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Monitoring and Evaluation and Construction Project Performance in Rwanda. A Case Study of Musanze and Rwamagana Road Project

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Abstract

The general objective of this research is to assess monitoring and evaluation on construction project performance in Rwanda, case of Musanze and Rwamagana Asphalt road Project. The specific objectives were to assess the extent to which project budgets contribute to project performance of Musanze and Rwamagana asphalt road project, to determine the contribution of project risks analysis on construction project performance of Musanze and Rwamagana asphalt road project, to determine extent to which project trainings and accountability contribute to project performance of Musanze and Rwamagana asphalt road project and to determine the relationship between monitoring and evaluation on construction project performance. Thus, a description research design was used and the target population of the study was the project contractors, project engineers and project human resource officers. In total they were 210 from which a sample of 138 were selected as sample. A simple random sampling technique was used to select respondents and data were collected using questionnaire and interview. Analysis of data was done through SPSS (Statistical Package for social Science) version 20. Research findings showed that project budget was per planned to meet operating activities of the project. This was determined by mean score of 1.670 and standard deviation of 0.756. As indicated, the study findings showed that project budget varies from 5-10% of the entire project budgets as indicated by mean score of 1.636 and standard deviation of 0.734.Based on research findings provided in two selected projects, the were efficiency and effectiveness and reliable as respondents had the common understanding. The results showed that project has meet timelines operations of construction. This was confirmed by respondents at the mean score of 1.751 and standard

deviation of 0.732.Findings showed that project trainings and accountability of project personnel led to quality assurance of projects operators as this confirmed by respondents at the mean of 1.446 and standard deviation of 0.616. Results showed that there is a positive correlation between Monitoring and evaluation and construction project performance where project cost effectiveness has a positive correlation at (r=.811, p=0.024), expected quality standards had a positive correlation at (r=.947, p=0.019), project time schedule (0.772, p=0.053) while beneficiary satisfaction (r=.819, p=0.064). As recommendation, researcher recommend to put more focus on undertaking appropriate monitoring and evaluation practices to achieve effective construction performance.

Keywords: *Monitoring and evaluation, construction, project budgets, project risks analysis, trainings and accountability, project performance.*

1.1 Background of the study

Monitoring consists of assessing ongoing activities of the project regularly by stakeholders as to know the achievement. Therefore the purpose of this monitoring intends to see whether goals or objectives are being achieved as they were established (Clarke, 2011). In Africa and Asia countries, monitoring and evaluation in construction industries remain important aspect of project performance and this is enhanced by labor intensive technology. This program or technique consists of ensuring the creation of employment and the efficient product quality in the field of construction industry (Gyorkos, 2011).

According to the Ministry of infrastructure (2010), government efforts in ensuring that all Rwandans benefit from modern public infrastructure, the government is committed to support secondary cities through strategic infrastructure investments in roads, street lights, constructing bridges and drainages in order to strengthen the middle class.

1.1 Statement of the Problem

The problem arising in some projects whether profit or nonprofit making costs of shortage of resources measured in terms of capital, material, and human which constitute barriers for monitoring and evaluation to be more successful. Monitoring and evaluation in Africa more specifically in Sub-Saharan remain poor due to insufficient capital of project organization. This means that the application of monitoring and evaluation is for large organizations having capabilities and with experiences and skilled human resources (United Nation Development Programme, 2006).

The construction project is mostly involved taking risk; no person can be free from risk in construction project. Whatever kind of the size of construction project two parties both client and constructor signed the contract for better moving ahead. The individual in the construction industries that undertake various activities are heterogeneous since client; consultant and contractors have different roles and objectives (Singh & Nyandemo, 2004).

The construction of roads in Rwanda increases overtime but this brings about difficulties in project achievement or completion within timelines due to limited financial resources. The other

observation in Rwanda is that most of construction projects fail due to poor contraction experts which call for external support. Roads construction delay lead to stagnation of economic development and quality service delivered to the community realization which restricts development targets (Ministry of Infrastructure, 2010).

