

Project Risk Management, Project Resilience And Project Efficiency. A Case Of Health CBOS In Busoga Region

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Abstract : *This study examined the relationship between project risk management, project resilience and project efficiency among health CBOs projects in Busoga Region. The study used a cross-sectional research design and a quantitative research approach. The sample size constituted 136 health CBOs from 214 located in the 10 districts of Busoga Region. Respondents comprised project manager, project monitoring and evaluation officer and a beneficiary. A structured questionnaire was used to obtain data. Data was analyzed using SPSS v.25 from where descriptive and inferential statistics were used to interpret findings. Mediation was tested using Med-Graph system. The study found a positive relationship between project risk management and project efficiency. The subcomponents of risk mitigation and risk assessment unlike risk monitoring and control were also found positively correlated with project efficiency. A positive relationship was ascertained between project resilience and project efficiency. Further, project adaptability, project competitiveness and project value subcomponents of project resilience were positively correlated with project efficiency. There was a positive relationship between project risk management and project resilience. Risk mitigation and risk monitoring and control unlike risk mitigation were positively correlated with project resilience. Both project risk management and project resilience were significant predictors of project efficiency. Moreover, the study found that project resilience is the better predictor of project efficiency. Further, it was ascertained that project resilience fully mediates the relationship between project risk management and project efficiency. The study concludes that as policy makers, managers and practitioners seek increase the rate of technical, financial and operational efficiency, they should bear in mind that project risk management and project resilience are critical factors which should be taken for granted. Moreover, drawing more attention towards project resilience will result in more project efficiency intensity. The study recommends; project adaptability, project competitiveness, risk assessment and risk mitigation.*

Keywords: Project, Risk Management, Project Resilience And Project Efficiency

Background to the Study

While this is the case, many Community Based Organizations (CBOs) across the globe are failing to meet the efficiency required (Christopher, Komunda, et al., 2022). Notable, Emmrich and Kleinschmidt (2017) conducted a survey of 824 CBOs in Asia and African states where they found out that 41% of CBOs implement most activities in supplementary budgets while 80% worldwide close shortly after their opening because they are unable to meet operational expenses, hence less efficient (Ntirandekura & Friday, 2022). KPMG Monitoring and Evaluation Report (2014) had earlier revealed that more than half the number of CBOs (59.5%) within sub Saharan Africa encounters administrative cost overruns (Lydia et al., 2023).

Similarly, in Uganda, many projects are not efficient. Uganda National NGO-Forum (2018) indicates that 5 in every 20 model beneficiaries of health CBOs do not have the necessary technical and operational ability to efficiently execute programs as planned (Christopher, Moses, et al., 2022). In addition, out of a total of 23,071 health CBO projects executed between 2016 and 2017, 49.4% do not have basic health equipment tools to render appropriate health services. Particularly, in Busoga Region a Joint Technical Monitoring survey by (Moses & Nancy, 2024) conducted indicates that 25% of health projects in Jinja do not have the necessary competent health personnel to deliver services to the communities within the region. Over 45.3% of projects were found to be using faulty test kits to treat communities with malaria and other sexually transmitted diseases. In Iganga District, over 70% of projects are implemented on supplementary budget as with 37% of health CBO projects in Mayuge District. In Kamuli District, over 18% of the projects by Bread of Life and Water Aid were not implemented on time as a result of resources scarcity as a result of advancing such resources to other projects (Faridah et al., 2023).

Dynamic Capability Theory emanates from the identified gaps within the Resource Based View whose overriding source of competitive advantage are resources which are valuable, rare, imperfectly imitable and non-substitutable in what is presented in the VRIN acronym (Ntirandekura et al., 2022). Initiated by Teece and Pisano (1994), DCT emphasize that competitive advantage among projects which serves as a throughput to efficiency can be attained when the project is ready and able to adopt to change. The theory reveals that every organization cannot predict how the project will be in the future, but instead, it needs to be able to undergo a successful rapid and unpredictable change (Ivan et al., 2023).

DCT implies that project risk management and project resilience are necessary in stimulating project efficiency (Souza *et al.*, 2017). Projects which implement risk management are able to reduce on unexpected and costly surprises which would compromise effective allocation of resources and efficiency. On the other hand, (Deus, 2023) indicates project resilience enables projects to adopt to change and exercise perseverance to uphold efficiency standards. Project resilience enables projects to implement systems for effective monitoring and assimilation of change before they affect the operations of the project (Faith, Kalikola, Kazaara, et al., 2023).

