

Assessment of Monitoring and Evaluation of Capital Projects in Hadiya Zone, South Ethiopia

Mekoro Arega Gashe

College of Business And Economic, University Wachemo University Ethiopia
HV3M+368, Hosaena, Ethiopia

Email: mekoroarega12@gmail.com

ABSTRACT

This study was conducted to assess the factors affecting monitoring and evaluation of capital projects in selected woredas of Hadiya Zone, south Ethiopia. The main sources of data were both primary and secondary sources of data. Primary data were collected through questionnaires administered to the selected respondents and interview. The sampling technique employed for this research was purposive sampling to select sample Woredas. The binary logistic regression analysis was used by applying stata 14 software. Results of the study revealed that there is a positive and significant relationship between effective monitoring and evaluation of governmental capital project and availability of budget. Regression analysis revealed that a unit change in availability of budget increased evaluation of capital projects in government organization 1.409 units. Correlation analysis showed that there was a positive and significant relationship between stakeholder participations and evaluation of capital projects in government organization. Regression analysis revealed that a unit change in stakeholder participations increases effectiveness of evaluation of capital projects by 1.192 units. The study revealed that there was a positive and significant relationship between selection tools and techniques or methods and evaluation of capital projects. Regression analysis showed that a unit change in selection tools and techniques/methods increased monitoring and evaluation of capital projects by 2.721 units. Regression analysis showed that a unit change in skill level of experts increased effectiveness of monitoring and evaluation of capital projects by 2.688 units. The skill level of experts significantly affects the capital projects performance of monitoring and evaluation system. The planning, monitoring and evaluation core work process of governmental organization's capital projects in each sector should employ experienced and skilled human power so that they can put in place effective monitoring and evaluation system.

Keywords: Binary logistic regression, Capital Project, Monitoring and Evaluation, and Hadiya Zone



INTRODUCTION

Monitoring and evaluation is one of the tools that help project managers know when plans are going according to plan and when conditions change. They provide the management with information to make decisions in regard to the project. Monitoring and evaluation (M&E) is useful to all projects, big or small, because it helps in identifying project areas that are on target and those that need to be adjusted or replaced. Different types of projects require different types of M&E systems (Shapiro 2011).

According to World Bank (2011), Monitoring is a continuous function that uses systematic collection of data on specified indicators to provide management and the main stakeholders of an on-going development intervention with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds. Simply stated, monitoring refers to collecting information on a project regularly and analysing it to find out how it is progressing. In doing this we collect quantitative data, hard facts such as how much money and time has been spent on a project; and also qualitative data such as whether the project is progressing smoothly and whether participants are satisfied with the project.

In developing countries like Ethiopia, huge amount of money is spent on different public investment programs and projects to meet developmental needs. In this respect, mega and small capital projects are under construction at federal, regional, and local government levels. Unfortunately, some public sector projects are not completed on time and this delay results allocation of budget for additional expenditure (Tilahun, 2013). According to Asmamaw et al., (2012) the major challenges of public investment projects are top down project approach, lack of mandatory control gateways at the front end project preparation and decision making stage, and weak links between projects stakeholders affected.

A recent study conducted by Tilahun (2013), stated that, Even though there were a monitoring and evaluation system in the sectors, it does not have policy, and procedures to guide, monitoring and evaluation does not have practice of preparing the monitoring and evaluation plan on time, there is no data collection schedule, adequate data collection tools and specific time for a project a monitoring and evaluation activity. Factors affecting monitoring and evaluation of capital projects, a subject the current study deals with has not been considered in the study.

Public sectors projects call application of appropriate project monitoring and evaluation technique, methods and tools. On the contrary, those monitoring and evaluation technical instruments are still not well utilized in public sectors project management system and this result into failure of public institutions because of applying weak monitoring and evaluation system in the government organization capital projects.

In Hadiya Zone selected woredas, regional and local governments carry out many projects. However, as observed from experience, some public sector project delays due to poor project control framework and weak monitoring and evaluation system. The lack of monitoring and evaluation of capital projects has resulted to huge loses of public funds through construction of poor quality, delay, and need extra resource and budget expenditure. In this regard, the researcher's knowledge, there is no study on identifying factors that affect the effective monitoring and evaluation system at local government level projects. Therefore, this study is designed to fill such gap in this area by identifying factors affecting monitoring and evaluation system of capital projects in Hadiya zone of selected seven woredas.