1.2 Research Objectives

i. To assess the extent to which project budgets contribute to the construction project performance of Musanze secondary road asphalt and Rwamagana urban road project

ii. To determine the benefits of project risks analysis on construction project performance of two selected projects: Musanze secondary asphalt road and Rwamagana urban road project

iii. To determine extent to which trainings and accountability contribute to project performance of two selected projects: Musanze secondary asphalt and Rwamagana urban road project.

iv. To determine the effect of monitoring and evaluation on construction project performance in two selected projects

2.1 Theoretical Framework

2.1.1 Theory of Change (ToC)

This theory was developed by Carol Weiss in 1995 and explains how and why initiatives work. It focuses on how to generate knowledge on project effectiveness and methods that can be used to be effective. This theory indicates how to achieve project success. In this theory, decision makers for successful project are the one to promote the success of the project. The implication of this theory regards to the practices oriented activity in terms of monitoring and evaluation which are basis of making changes throughout project success.

2.1.2 Contingency Theory (CT)

This theory was advanced by House (1996) and focuses on contingency approach within the management organization. This theory assumes that there is no specific way of managing, planning, organizing, leading, and controlling organizations. In this theory, the only strategy to be used within organization must be tailored to the specific circumstance faced by an organization. The theory point out the argument related to the managerial decision making which must be applied based on situation and market condition.

A strategic leader takes suitable actions based on the aspects that are most important to the current situation. The implication of this theory to the current study is that leaders need to include staff members in sharing decision and take strategic policies to achieve strategic objectives. Within Musanze District, coordination, participation and team work is needed and can allow the organization to implement strategies.

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2.2 Conceptual Framework

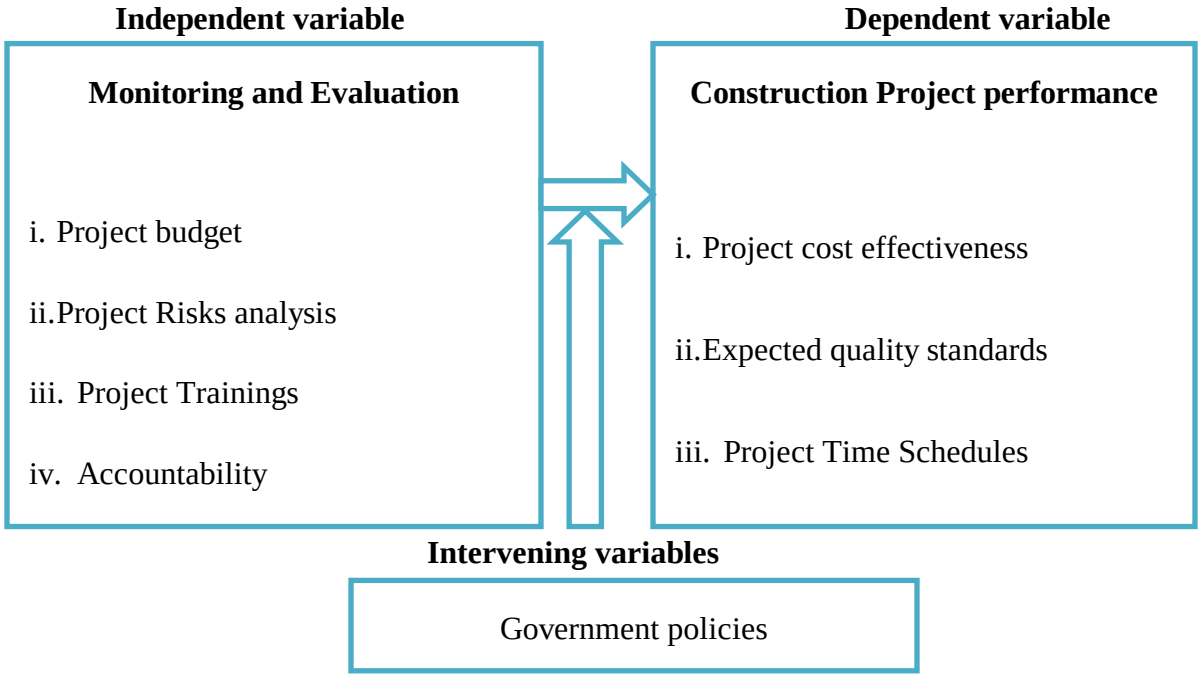


Figure 1: Conceptual Framework

Source: Research (2022)

3.0 Research Methodology

The study adopted to use a descriptive research design with two mixed methods such as quantitative and qualitative approaches. The target population of this study were the project management officers, project engineers and project supervisors and foremen. From these total target population, project management officers were given questionnaire and management of Musanze Secondary Asphalt Road and Rwamagana Urban Road Project construction project were given interview. In total they were 645 from which a sample of 173 were selected in project one and a sample of 184 were selected in project two.