There has been evidence of poor risk management and lack of resilience among some health CBOs in Busoga Region. Another case is Orphans Community Based Organization (OCBO) in Luuka district, which overspent its budget, and when the donor funding was stopped, the project could not continue and ended abruptly culminating in project failure (Christopher, Komunda, et al., 2022). It is against this background that the researcher thought fit to investigate the extent to which project risk management and project resilience influence project efficiency in Uganda's context.

Statement of the Problem

Projects are working towards achieving project efficiency as a mechanism of guaranteeing continuity and creating a lasting impact to the communities in which they operate (Edgar & Moses, 2023b). However, most health CBO projects within Busoga region suffer from inefficiency as evidenced by inadequate technical, operational and allocative efficiency to the extent that over 45.3% of projects were found with faulty test kits to treat communities with malaria and other sexually transmitted diseases (Edgar & Moses, 2023a). Some of the health projects have limited personnel and equipment such as testing kit, thermometer and surgical blade to appropriately render health services to the communities (Ntirandekura & Friday, 2022). In some cases, some project activities have not been executed while those that are implemented have been executed under deficit budgets. Over 57% of projects are implemented on supplementary budgets. It is anticipated that these inefficiencies may be attributed to inadequate project risk management and lack of project resilience (Benard, 2023), which prompted the researcher to seek further inquiry.

Specific Objectives

1. To examine the relationship between project risk management and project efficiency among health CBOs in Busoga Region
2. To examine the relationship between project resilience and project efficiency among health CBOs in Busoga Region
3. To examine the relationship between project risk management and project resilience among health CBOs in Busoga Region
4. To examine the mediation effect of project resilience in the relationship between project risk management and project efficiency among health CBOs in Busoga Region

Methodology

This study used a cross-sectional research design along with a quantitative research approach. Cross-sectional research design involves gathering data about a particular subject just once, or in snapshot. This research design was adopted because of its potential to facilitate fast conclusions and recommendations to the research phenomenon (Nafiu et al., 2017). On the other hand, the quantitative research approach was adopted because its potential to provide clear, precise and easily understandable findings in relation to the cause and effect relationship between variables (Jallow et al., 2021). The population for the study comprised 214 health CBOs projects located in the 10 districts of Busoga Region (Uganda Registrars Services Bureau (Jallow et al., 2022). The health activities of the CBOs were considered as a one project. The sample size constituted 136 health CBOs which were determined based on the Krejcie and Morgan (1970) table for selecting samples from a given population (Jallow et al., 2021). This study applied stratified random sampling technique which involves the categorization of the population into different strata before applying simple random sampling. In the same way, the researcher categorized health CBOs according to district, forming a total of 10 strata (Jallow et al., 2022). The study applied stratified random sampling because it puts into consideration the heterogeneity of the population which guarantees selecting a sample which is representative enough (Olanrewaju et al., 2021a). This study used a self-administered questionnaire instrument. The instrument contained only closed-ended questions which were gauged based on a 6-Point Likert scale. The points on this scale were defined as 1-strongly disagree, 2-disagree, 3-somewhat disagree, 4-somewhat agree, 5-agree and 6-strongly agree (Rasheed et al., 2022). The justification for applying this scale was to ensure that respondents are availed with numerous options from which they could easily make a choice. In addition, the scale was used because it provides the extent of agreement among respondents with the different items (Olanrewaju et al., 2021a). On the other hand, the questionnaire was used to easily facilitate the collection of data from the large and highly dispersed sample (Creswell, 2014). Project risk management was conceptualized using constructs of risk assessment, risk mitigation and risk monitoring and control (Faith, Kalikola, Ariyo, et al., 2023).

Some of the examples of the items used herein include; "Our project has a written policy regarding risk assessment" and "In this project, identified risks are quantified" to assess risk assessment; "Our project focuses on developing strategies for only risks which cause potential threat" and "Our project accepts some of the identified risks" to evaluate risk mitigation (Nafiu et al., 2016). Items such as "Our project conducts regular risk reviews throughout its lifecycle" and "Our project continuously crosschecks the effectiveness of risk strategies, policies and practices" were used to assess risk monitoring and control.