The general objective of this study is to identify the factors affecting monitoring and evaluation system capital project of Hadiya Zone. The following are specific objectives of this study: 1). To determine availability of budget affects monitoring and evaluation of capital projects in government organization. 2). To assess how stakeholder participations affect monitoring and evaluation of capital projects in government organization. 3). To evaluate whether the tools and methods affects monitoring and evaluation of capital projects in government organization. 4). To identify the skill level of experts affects the monitoring and evaluation system of capital projects in government organization.

Understanding from the interaction between dependant and independent variables in monitoring and evaluation of capital projects, it is important to develop conceptual frame work to clearly state how the independent variables can relate and influences dependent variables. Independent variables may have either positive or negative effect on dependent variable.

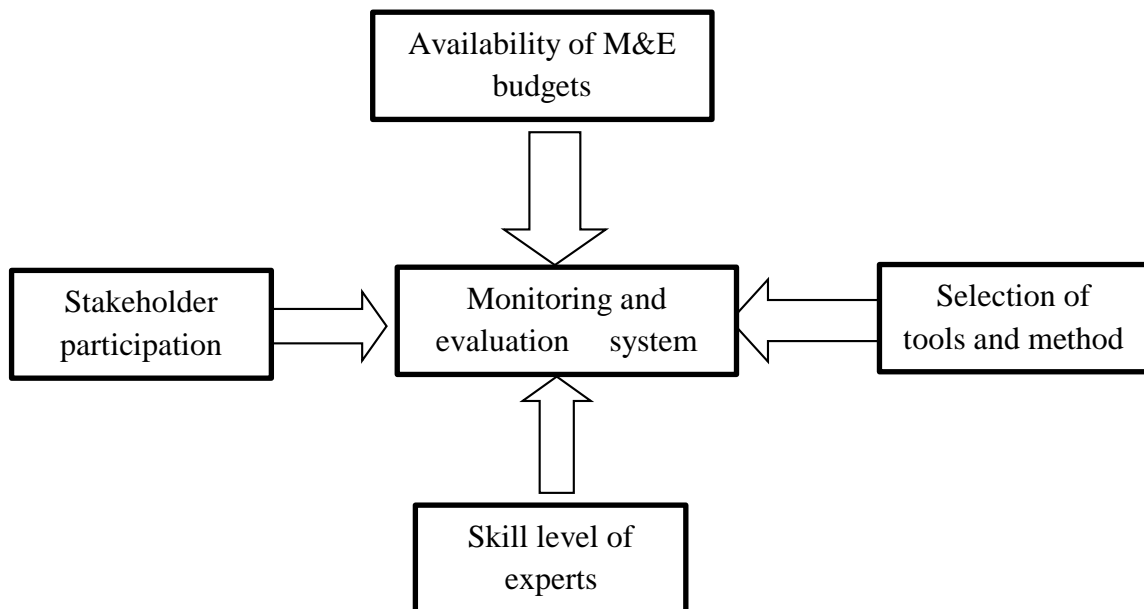


Figure 2.1: Conceptual Frame Work, (Source: Researcher own constructed, 2021)

Line with the broad purpose statement the following hypotheses has been also formulated for investigation.

H_{A1}: Availability of monitoring budgets has significant relationship with Monitoring and Evaluation of capital projects.

H_{A2}: Stakeholder participation has significant relationship with Monitoring and Evaluation of capital projects

H_{A3}: Tools and method has significant relationship with Monitoring and Evaluation of capital projects.

H_{A4}: Skill level of expert has significant relationship with Monitoring and Evaluation of capital projects.

METHOD

Research Design

Research design was the blue print for fulfilling research objective and answering research questions (John et al., 2007). In other, it was a master plan specifying the methods and procedures for collecting and analysing the needed information. It ensures that the study was relevant to the problem and that it use economic procedures. To achieve the research objective, the research designs in this study were descriptive and explanatory and the research approaches were mixed (qualitative and quantitative) which can assist that the study clearly describing the state of affairs in the study area. The study also employs primary data from primary source using appropriate data collection methods.

Sample size

To determine the sample size variability, confidence level and margin of error was considered the simple size determined by using the following formula (Yamane, 1967).

$n = \frac{N}{1+Ne^2}$, Where, n = required Sample size of the study. N = total number of employees of all selected woredas sectors, e = margin of error (0.05)

The total sample size obtained for the study based on the given information as follow: $N= 293$ total Targeted planning, monitoring and evaluation experts of all selected woredas sectors. At confidence level is 95%, and then margin of error is (e) is 0.05.