The sample size will be 173 drawn from the total target population of 305 in project one. While the sample size of 184 will be taken from the total target population of 340 of the project two. All these samples in selected projects were got by use of Yamane formula (1967).

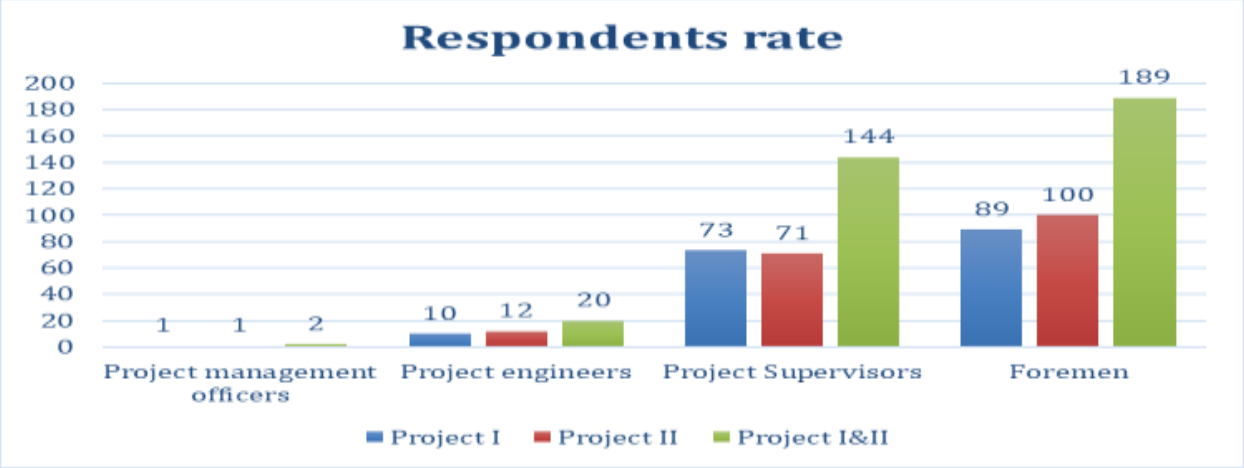
n= N/ 1+ (e) ^2 Where, n: Is the sample

N: Is target population

e: Is the error of precision and is equal to 0.05=5%

In this study, the researcher used stratified random sampling technique to select respondents in different stratum of each project. This technique allowed researcher to achieve research objectives as respondents of each project are distributed in four categories such as project management officers, project engineers, project supervisors and foremen of the project. Researcher will use closed ended questions to the concerned respondents to serve them not to be exhaustive when providing research information. Documentation review and interview discussion will be used to collect data about the research topic. The quantitative analysis approach was done through (SPSS) version 21 to get frequency table, pie charts, bar graph and their related percentage. An authorization to carry out the study was obtained from ethical committee of Mount Kenya University. The acceptance letter to conduct the research was obtained from the management of two selected projects Therefore confidentiality; privacy was some of cornerstone of field research.

4.0 Findings and Discussions



In project one, male participants in the research were76.9% and female were 23.1% while in project two, male participated 77.6% while female participants were 22.4%. In addition, in project one 34.7% of respondents have completed secondary level of education, 18.5% have completed diploma level of education, 36.4% have completed university education level and 10.4% respondents completed masters education level. 38.6% of respondents have completed secondary school level, 17.4% of respondents have completed diploma education level, 34.2% of respondents have completed university level and 9.8% of respondents have completed Masters Level.

In Project one which is Musanze secondary asphalt had 2.9% of project management officers, 9.8% of project engineers, 49.1% of project supervisors and 38.2 of foremen wile in project two which is Rwamagana urban road, there are 8.7% of project management officers, 9.2 of project engineers, 46.2% of project supervisors and 35.9% of foremen. In project one 27.7% of respondents had experience less than one year, 32.9% of respondents had experience between 1-2years, 31.8% of respondents had experience between2-3years and 7.5 of respondents had experience of greater than two years. Thus, the project two showed that 32.1% of respondents

had experience of less than one year, 31% had experience between 1-2 years, 29.9% of respondents had experience of between 2-3years and 7.1% had experience of greater than 3years.