Data obtained from the field was sorted, cleaned and edited accordingly. The data will then be captured in SPSS v.25 for analysis (Nelson et al., 2022). The researcher carried out parametric tests including normality, linearity, independence, kurtosis, skewness, confirmatory factor analysis to ensure that the data was good enough. The researcher then retrieved descriptive and inferential statistics to facilitate data interpretation. The descriptive statistics used herein were mainly frequency tables which presented demographic characteristics in relation to respondents and projects. Inferential statistics of correlation and regression analysis were used to address objectives of the study. Correlation Analysis examined the nature of the relationships between variables while regression was used to check the predictability of variables. To test the mediation effect, a MedGraph system and hierarchical regression analysis were used

RESULTS

Table 1: Descriptive statistics for observed data

Variable/Construct	Mean	Std. Deviation	n
Project Risk Management	2.97	0.63	104
Risk Assessment	2.82	1.05	104
Risk Mitigation	3.14	0.91	104
Risk Monitoring	3.03	1.06	104
Project Resilience	3.16	0.66	104
Project Adaptability	3.24	0.95	104
Project Competitiveness	3.15	0.93	104
Project Value	3.09	0.82	104
Project Efficiency	3.03	0.62	104
Technical Efficiency	3.09	0.79	104
Operational Efficiency	3.07	0.85	104
Financial Efficiency	2.92	0.84	104
<i>Note: Values rounded to two decimal place s</i>			

Source: Primary Data

From the descriptive statistics (Table 1) the mean values (μ) of 2.97, 3.16 and 3.03 were obtained in relation to project risk management, project resilience and project efficiency. The results further revealed SD (δ) of .63 in relation to project risk management, .66 in relation to project resilience while project efficiency obtained SD=.62. In relation to project risk management, the results implied that most respondents disagreed with most of the presented Items. These responses were also subject to low variation ($SD < 1$) among respondents who expressed otherwise. These results implied surety among responses. Therefore, these results portrayed that most health CBO projects in Busoga Sub region are not effectively managing project related risks.

The mean responses in regards to project resilience indicate that most respondents were uncertain with most Items. In essence, the results indicated that respondents were skeptical to reveal whether CBOs within Busoga Region were resilient or not. Perhaps, this could be due to the fact that the study solicited views from project managers and M & E officers who are primarily responsible for ensuring that projects are resilient enough. It is therefore more likely that CBOs within Busoga Sub region are not resilient as they should be. In the same way, the responses obtained in relation to project efficiency indicate that most respondents were uncertain. This depicts bias among responses where they declined from truly providing the status of project efficiency. This could be explained by the fact that respondents presumed that by expressing that the projects are not efficient, they would have exposed their failure since their contribution is critical in achieving project efficiency. On that note, it could be concluded that CBOs within Busoga sub region are not efficient; technically; financially; and operationally.

Table 2: Correlation Analysis

Variable/Construct	1	2	3	4	5	6	7	8	9
Project Risk Management	1								
Risk Assessment	.74**	1							
Risk Mitigation	.58**	-0.030	1						
Risk Monitoring and Control	.47**	0.010	.29**	1					
Project Resilience	.47**	0.09	.54**	.41**	1				
Project Adaptability	.42**	.15**	.41**	.29**	.72**	1			
Project Competitiveness	.29**	-0.080	.49**	.34**	.74**	.34**	1		
Project Value	.33**	.12*	.31**	.29**	.75**	.28**	.34**	1	
Project Efficiency	.39**	0.09	.41**	.37**	.56**	.41**	.39**	.47**	1

Note: n=104, *. p<.05 (2-tailed), **. p<.01 (2-tailed), values rounded to nearest two decimal places

Source: Primary Data

Project Risk Management and Project Efficiency

Results in Table 2 revealed a significant and positive relationship between project risk management and project efficiency ($r=.39$, $p<.05$). This implied that enhancing project risk management is associated with a likely improvement in project efficiency (Olanrewaju et al., 2021b). To understand this further, the study explored how the constructs under project risk management associate with project efficiency. From the results, a significant and positive relationship was obtained between risk mitigation and project efficiency ($r=.41$, $p<.01$). This implied that improving risk mitigation in project risk management is likely to facilitate improved project efficiency (Maiga et al., 2021). Furthermore, the results obtained that there exists a significant and positive relationship between risk monitoring and control and project efficiency ($r=.37$, $p<.01$) (Nafiu et al., 2012). In this case, the results implied that an improvement in risk monitoring and control as part of project risk management is necessary in enhancing project efficiency. More so, the results obtained that risk assessment is not significant, much as positively related with project efficiency ($r=.09$). This result signified that the improving risk mitigation may not necessarily translate into project efficiency.

