

INFLUENCE OF PROJECT TIME MANAGEMENT ON PERFORMANCE OF LIVESTOCK PROJECTS IN INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

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Abstract: Time management is considered an imperative aspect in the management of projects. It is one of the core knowledge areas and is related to scope and cost. Project time management aims at building processes that will be useful to the project manager to ensure the project team completes the project in time. The reputation of many organizations is damaged by delays in the delivery of projects and cost overruns. Projects are hardly completed without changes in scope; thus, the original baseline plan is always affected and in turn, affects the estimation of project delivery time. This leads to a discrepancy between the estimated time and the completion time. This study focused on project time management's influence on the performance of projects at the International Livestock Research Institute. Specifically, the study looked at Project Scope Management, Project Schedule Management, Funds management, and Project monitoring as components of Project time Management and how they influence the Performance of Projects. A descriptive survey design was adopted, and the target population included 171 projects across various programs like Animal and Human Health, Policies Institutions and Livelihood, Livestock Genetics, and Sustainable Livestock System where 120 project leaders were administered by questionnaires. The study used SPSS version 24 to analyze data. Both descriptive and inferential analyses were used. The study found that Project Scope Management, Project Schedule Management, Funds management, and Project monitoring as components of Project time Management significantly influenced the Performance of Livestock Projects at the International Livestock Research Institute. The four independent variables were also found to explain 64.5% of the change in performance of livestock projects at the International Livestock Research Institute. The study recommends effective implementation of project time management practices to ensure improvement of the performance of projects. The study further recommends a similar study be done in the public sector and other organizations dealing with projects. The results of the study will be useful to project managers, project consultants, project donors, and scholars.

Keywords: Project Time Management, livestock Projects, Project Performance, Project Scope Management, Projects Funds Management, Project schedule Management.

I. INTRODUCTION

Time management is considered an imperative aspect in the management of projects. It is one of the core knowledge areas and is related to scope and cost. Project time management (PTM) aims at building processes that will be useful to the project manager to ensure the project team completes the project in time. In the planning stages, outputs are created to show how the project tasks and activities are related and allocated [1]. The process of monitoring and control tracks and

reports the progress of the work done and helps in doing adjustments of time outputs in explaining the changes made to the project plan. The closing stage includes an audit of the project time targets. Time management is among the first processes to be completed since it is a necessity for the project team in organizing the various deadlines to meet and collaborate [2]. Project time management is therefore a process that involves determining milestones and delivery dates while considering all the constraints of the project. Seven processes constitute the project time management knowledge area. The processes fall under a larger process of planning or monitoring and control. The processes include plan schedule management, define activities, sequence activities, estimate activity resources, estimate activity durations, develop a schedule (planning process), and finally, control schedule (monitoring and controlling process)[3].

Project Time Management is required throughout the entire lifecycle of a project, and it is normally arrived at during the initiation stage to provide a framework for the project plan to evolve during project iteration between planning, implementation, or execution and monitoring. The processes related to PTM require collective decision making, thus PTM requires the involvement of the project team, project manager, and other stakeholders in various meetings to make quick and good decisions that will determine the successful implementation of the project as well as the success of the project. The decisions relate to the definition of activities and estimates. During the meetings, disagreement on opinion concerning the estimates will always arise and this is expected. The disagreements become a problem when the members in the meeting drag the discussion for long to arrive at a reasonable estimate [3]. PTM is sometimes assumed as the core discipline on project management where many software tools highly focus exclusively on it. It is a way of using the project plan to come up with a sequence and schedule to produce the project deliverables. There are various tools used for effective project time management. Resource levelling is a powerful tool that allows levelling of the resources available to ensure they are effectively used during the execution phase. Resource levelling is easily implemented using project management software e.g. Microsoft Project. Timesheets are used for activity planning and recording of the actual involvement of the various project members in the project activities. They are effective for recording the time spent by the project team members and they are also very useful for lessons learned and collective actions of project team members. Time recording and control tools, project management estimating, planning and control tools, and collaborative project management tools are also some of the tools used to ensure effective time management in projects [4].