4.1 Descriptive Analysis

Objective one: To assess extent to which project budget contribute to the project performance

Table 1: The extent to which project budgets contribute to the project performance

Response	Project 1							Project 2						
	1	2	3	4	5	Mean	St.D	1	2	3	4	5	Mean	St.D
	(%)	(%)	(%)	(%)	(%)	-	-	(%)	(%)	(%)	(%)	(%)	-	-
Project budget led to construction project performance..	32.4	64.7	2.9	-	-	1.763	0.728	36.4	60.9	2.7	-	-	1.717	0.729
Project budget was per planned to meet operating activities of projects	41.6	55.5	2.9	-	-	1.670	0.756	45.1	52.2	2.7	-	-	1.630	0.749
Project budget is prepared/ established by construction project experts	41.6	53.2	2.9	2.3	-	1.682	0.745	45.1	50.0	2.7	2.2	-	1.641	0.740
Project budget is well allocated to achieve intended goals of project.	41.6	56.6	1.7	-	-	1.682	0.745	45.1	53.3	1.6	-	-	1.597	0.662
The project budget varies from 5-10% of the entire project budgets	41.6	53.2	2.3	2.9	-	1.716	0.786	45.1	50.5	2.2	2.2	-	1.636	0.734
Overall average						1.702	0.758						1.644	0.723

1: SA: Strong agree, 2: A: Agree, 3; D: Disagree, 4: SD: Strongly Disagree, 5: N: Neutral

Research findings showed that project budget led to the construction project performance. This is determined by the mean of 1.763 and standard deviation of 0.728 while findings collected among respondents of Rwamagana Urban road showed that project budget helped in achieving construction project performance. This was confirmed at the mean of 1.717 and standard deviation of 0.729. The information collected in Musanze secondary asphalt project revealed that project budget was per planned to meet operating activities of the project. This was determined by mean score of 1.670 and standard deviation of 0.756. Thus, data collected in Rwamagana urban road also confirmed that Project budget was per planned to meet operating activities as indicated by mean of 1.630 and standard deviation of 0.729.

The study findings from Musanze secondary asphalt also showed that budget was well allocated to achieve intended goals of project .this was determined by mean of 1.682 and standard

deviation of 0.745.Thus, the study findings Rwamagana urban road also showed that Project budget was well allocated to achieve the stated goals and objectives as was indicated by mean of 1.597 and standard deviation of 0.662. The information gathered from research participants of Musanze secondary asphalt project showed that project budget varies from 5-10% of the entire project budgets which led to the construction project performance. The results are measured by mean score of 1.716 and standard deviation of 0.786. thus, respondents of Rwamagana urban road project also indicated that the project budget varies from 5-10% of the entire project budgets as indicated by mean score of 1.636 and standard deviation of 0.734.Based on research findings provided in two selected projects, the were efficiency and effectiveness and reliable as respondents had the common understanding.

Objective two: Effect of project risks analysis on construction project performance of two selected projects

Table 2: Effect of project risks analysis on construction project performance of two selected projects

Response	Project 1							Project 2						
	1	2	3	4	5	Mean	St.D	1	2	3	4	5	Mean	St.D
	(%)	(%)	(%)	(%)	(%)	-	-	(%)	(%)	(%)	(%)	(%)	-	-
Project risks analysis remains important in construction project to achieve desired performance.	41.6	53.2	2.3	2.9	-	1.716	0.832	45.1	50.0	1.1	1.1	-	1.663	0.799
Project risks analysis helped to achieve expected quality standards	32.9	62.4	12	6	2.9	1.780	0.761	37.0	60.3	2.7	-	-	1.712	0.731
The project risks analysis is done before the project operation stage, and at the final stage.	30.6	64.2	2.9	2.3	-	1.768	0.614	34.8	2.0	2.7	0.5	-	1.690	0.550
Effective project risks analysis is based on clear decision making of managers to achieve construction project performance.	17.9	79.2	2.9	-	-	1.907	0.658	22.8	74.5	2.7	-	-	1.799	0.465
Through project risks analysis, the management of project has meet timelines operations.	33.5	63.6	2.9	-	-	1.751	0.732	37.5	60.3	2.2	-	-	1.690	0.677
Overall average						1.784	0.719						1.711	0.644

1: SA: Strong agree, 2: A: Agree, 3; D: Disagree, 4: SD: Strongly Disagree, 5: N: Neutral.