Project Resilience and Project Efficiency

Correlation results indicated in Table 2 reveal a significant and positive relationship between project resilience and project efficiency ($r=.56$, $p<0.01$). The results implied that improvement in project resilience is likely to result improve project efficiency. Project resilience has subcomponents of project adaptability, project competitiveness and project value. The results obtained a significant and positive relationship between project adaptability and project efficiency ($r=.41$, $p<0.01$). This implied that enhancement in project adaptability would result in enhancement in project efficiency. Furthermore, the results indicate a significant and positive relationship between project competitiveness and project efficiency ($r=.39$, $p<0.01$) (Christopher, Komunda, et al., 2022). This means that improvement in project competitiveness is associated with improved project efficiency. More so, the results revealed a positive significant relationship between project value and project efficiency ($r=.47$, $p<0.01$). The results signified that improvement of project value is associated with improvement in project efficiency.

Project Risk Management and Project Resilience

Table 2 indicates a significant and positive relationship between project risk management and project resilience ($r=.47$, $p<0.01$). The results implied that enhancing project risk management would translate in improved project resilience. To further comprehend this relationship, the researcher explored how the constructs under project risk management associate with project resilience. Results obtained a significant and positive relationship between risk mitigation and project resilience ($r=.54$, $p<0.01$) (Frank et al., 2023). In essence, the results implied that improvement in risk mitigation would lead to improvement in project resilience. Also, the study ascertained a significant and positive relationship between risk monitoring and control and project resilience ($r=.41$, $p<0.01$). This implied that improvement in risk monitoring and control as part of project risk management would stimulate improvement in project efficiency. On the other hand, the study obtained that risk assessment is not significant, although it positively relates with project resilience ($r=.090$, $p>0.01$). Analysis of these results implied that improvement in risk assessment may not necessarily translate in visible enhancement in project resilience.

Table 3: Multiple Regression Analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	S.E.B	Beta			Tolerance	V.I.F
1	(Constant)	1.129	0.164		6.887	0.000		
	Project Risk Management	0.164	0.052	0.168	3.138	0.002	0.776	1.288
	Project Resilience	0.448	0.050	0.477	8.901	0.000	0.776	1.288
		R	r²	Adj. r²	F	Sig.	Durbin-Watson	
		.576 ^a	0.332	0.327	74.384	.000 ^b	1.741	

Note: n=104, Dep Var.=Project Efficiency; Cooks Distance=0≤C≤1; Mahal. Distance=0≤M≤50

Source: Primary Data

Regression model (Table 3) indicates that $F=74.384$, $Sig<.05$ in relation to project risk monitoring and project resilience. These statistics implied that there exists a statistically significant predictability between project risk management, project resilience and project efficiency. The results further obtained that the Variance Inflation Factor (VIF) corresponding to each project risk management and project resilience were all less than 5. Tolerance was also greater than 0.1 for the predicting variables. These

statistics implied that the data was free from multi-collinearity issues. Therefore, it is conclusive that the model was fit enough to be based on to make conclusions and recommendations.

The model revealed that project risk management and project resilience predict up to 33.2% of the variance in project efficiency (Adj. $r^2=.332$). In addition, the results obtained standardized coefficients of $\beta=.168$, $t=3.138$, $p<.05$ in relation to project risk management. These results implied that project risk management is a significant predictor of the variances in project efficiency. Project resilience standardized coefficients revealed $\beta=.477$, $t=8.901$, $p<.05$. The results implied that project resilience is a significant predictor of the variance in project efficiency. Furthermore, the beta values indicated that a unit change in project risk management is associated with .168 change in project efficiency. On the other hand, the results revealed that a unit change in project resilience is associated with .477 change in project efficiency. Henceforth, the results signified that the better predictor of project efficiency is project resilience.

Testing of Mediation

This study used hierarchical multiple regression model and Med-Graph to examine the mediation effect of project resilience in the relationship between project risk management and project efficiency. The hierarchical regression was used to test the conditions for mediation which as proposed by Baron and Kenny (1986). Med-graph was used to ascertain the type of mediation, Sobel z-value and corresponding p-value for the mediation.