Total sample size of the study (n) will be:-

$$n = \frac{N}{1+N(e^2)} \quad n = \frac{293}{1+293(0.05^2)} ; \quad n = \frac{293}{1.7325} ; \quad n = 169$$

Therefore, in order to determine the Proportional allocation of total sample in each woreda the following formula has been applied / suggested.

$$n_i = \frac{n \times N_i}{N}$$

Where, n_i = required Sample sizes of each woreda's (sample of i^{th} woredas)

N_i =number of employees in each selected woredas (total population in i^{th} woreda's)

Table 1. Proportional allocation of sample planning, monitoring and evaluation experts in selected woreda's

N_0	Sample woreda	Total Number of selected woreda's employee	Sample size	Method of selection
	Anlemo woreda	42	$n_1 = \frac{169 \times 42}{293} = 24$	Simple Random sampling method
	Lemo woreda	43	$n_1 = \frac{169 \times 43}{293} = 25$	
	Misha woreda	43	$n_2 = \frac{169 \times 43}{293} = 25$	
	Soro woreda	43	$n_1 = \frac{169 \times 43}{293} = 24$	
	Duna wored	40	$n_1 = \frac{169 \times 40}{293} = 23$	
	Misrak badewacho	40	$n_3 = \frac{169 \times 40}{293} = 23$	
	Shashogo woreda	42	$n_1 = \frac{169 \times 42}{293} = 25$	
	Total	293	169	

Source, Researcher survey, 2021

Data Collection Methods

For this study, the researcher used collected data from individual respondents and key informants by using semi-structured close ended likert scale questionnaires, semi-structured open ended interviews, respectively.

In this study, questionnaire has been employed as primary tool for collecting data from monitoring and evaluation experts. A Likert-type scale requires an individual to respond to a series of statements by indicating whether he or she strongly agrees (SA), agrees (A), is undecided (neutral), disagrees (D), or strongly disagrees (SD). Each response is assigned a point value, and an individual's score is determined by adding the point values of all of the statements (Gay *et al.*, 2009). According to the Maurer (1998), a Likert rating scale measurement can be a useful and reliable instrument for measuring self- efficacy. Ray (1980) also determined that there was a significant difference between the differently constructed Likert scales. Increasing the number of Likert items from 3 to 5 contributed to a higher internal reliability and extra discriminating power. So in these studies were used 5 scale Likert questionnaires, which shows the level of agreement is prepared positively analysed by reversing it in to negative.

Binary Logistic Regression Analysis

A binary logistic regression was used to capture the net effect of the different possible factors on the effective monitoring and evaluation system. There were two categories which formed the binary outcome of effective monitoring and evaluation system or ineffective monitoring and evaluation system.

The probability of being effectiveness of monitoring and evaluation system of capital project would be written as follows:

$$P_i = \frac{E(\gamma = 1)}{X_i} = \left(\frac{1}{1 + e^{-(\beta_0 + \beta_i X_i)}} \right)$$

Where, $\beta_0 + \beta_i X_i$ to be z_i then the formula can be broken down as follows;

$$\text{Prob(EME)} = \left(\frac{1}{1 + e^{-z_i}} \right) = \frac{1}{1} + \left(\frac{1}{e^{-z_i}} \right) = 1 + e^{-z_i}$$

$$\text{Prob(EME)} = \ln 1 + \ln e^{-z_i} = 0 + z_i$$

Were, $Z_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_n X_n$

Which implies a linear combination of correlates, X_i with i ranging from 1 to n and the β_i ($i = 1$ to n) represents the coefficients for the correlates. The value of Z_i ranges from $-\infty$ to $+\infty$ and therefore, P_i ranges between 0 and 1. Given that P_i is the probability of EME then $1 - P_i$ becomes the probability of not EME.

For empirical estimation, the logistic regression model is specified as follows:

$$Z_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_n X_n + U_i$$

Where,

Z_i = Effective monitoring and evaluation system

X_1 = Availability of budget, X_2 = Stakeholder participation, X_3 = Selection of tools and methods, X_4 = Skill level of experts and U_i = Random Error Term With the above single binary logistic regression equation, the impact of each of the explanatory variables on EME estimate would be determined in terms of the statistical significance level using 5% test size.