The information collected from Musanze secondary asphalt revealed that project risks analysis remains important in construction project to achieve desired performance. The response mean score was 1.716 and the standard deviation of 0.832. On the other hand, research findings from Rwamagana urban road showed that project risks analysis remained important measure of construction project performance. Thus response mean score was at 1.663 and standard

deviation of 0.799. The results from Musanze secondary asphalt showed that with project risks analysis this assisted in achieving expected quality standards as confirmed by respondents at the mean average score of 1.780 and the standard deviation of 0.761.On the other side, results from respondents of Rwamagana urban road showed that project risks analysis remain important as indicated by respondent at the mean average score of 1.712 and standard deviation of 0.731. The study findings also showed that the project risks analysis was done before the project operation stage, and at the final stage. And this was established at the mean score of 1.768 and standard deviation of 0.614 at Musanze secondary asphalt and 1.690 and standard deviation of 0.550 at Rwamagana urban road project respectively. When assessing the effect of project risks analysis on construction project performance, the respondents clearly highlighted that Effective project risks analysis was based on the fact that the project had clear decision making of managers to achieve construction project performance. The information collected were confirmed by respondents at the mean score of 1.907 with standard deviation of 0.658 while the results from Rwamagana urban road the level of agreement was at the mean score of 1.799 and standard deviation of 0.465. The management of project has meet timelines operations of construction. This was confirmed by respondents at the mean score of 1.751 and standard deviation of 0.732. On the other side the information collected from Rwamagana urban road project, was confirmed at the mean score of 1.690 with standard deviation of 0.677.

Objective three: Extent to which project trainings and accountability contribute to project performance

Table 3: Extent of project training and accountability on construction project performance

Response	Project 1							Project 2						
	1	2	3	4	5	Mean	St.D	1	2	3	4	5	Mean	St.D
	(%)	(%)	(%)	(%)	(%)	-	-	(%)	(%)	(%)	(%)	(%)	-	-
Having trained and accountable project personnel led to the performance of projects.	49.1	48.0	0.6	2.3	-	1.584	0.732	52.2	45.7	0.5	1.6	-	1.532	0.676
Trainings and accountability led to quality assurance of projects operators.	56.1	42.2	1.7	-	-	1.491	0.678	78.7	40.2	1.1	-	-	1.446	0.616
Training abilities is established at the start up stage to achieve construction project performance	30.6	65.9	0.6	2.9	-	1.786	0.728	34.8	62.5	0.5	2.2	-	1.723	0.689
Overall average						1.620	0.713						1.567	0.660

1: SA: Strong agree, 2: A: Agree, 3; D: Disagree, 4: SD: Strongly Disagree, 5: N: Neutral

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Research findings collected from Musanze secondary asphalt project to assess the extent to which project trainings and accountability contribute to project performance intended to know whether having trained and accountable project personnel led to the construction performance .Rhesearch response rate was confirmed at the mean score of 1.584 and standard deviation of 0.732. Based on results also collected from Rwamagana urban road project, research participants also confirmed that having trained and accountable project personnel led to the performance of projects as confirmed at the mean score of 1.532 and standard deviation of 0.676. The information collected from Musanze secondary asphalt project revealed that trainings and accountability led to quality assurance of projects operators as this was clearly confirmed at the mean score of 1.491 with standard deviation of 0.678. Therefore, results collected from respondents of Rwamagana urban road project also showed that trainings and accountability of project personnel led to quality assurance of projects operators as this confirmed by respondents at the mean of 1.446 and standard deviation of 0.616.In this research project, the information were collected in Musanze secondary asphalt showed that training abilities were established at the start up stage to achieve construction project performance as confirmed at the mean average of 1.786 and standard deviation of 0.728.And the information collected from Rwamagana urban road also showed that Training abilities is established at the start up stage to achieve construction project performance. This was also confirmed at the mean of 1.723 and standard deviation of 0.689.