Project time management entails several activities which include, planning schedule management, project activity requirements, project activity sequencing, resource estimating, project activity duration analysis, development of project schedule, and control of project schedule [5]. Project time management is key to effective project management to ensure the timely completion of projects. Various techniques and methods are commonly used including, Gantt bar chart, critical path networks/methods, milestone date programming techniques, project evaluation and review technique (PERT), Elementary Trend Analysis or line of balance method (LOB), precedence network diagram, and simulation [6]. Performance is related to many topics and factors such as time, cost, quality, client satisfaction; productivity, and safety. The construction industry in Kenya suffers from many problems and complex issues in performance. For example, the construction of 10 dwelling units in the Nairobi Area suffered from poor performance because of delays for about 3 months. In 2009 there were many projects which finished with poor performance because of many evidential reasons such as obstacles by the client, non-availability of materials, road closure, amendment of the design and drawing, additional works, waiting for the decision, handing over, variation order, amendments in Bill of Quantity (B.O.Q) and delay of receiving drawings [7].

The International Livestock Research Institute (ILRI) is an international agricultural research institute that was founded in 1994. ILRI is co-hosted by Kenya and Ethiopia, has 14 offices across Asia and Africa, and has an annual operating budget of about USD80 million. It is a member of the CGIAR and focuses its research on building sustainable livestock pathways out of poverty in low-income countries. ILRI has its headquarters in Nairobi, Kenya, and is co-hosted by the Government of Ethiopia through a Host Country Agreement with the Government of Kenya signed on 29 December 1994 and the Government of Ethiopia signed on 8 June 1995. ILRI works for better lives through livestock in developing countries. It works with partners worldwide to help poor people keep their farm animals alive and productive, increase and sustain their livestock and farm productivity and find profitable markets for their animal products.

1.1. Statement of the Problem

Agriculture is an important segment of the economy of Kenya it is equivalent to 27% of Gross Domestic Product (GDP) and supports livelihoods for most of the population. Over 65% of earnings from exports accruing to Kenya come from agriculture while an estimated 75% of living upcountry depends on the sector for employment either directly or indirectly.

Project time management entails several activities which include, planning schedule management, project activity requirements, project activity sequencing, resource estimating, project activity duration analysis, development of project schedule, and control of project schedule [4],[5]. Several factors affect project performance, among them the shortage of supply of raw materials, insufficient resources availability, and delay of services from consultants and contractors. According to the project detail report of 2020, the organization had a cost overrun of over 60% across its four major programs i.e., Animal and Human Health, Policies Institutions and Livelihood, Livestock Genetics, and Sustainable Livestock System. Project time had been affected and the effect was felt on the scope of the project, schedule, and funds or costing. This meant also monitoring the progress of the projects was very challenging. Out of the 171 ILRI projects affected 90 (52.63%) were supposed to have been completed by December 2020 yet some had not even been started [9].

1.2. Objectives of the Study

The study sought to establish the influence of Project Time Management on Performance of Livestock Projects in the International Livestock Research Institute.

Specific Objectives

- 1) To establish the influence of scope management on the Performance of the Livestock Projects in the International Livestock Research Institute.
- 2) To evaluate how funds Management will influence the Performance of Livestock Projects in the International Livestock Research Institute.

II. CONCEPTUAL FRAMEWORK

The conceptual framework for this study is illustrated as shown on figure 1 below.

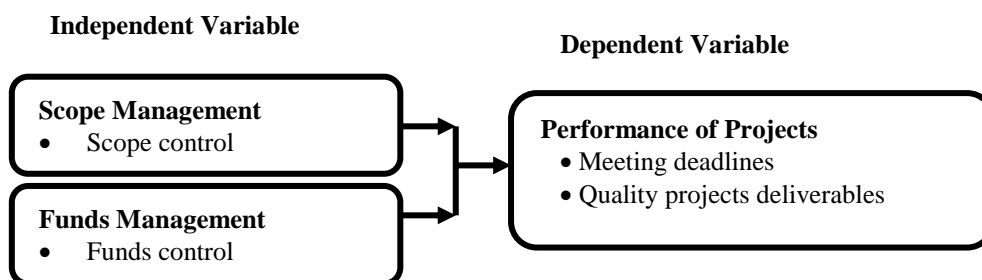


Figure I.