RESULTS AND DISCUSSION

Correlation Analysis

Further the study carried out inferential statistics to examine the model as conceptualised in chapter two. Correlation analysis was used to show the strength of the relationship between dependent and independent variables while binary logistic regression analysis was used to show the nature of the relationship between dependent and independent variable. Therefore, this section consists of Pearson correlation matrix and Regression analyses.

Table 2. Pearson correlation matrix

Variables	Effectiveness monitoring and evaluation	
	Pearson correlation	Sig (2-tailed)
Availability of budget	0.417**	.000
Participation of stakehold	0.417**	.000
Tools and methods	0.036	.645
Skill level of experts	0.063	.421

** . Correlation is significant at the 0.01 level (2-tailed).

Table 2, illustrates the relationship between the dependent variable and independent variables. The results indicate there are significant correlations between Availability of budget and Participation of stakeholders and Effectiveness monitoring and evaluation ($r = 0.417$, $p = 0.00$). Therefore, as per the respondents' response an organization which is characterized by team work, participation and allocation and availability of budget has a relationship with their level of Effectiveness monitoring and evaluation. In the addition, an organization whose major values are orders, rules, whose leadership style is characterized by administrator, coordinator and whose strategic emphases are stability and smooth operations do have strong relationship with overall effective monitoring and evaluation of capital project.

Multicollinearity

Multicollinearity occurs when several independent variables correlate at high levels with one another, or when one independent variable is a near linear combination of other independent variables. If a correlation matrix demonstrates by computing tolerance values which measures the influence of one independent variable on all other independent variables and Variance Inflation Factor (VIF) for each independent variable. According to (Gujarati, 2004), Multicollinearity exists when Tolerance is below 0.1, and the average variance inflation factor (VIF) is greater than 10. The output shows that there is no multicollinearity with in variables.

Table 3 Multicollinearity test using Tolerance Values and Variance Inflation Factor

Model	Collinearity Statistics	
	Tolerance	VIF
Availability of budget	.981	1.019
Participation of stakeholders	.159	7.058
Skill level of experts	.160	6.611
Tools and methods	.829	1.206

a. Dependent Variable: Effectiveness monitoring and evaluation

The table 3, above displays that the multicollinearity tests by computing tolerance values and Variance Inflation Factor (VIF) for each independent variables. In this case, all the tolerance values are greater than 0.10 and VIF is less than 10. Hence, the researcher assumed Multicollinearity was not a problem.

Linear Regression Analysis of Variance (ANOVA)

The key purpose of ANOVA test is to show whether the model is significantly better at predicting the dependent variable or using the means. Accordingly, Table 4.17 indicates that the ANOVA is significant ($F=14.412$, df (regression) = 4, df (residuals) = 27.513, $Sig=0.00$). Hence, it can conclude that at least one of the four independent variables can be used to model effective M&E of capital project towards availability of budget, participation of stakeholders, tools and methods and Skill level of experts in this study.

Table 4. Overall Model Fit of the Regression Model (ANOVA)

ANOVA ^a					
Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	9.975	4	2.494	14.412	.000 ^b
Residual	27.513	15	.173		
Total	37.488	16			

a. Dependent Variable: effective monitoring and evaluation

b. Predictors: (Constant), Skill level of experts, Availability of budget, Participation of stakeholders, Tools and methods

Binary Logistic Regression Model Results

To investigate the factors that influence effective monitoring and evaluation of capitated project, responses from the survey were subjected to a binary logistic model. To begin with $Prob>chi^2$ and Hosmer and Lemeshow test were used to check if the binary model is a good fit to the data provided.

The test statistics to evaluate the validity and significance of the model parameters are the $Prob>chi^2$ and Hosmer and Lemeshow. The hypothesis that all coefficients are simultaneously equal to 0.008 in the binary logit model was tested using $chi-\chi^2$ statistics. Furthermore, just using the probability of chi^2 value reported in Table 4.4, we could reject the null hypothesis mentioned bellow. This indicates that the model is efficient for explaining the variation in effective monitoring and evaluation of capital project. Also R Square equal to 0.832; that show 83.2% of Effective monitoring and evaluation of capital project explained by independent variables. The result of the binary logit model is given below.

