overrun and stakeholders are unsatisfied. The problem of the society also could not be answered. Accurate performance of project performance is the result of project risk management activities. Project risk response monitoring has significant relationship with the performance of selected projects. This indicate that with more project risk monitoring, planning and risk response implementing results in decrease in project risk and increase in project performance. Project risk qualitative



Cover Page



and quantitative analysis have only low effect on project performance of the selected projects in the study area and for this matter they are the least seldom practiced in the selected projects.

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