III. THEORITICAL REVIEW

This study was anchored on the Theory of constraints (TOC) and Goal setting theory. The Theory of Constraints (TOC) was introduced by Dr. Eliyahu. M. Goldratt in 1984 as a management philosophy. The TOC explains that a small given number of constraints prevents any given management system from achieving its objectives [10]. There is always at least one constraint and the TOC used the focusing process of that constraint and later restructures to address it. The TOC tends to find the weakest link to lessen it and this applies in organizations, processes, team members, or any risk to the successful completion of a project. The key assumption in TOC is that an organization can be managed by looking at three things referred to as throughput accounting [11]. TOC is applied in project scheduling to reduce project duration and simplify project control. Further, the TOC has also been applied to allocate resources shared in concurrent projects. However, [10] is of the view that TOC can be applied in Project Risk Management and Project time management. According to [12], the project duration is considered as the major constraint in projects generally. The project costs often escalate due to extended project duration and an increase in a project schedule with a fixed scope ensures an increase in costs. Revenues are also affected negatively by delays. The contingency costs for project delays could be very high [13]. Project duration extension leads to overhead costs increase and so is scope changes as the project stakeholders' needs could easily change in a given time [14]. Within a multi-project environment, the organization has to look at several components to achieve success. The first is the synchronization mechanism where projects are allowed to start later but finish sooner and there is resource assignment of priorities. The second is the planning process where there is accounting

for the dependencies and criteria for completion. The third is the scheduling and budgeting process where the concentration should be on where safety and protection will be most. The fourth is a mechanism to control the project.

The goal-setting theory was developed by [15] and is based on the simplest of thoughtful observations that conscious human behavior is purposeful. It is controlled by an individual's goals. Performance in organizations is enhanced when goals are set. The goals are achievable when the project team is given the appropriate support to enhance performance. . Goal setting is understood to mean the identification process in the stages of performance to achieve the desired outcomes. The basic principle of goal-setting theory in projects is to look for means to achieve the project constraints (time, scope, and cost) without compromising quality [16]. It is understood that if the project team finds that the program performance is not achievable to the desired goals, they will find a new strategy not to compromise the project constraints (goals) [15]. The effectiveness of the goals is achieved when the goals are assigned to the project team. This is contrary to [15] who view that participative set goals achieve higher performance. They further suggested that benefits arrived at participation are not due to motivation but rather cognition like task strategy development. [15] further indicated that the Goal Setting Theory is premised on the human interaction with the projects, which is directed to conscious goal achievement. Purposive is fully aimed at ensuring the project constraints are achieved as they are the ultimate goals of a project. The decision to set a goal results from dissatisfaction with current performance levels. Goal setting theory is enhanced through projects' achievement of objectives, stakeholder satisfaction, benefits realization, and completion of the project within scope, time, and cost. The goal-setting theory aims at ensuring the project team sets the achievable targets to accomplish them with their project managers. The livestock projects require adequate participation in goal setting as means of achieving the desired goals [16]. This theory is applicable in the funded livestock projects as the stakeholders set goals to meet or achieve project constraints (project time management) to their satisfaction. This is expected as the organization provides the contractors to meet the set goals to be paid in time. If the contractors are not able to deliver the project as to the set goals and within the expected principles standards then the project constraints are compromised, thus the project goals are not met. This theory was useful in explaining the performance of livestock projects as affected by time management as a constraint.

IV. EMPIRICAL REVIEW

a) Scope Management and Performance of Projects

Scope management is related to other areas of project management such as cost, time, and risk management. When the scope is not well defined, it causes inconsistencies and many failures may happen throughout the project [17]. Modifications to the agreed scope are inherent in projects due to their complexity and the inevitability of unforeseen problems. Scope changes have a significant impact on the cost of projects. The more changes occur in a project the more effect it will have on the project's cost and project schedule.. However, a thorough investigation of the effect of scope changes on project duration has not yet been conducted [18].

The PMBOK defines Scope management as an area of project management that has processes to record and control everything that belongs to the project boundaries. Though the area is relevant to the success of projects, its application is still a challenge due to the lack of computational tools to support project management that integrate the scope management in totality [18]. Further, the lack of understanding of project requirements is an additional factor that hinders the execution as the stakeholders do lack sufficient knowledge of their needs at the beginning of the project, consequently initiating changes throughout the project lifecycle, and thus increase in costs and effects to the deadlines [19]. Errors in defining the project requirements are always costly and eventually lead to loss of time, the reputation of the organization undertaking the project, as well as revenue. The corrections to the requirements that have been implemented are costly and have a greater impact on the project budget [20].