Table 5 Factors Associated with Effective monitoring and evaluation of capital project

Factors of M&E of capital project	Coef ficient (B)	.E.	ald	f	ig.	Odds Ratio (Exp(B))	dy/dx
Availability of budget	1.409 ***	.414	1.553		.001	0.244	0.062153
Participation of stakeholders	1.192 ***	.401	.851		.003	0.304	2.615831
Tools and methods	2.721 **	.289	.455		.035	15.189	0.075228
Skill level of experts	2.688 **	.219	.860		.027	0.068	2.503877
Constant	3.737 ***	.667	1.369		.000	41.957	
Prob>chi ²	0.0088						
Nagelkerke R Square	0.832						
Hosmer and Lemeshow	17.12						

Source: Own Survey, 2021

Notes: **Significant at 5%, ***Significant at 1%

From the results, availability of budget, Participation of stakeholders, the Tools and methods, and Skill level of experts were found to have positive and significant effects on effective M&E of capital project at 5% significance level as seen in Table 4.4.

Specifically, the results mean that as the Availability of budget experienced by the experts increase, the more likely that M&E of capital project and the coefficient or odds of this happening are 1.409 times greater than experience lower incidents of Availability of budget. Also, the frequency of Availability of budget positively and marginal effect on effective M&E of capital project at 1% level of significant. There was a positive and significant relationship between M & E plan and effective M&E of capital project (odds ratio =0.244, p value <0.05). This implies a unit increase in budgetary allocation increases project success by 24.4%. There was a positive significant relationship between Availability of budget and effective M&E of capital project (b =1.409, p value = 0.001). This implies a unit increase in Availability of budget increases effective M&E of capital project by 140.9%. Therefore, the first hypothesis which says availability of budget for monitoring and evaluation of governmental organization capital projects positively and significantly affect effective monitoring and evaluation system is accepted at p <0.05. Availability of budget for monitoring and evaluation in terms of providing sufficient funds, making independent budgetary decision, and allocated resource/fund used for monitoring and evaluation purpose only, their added value for the effective monitoring and evaluation system in their finance and economy development office.

As the model result portrays, the variable Participation of stakeholders had positively and significantly influenced the effectiveness of M&E of capital project at 1% level of significance. The result showed those stakeholders who had Participate in organizations have been found more participants in effectiveness of M&E of capital project than those who had not.

Participation of stakeholders plays a significant role in enhancing the effectiveness of M&E of capital project. The odds ratio in favour of effectiveness of M&E of capital project increased by a factor of 2.62 for stakeholders who had participated in monitoring and evaluation activity. Therefore, the regression result regarding the participation of stockholder toward the effective monitoring and evaluation system show that there is statistically significant contribution for the monitoring and evaluation ability in identifying the stakeholder participation activity and their added contribution to the end objective of effective monitoring and evaluation system in their office.

As the model result depicts the variable Tools and methods or techniques had positively and significantly influenced the probability of effective monitoring and evaluation capital project at ($p < 0.05$). The odds ratio in favour of M&E of capital project effectiveness increased by a factor of 0.075 per unit increase in applying better Tools and methods on M&E process. Thirdly, there was a positive and significant relationship between tools and method and effective M&E of capital project ($\beta = 2.721$, p value < 0.05). This implies a unit increase in tools and method/ techniques increases effective M&E of capital project by 272.1%. Therefore, the finance and economy development office can contribute for the effective result of the monitoring and evaluation system through their support by using semi structured questionnaire, focus discussion guideline, unstructured interview, survey of project, and participatory observation and this in turn strongly supports the third proposed hypothesis.

The result of Logit model shows that Skill level of experts was positively and significantly related to the probability of effective monitoring and evaluation capital project at ($p < 0.05$) (Table 18). The odd ratio of 2.504 Skill level of experts implies that other things being kept constant, the odds-ratio in favour of probability to effective monitoring and evaluation capital project varieties increases by a factor of 250.3% as a concerned body Skill level of experts increases by one unit. Therefore, the existence of the skill level of experts in monitoring and evaluation activity of capital project in public office result positively relationship with effective monitoring and evaluation system of capital projects in GOs and with high contribution for the effective monitoring and evaluation system performing their activity by qualified staffs, and giving the train for expert the scope of monitoring and evaluation of GOs capital projects.