Objective four: Effect of Monitoring and evaluation rating of project one by attributes of construction project performance

Table 4: Effect of Monitoring and evaluation rating of project one by attributes of construction project performance

Performance attributes of project 1	Performance rating (1 most & 5 least)					Average Percentage Score (%)		
	1	2	3	4	5			
Project Cost effectiveness	50.9	43.9	2.3	2.9	-	20.0	94.8	Very successful
Proper plan, cost minimization	42.2	55.5	2.3	-	-	20.0	97.7	Very successful
Expected quality standards	24.3	72.8	0.6	2.3	-	20.0	97.1	Very successful
Project time schedule	44.5	50.3	2.3	2.9	0.0	20.0	94.8	Outstanding
Performance average						20.0	96.1	Very successful

Table 5: Effect of monitoring and evaluation rating of project by attributes by number of respondents

Performance attributes of Project 2	Performance rating (1 most & 5 least)					Average Percentage Score (%)			
	1	2	3	4	5				
Project cost effectiveness	53.8	41.8	2.2	2.2	-	20.0	95.6	Very successful	
Proper plan and cost minimization	45.7	52.7	1.6	-	-	20.0	98.4	Very successful	
Expected quality standard	45.7	52.7	1.6	-	-	20.0	98.4	Very successful	
Project time schedule	28.8	69.0	0.5	1.6	-	20.0	97.8	Outstanding	
Performance average						20.0	97.55	Very successful	

Project 1:

Having proper project planning and cost minimization were considered as important attributes of construction project performance of Musanze secondary asphalt. This is indicated at the average score of 20.0 with corresponding percentage rate of 97.7%.Thus, the expected quality standards remained important to achieve construction project performance in Musanze District as this is at the average score of 20.0 having percentage rate of 97.1%.

Project 2

As indicated table 4.8, an average of project performance of construction was rated very successful by the respondents on project cost effectiveness as important attribute to construction project performance. Therefore, average score is 20.0 out of 5. This means that respondents rated cost effectiveness at 95.6% very successful. *The management of two projects (Musanze Secondary project and Rwamagana Urban Road Project) said "the satisfaction level of our projects is determined by project facilities in transportation service, trading service, tourism service and other economic activities which had had improvement on the areas of selected construction project.* As indicated, project plan and cost minimization has the attribute of proper construction project performance at an average score of 20.0 at the percentage rate of 98.4% which termed to be very successful. Among the attributes of construction project performance, respondents rated expected quality standards of the project with average score of 20 at the percentage of 98.4% which concluded to be very successful. Otherwise, having project time schedule at Rwamagana urban road have been put in front by respondents as this had an average score of 20.0 at the percentage of 97.8% which was also very successful attribute of construction project performance. *The response from the management of two projects (Musanze secondary asphalt project and Rwamagana urban Road project) argued that "The end results of project were satisfactory not only by project initiators, implementers but also by project beneficiaries".*

5.0 Conclusion

The overall conclusion of research findings is that the stated objectives were achieved and findings answered research questions. As indicated, the analysis found the there is significant role of monitoring and evaluation practice on construction project performance in two selected project (Musanze secondary asphalt project and Rwamagana urban road project. Findings

showed that there is significant relationship between monitoring and evaluation on construction project performance. Thus, the study findings showed that monitoring and evaluation practice in Rwamagana urban road project contributed to the construction project performance at cost effectiveness, at expected quality standards, with project time schedule and has led to beneficiary satisfaction

6.0 Recommendations

Based on problems faced by Musanze secondary asphalt project and Rwamagana urban road project related to difficulties in project achievement or completion within timelines due to limited financial resources, researcher highly recommended the two selected projects to undertake appropriate monitoring and evaluation practices to achieve effective construction performance. Beside, cooperation among construction, authorities, policy makers, is needed to achieve effective construction project performance. More research is required to be conducted in deep on monitoring and evaluation practices in Rwanda as there are continuous projects in Rwanda. Therefore, there is a need to assess project risks and ways to reduce them. Otherwise there is a need to assess the impact of strategic policies on construction project performance in Rwanda.

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