Project scope definition influences the overall project performance. The level of efforts ensured during the scope definition phase defines the success during the design and implementation phase. Poor scope definition adversely affects the final costs of a project due to certain changes, lowers the productivity of the workforce, and delays project completion time [21]. The number of times losses and monetary losses in projects is considerable, and its caused by inadequate flow of funds, misappropriated funds allocation, improper schedule management planning, changes in scope, and changes in prices [22]. There are no scope changes without possible consequences to schedule in terms of time, budget in terms of money and quality or risk level of the project". This is true and vice versa as well. If the schedule or budget must be tightened, it may require changing the scope or quality requirements, or increase the project risk.

b) Funds Management and Performance of Projects

According to [21] Project Funds are the amount of money that the sponsor has or can afford on a current project. This amount of money in some cases determines the final functionality or in some cases, the fate of the project the sponsor might ask for supplementary feasibility and reconsider the project, the amount, and terms of financial commitment. The owner acquires the money for the project on his personal or organizational responsibility whichever the case might be and therefore has the final say in the decision-making process [21]. [22] in his study to identify the number of times losses in projects and the reasons found that the amount of time and monetary loss is considerable which the causes behind being the inadequate flow of funds, misappropriate funds allocation, improper schedule management planning, changes in scope and changes in prices. A study by [23] demonstrated that adopting fund management practices has a significant positive impact on project performance. The study by [24] contradict that the performance of the project depends on funds management, the results from his study indicated that the critical factors that contribute to the performance of a project included top management support, effective communication, clarity of project purpose and goals, and project stakeholder involvement [24]. [25] in her study of the effect of funds management on project performance found that funds management has a significant positive correlation with the performance of projects in Rwanda.

V. RESEARCH METHODOLOGY

Descriptive research is the one that is undertaken with a view of offering the researcher a profile or to describe relevant aspects of the phenomena of interest from an individual, organization, industry-oriented, or other perspectives [26]. This research design enabled the researcher to obtain the correct information on the Project Time Management on Performance of Projects at ILRI.

a) Target population

The target population, therefore, was the key projects managers and beneficiaries and the unit of observation was the 171 projects that ILRI is implementing. This study focused on Project Time Management on Performance of Livestock projects at ILRI. The study targeted completed and ongoing livestock projects at ILRI within the various programs that include: Animal and Human Health, Policies Institutions and Livelihood, Livestock Genetics, and Sustainable Livestock System. This research targeted respondents with decision-making ability from the project's team and beneficiaries.

b) Sample Size

Yamane's 1967 formula was used to calculate the sample size of the study since it is simple and the population is less than 10,000. Thus, a sample 120 employees was obtained.

c) Data Collection Instrument

Primary data was collected by administering an open and close-ended questionnaire to the respondents. The questionnaire was delivered to employees in the relevant departments.

VI. RESEARCH FINDINGS

A. Descriptive statistics of Study Variables

In this study respondents were asked to indicate whether they agree or disagree with the statements based on a Likert scale of 1 to 5 where 1=Strongly Disagree, 2=Disagree, 3 =Neutral, 4=Agree, 5 =Strongly Agree.

1. Status of Project Time Management and Performance of Livestock projects

The main objective of the study was to establish the influence of Project Time Management on the performance of Livestock projects in the International Livestock Research Institute. Findings from the statistics did not provide significant evidence to explain how project time management influenced the change of performance of livestock projects at the International Livestock Research Institute (overall project performance 3.44, 0.24). The study revealed that project time management has helped increase the activities implemented in the project. (3.79, 0.461). Respondents also agreed that the activities implemented corresponded with the planned activity as per the project plan (4.01,0.084). However, there was no significant statistical evidence to suggest that the organization had minimal delays due to good project time management (2.98, 0.230). Further, the study did not give any significant statistical evidence that project time management influences the implementation of livestock projects within their budgets (2.74, 0.463). There was no significant evidence to show an increase in the successful implementation of projects as a result of good project time

management (2.76, 0.321). Respondents however agreed that the projects delivered at International Livestock Research Institute are of high quality as a result of project time management (3.85, 0.112). The respondents also agreed that proper time management has ensured timely delivery of projects and has consequently increased the satisfaction level of stakeholders (3.69, 0.124). Finally, there was evidence of an increase in project beneficiaries each year as projects are implemented and delivered within the planned timelines (3.76, 0.125).