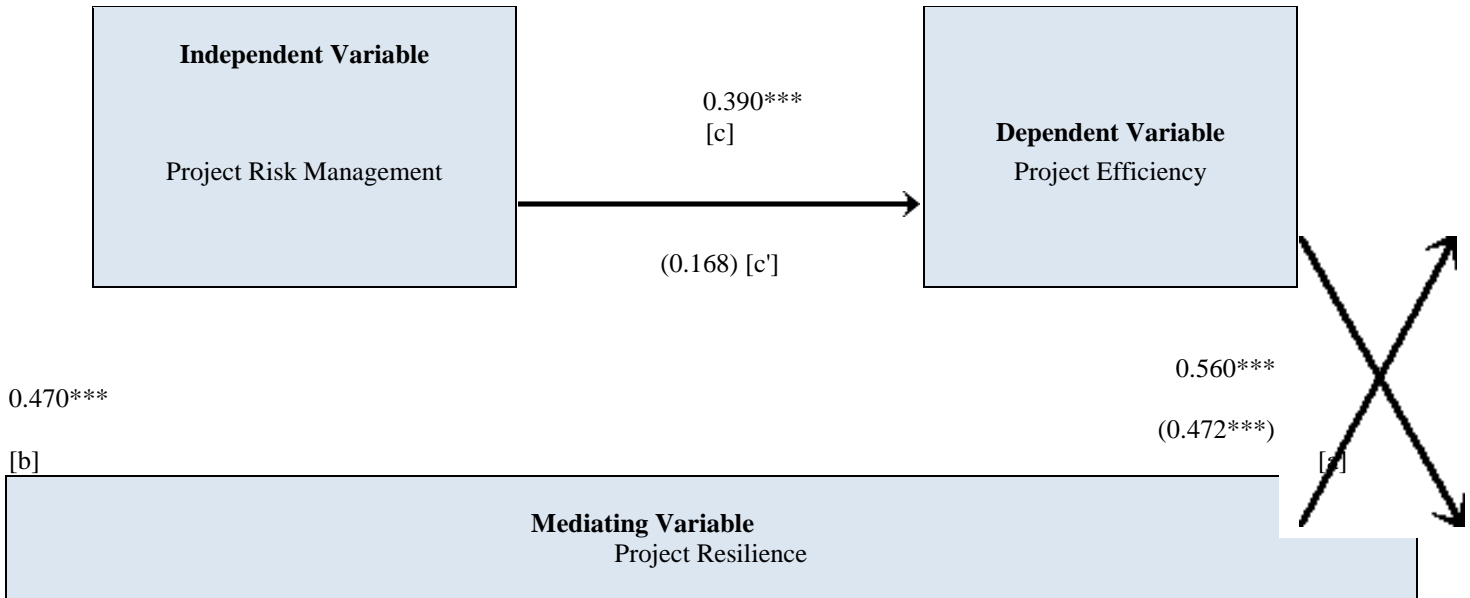
Table 4: Hierarchical Regression Analysis

Model		Unstandardized Coefficients		Standardized Coefficients	F	R	R2	Adj. R2	ΔR2	ΔF	Part	Sig.
		B	Std. Error	Beta								
1	(Constant)	2.94	0.16		1.18	.13 ^a	0.02	0.00	0.02	0.32		.32 ^b
	Location	-0.01	0.02	-0.04							-0.04	
	Duration	0.06	0.05	0.06							0.06	
	Source of funds	-0.02	0.05	-0.02							-0.02	
	Beneficiaries	0.07	0.06	0.06							0.06	
2	(Constant)	1.82	0.21		12.00	.41 ^b	0.17	0.15	0.15	0.00		.00 ^c
	Location	-0.01	0.01	-0.03							-0.03	
	Duration	0.04	0.05	0.05							0.03	
	Source of Funds	-0.02	0.05	-0.03							-0.03	
	Beneficiaries	0.08	0.06	0.07							0.07	
	Project Risk Management	0.39	0.05	0.39 ^{**}							0.39	
3	(Constant)	1.07	0.21		25.43	.58 ^c	0.34	0.33	0.17	0.00		.00 ^d
	Location	-0.00	0.01	-0.02							-0.02	
	Duration	0.03	0.04	0.03							0.03	
	Source of Funds	-0.02	0.04	-0.03							-0.03	
	Beneficiaries	0.07	0.05	0.06							0.06	