CONCLUSION

This study has examined the factors that determine the effective monitoring and evaluation system of capital projects in Hadiya zone, governmental organization capital project. To this end, data were collected from monitoring and evaluation experts, sector official experts, and stakeholders at woredas levels as a primary data source. Accordingly, a questionnaire was designed and information relevant to the research questions raised was collected. In addition to this key informant interview were made by sector officials and experts. Finally, the relevant documents were reviewed which were necessary for the study. The gathered data relating to the opinions of sample respondents is described and analyzed using descriptive and inferential statistics.

The Binary logistic regression applied on monitoring and evaluation were effective or not by determining explanatory variables (availability of budget, stockholder participation, selection of tool and method, and skill level of experts). The results have positive and significant effect on effective monitoring and evaluation of capital project in government organization.

The study concludes that budgetary allocation and availability affects the effectiveness of M&E of projects to a great extent. Regression analysis revealed that a unit change in availability

of budget increased evaluation of capital projects in government organization 1.409 units. The study further concludes that to effectively achieve effective M&E projects a good M&E budget estimating the costs, staff, and other resources that are needed for M&E work is necessary.

The study also concludes that stakeholder participation affects the effectiveness of M&E of capital projects to a great extent. The effectiveness of M&E by the County Government can only be achieved if all the stakeholders actively participate and they involve the contractors to the respective projects during M&E of capital project. Regression analysis revealed that a unit change in stakeholder participations increases effectiveness of evaluation of capital projects by 1.192 units. The study further concludes that the government delays the effectiveness of M&E by not laying down the slots for engaging all the stakeholders during M&E activities. The effectiveness of these factors is manifested through easy assessment of projects, accountability in projects, capacity of staff to undertake project monitoring and evaluation work among others.

The selection of tools and techniques/methods to be used in an M&E system determines its effectiveness or failure. Regression analysis showed that a unit change in selection tools and techniques/methods increased evaluation of capital projects by 2.721 units. However, in developing countries are said to be unable to develop appropriate tools hence resulting to substandard M&E systems that don't meet the requirements of the stakeholders (Chesos, 2010). This is therefore, a need to have consensus with all stakeholders on the kind of tools and methods to be applied.

Regression analysis showed that a unit change in skill level of experts increased effectiveness of evaluation of capital projects by 2.688 units. Training is relevant for an effective M&E system. M&E being a new profession, training is paramount in building an M&E human resource, which is able to manage the M&E system effectively (World Bank, 2011). A capacity building policy should also be put in place to emphasis on M&E training across the different sector on M&E systems. A professional association of M&E experts therefore needs to be started in order to develop and improve the quality and quantity of our local M&E experts. It is the general expertise of the staff handling the M&E that determine its effectiveness. Finally, the regression results illustrate that, effective monitoring and evaluation affected by availability of budget, stockholder participation, selection of tool and method, and skill level of experts.

Recommendations

From the findings and conclusion, the study recommends the following with regard to factors influencing effective monitoring and evaluation of capital project case of Hadiya zone, selected woredas finance and economic development office.

There is need to examine the role of availability of budget since it had a positive influence on M&E activities. However, the core problems identified in this study during the monitoring and evaluation of the capital projects were lack of sufficient budgetary allocation for monitoring and evaluation of the capital projects of governmental organization, thus greatly led for the projects need the additional budget and time. Hence, the governmental organization should continuously evaluate the cost benefits analysis associated with specific projects and ensure there is optimal benefit.

The study also found that stakeholder participation affects the effectiveness of M&E of Projects. Therefore, it is recommended that for effectiveness of M&E of projects funded by the county government to be achieved, all the stakeholders should actively participate during the M&E activities. Finance and economy development office to make preliminary assessments of

the direction and nature of by doing case studies of the target population within the life time of the project, participating the stakeholders should entail and early stage of projects. And the concerned body should also lay down slots for engaging all the stakeholders during M&E activities to ensure that people decision-making processes and decision-making capacity of governments at different levels is achieved.

As investigated in this study, the monitoring and evaluation tools and methods carried out to detect and control the timely and within budget completion of capital project. The study established that technical expertise of staff affects the effectiveness of M&E of capital projects funded. The study therefore recommends that when recruiting monitoring and evaluation officers, their competencies should be based on accuracy levels, turnaround time (time taken to complete a task), knowledge in monitoring and evaluation, and accountability and responsibility.

The skill level of experts significantly affects the capital projects performance of monitoring and evaluation system, the finance and economy development office planning, monitoring and evaluation core work process should employ the experienced and skilled human power for make the effective monitoring and evaluation system to governmental organization capital projects.

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