Project Risk Management	0.17	0.05	0.17**							0.15
Project Resilience	0.442	0.051	0.470**							0.413

Note: n=104; Dep Var=Project Efficiency; Statistics rounded to two decimal places

Source: Primary Data



Type of mediation=Full; n=104; Direct=.390; Indirect=.122; *, *** significance at p<.05, p<0.001; Sobel zvalue=6.338104; p=0.000001

Figure 1: Med-Graph testing mediation effect of project resilience in the relationship between project risk management and project efficiency

Results indicated a statistically significant relationship between project risk management and project resilience exists (Figure 1; $r=.470$, $p<.05$). The results further indicate a statistically significant relationship between project risk management and project efficiency (Table 4, Model 1: $r^2=.18$, $F=12.00$, $p\text{-value}<0.05$). More so, the results ascertained that there exists a statistically significant relationship between project resilience and project efficiency (Table 4; Model 3: $r^2=.34$, $F=25.43$, $p\text{-value}<0.05$). From the results in Table 4, it is revealed that the total effect of project risk management becomes smaller with the inclusion of the mediator (Model 2; Beta=.39 to Beta=.17). These results imply that the hypothesized mediation exists.

Furthermore, the results in Figure 1 indicate that the relationship between project risk management and project efficiency reduces from significance ($r=.39$, $p<.001$) to non-significance ($r=.168$, $p>.05$) when analyzed along with project resilience. These results signify full mediation effect of project resilience in the relationship between project risk management and project efficiency.

Conclusion

As policy makers, managers and practitioners seek increase the rate of technical, financial and operational efficiency, our research provides critical propositions. First, it confirms that project risk management is one of the key ascendants that require special attention. According to our investigation, it is of great importance to increase risk mitigation and monitoring and control as part of project risk management framework if projects are to attain technical, operational and financial efficiency. Similarly, it is unearthed that projects must be resilient if they are to become efficient. This resilience would necessitate projects to exhibit competitiveness, value and adaptability.

Importantly, our study puts it that project resilience significance as far as attaining project efficiency is concerned supersedes that of project risk management. Therefore, this study provides assurance that if the ultimate strategy for project efficiency is making sure that the project can easily adapt to change, increase competitiveness and value. Furthermore, it is emphasized herein that project risk management facilitates improvement in project resilience. Hence, as projects seek project risk management practices, they should

bear in mind that every initiative is more likely enhance project resilience. Additionally, it is ascertained that project resilience is a full mediator of the relationship that exists between project risk management and project efficiency. This further assures how project resilience is critical in project efficiency matters.

This study has important policy, managerial and theoretical implications. In regards to policy, it informs policy makers to formulate policies which uplift both project risk management and project resilience. On the other hand, it urges that management should neither take project risk management and project resilience for granted if indeed, projects are to become efficient. Moreover, it sends signals to management to focus mainly on project resilience to fasten the achievement of project efficiency objective. In theory, this study confirms the relevance of Dynamic Capabilities Theory in informing the relationship between project risk management, project resilience and project efficiency. It is clearly unveiled herein that a process such as project risk management will facilitate the minimization of uncertainties which will make the project resilient enough to achieve efficiency in the unforeseeable future.

Recommendations

Project adaptability should be intensified among health projects by engaging in activities which increase the reputation of the project, exercising flexibility within policies, processes and procedures to match the environmental demands in addition to ensuring that all dealings of the project are in line with the regulatory standards.

Projects should boost competitiveness in the face of different stakeholders to increase support and trust exhibited by stakeholders towards the project. It is therefore critical that before objectives of any project are developed, different stakeholders are consulted and involved such that projects can operate on objectives which meet interests of different stakeholders. In addition, projects should increase efficiency in executing programs and activities as this will increase confidence among stakeholders to make the project competitive.

Risk assessment should be intensified within projects. Project implementers should carry out a risk survey such that all potential risks are identified, categorized according to their severance, quantified and ranked according to their intensity. This will guide management in formulating proactive risk strategies to minimize project risks.

Risk mitigation should be increased throughout the project tenure. Managers must ensure that all identified risks are communicated to the different parties, consult from different stakeholders regarding the best risk strategies and ensure timely implementation of risk strategies.

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