2. Influence of Project Scope Management on Performance of Livestock projects

The study sought to establish how Project Scope Management in Project Time Management influences the performance of Livestock projects in the International Livestock Research. The Descriptive statistics show that project scope management in project time management influences the performance of livestock projects as shown by the mean (3.89, 0.254). The study found that requirements collection is normally conducted before the implementation of every project (3.89, 0.352). The study found that the project scope management plan guides how the scope will be managed (4.11, 0.144). This concurs with the findings of [27] that a good vision, a good implementation plan, and follow-up through are crucial for successful implementation. The study also found that the definition of activities is observed by the project team before the take-off of the project (3.76, 0.331). Scope verification is normally conducted during the implementation of every project (3.74, 0.463). The study also found that the scope is decomposed in form of work to do (3.86, 0.254). The study also found that the WBS is used to describe the activities of the project (3.85, 0.112). The study also found that scope control is one of the key factors considered before and after the implementation of the project. (3.99, 0.124). Control Scope is also used to manage the actual changes when they occur and is integrated with the other control processes [28].

3. Influence of Project Funds Management on Performance of Livestock projects

The study further sought to establish the influence of project funds management in Project Time Management on the performance of Livestock projects in the International Livestock Research Institute. The descriptive statistics show that project funds management as a component of project time management influences the performance of livestock projects in the International Livestock Research Institute to a great extent as supported by a mean of 3.92 and a standard deviation of 0.232. The study found significant statistical evidence that all project stakeholders are engaged in resource mobilization for project funds to ensure their timely release (3.89, 0.362). Further, project sponsors ensure timely disbursement of funds to avoid delays (4.21, 0.125). The study also revealed that optimal allocation of project funds enhances projects success at ILRI as projects are completed within their timeline (3.98, 0.324). These findings concur with [25] that Funds allocation improved project delivery in projects. There is access to funds for livestock projects which enhances their timely completion (3.74, 0.364). The study found that there are few bureaucracies involved in the release of project funds to the projects (3.76, 0.216). A clear project funds management plan is maintained and discussed with the project team to ensure effective use of funds (3.85, 0.111). The study found an internal controls mechanism of project funds utilization that ensured there are no delays and unavailability of funds (3.99, 0.120).

B. Inferential Statistics

Inferential statistics were used to assess the association between dependent and independent variables. Inferential statistics computed in this study was correlation analysis and regression analysis.

i). Correlation Analysis

The findings from the correlation matrix in Table 4.10 above indicate that, Project Scope Management ($r = 0.769$, P -value = 0.001). Project Scope Management has a strong significant correlation with project implementation (P -value = 0.001) which is below the threshold value of 0.05. The variable also has a strong relationship with Performance of Project as ($r = 0.769$) nears the maximum threshold of +1. The variable also has a positive coefficient meaning a direct relationship with the performance of projects. [29] further adds that poor scope definition has been linked to project failure as it negatively correlates to project performance, has long been recognized as a significant problem. Project Funds Management has a relatively strong positive significant correlation with performance of project ($r = 0.552$, P -value = 0.012). The P -value (0.012) is less than the accepted threshold of 0.05 thus, it is significant. The variable also has a strong magnitude as the r (0.552) nears +1. The fact that the coefficient r is positive implies a direct relationship between Project Funds Management and the performance of projects. The findings also concur with [25] in her study found that funds management has a significant positive correlation with the performance of projects in Rwanda. [23] found that fund management practices had a significant positive impact on project performance. However, [24] in his study did not find

the significant influence of funds management on performance projects though top management support, effective communication, and project stakeholders' involvement were seen as the critical factors that contribute to the performance of projects.

TABLE I: CORRELATION ANALYSIS

		Project Scope Management	Project Fund Management
Performance of Projects	Pearson Correlation	.769**	.552*
	Sig. (2-Tailed)	.001	.012
	N	94	94

** . Correlation is Significant at the 0.01 Level (2-Tailed).

* . Correlation is Significant at the 0.05 Level (2-Tailed).

i). Analysis of Variance

ANOVA was done to establish the significance and fitness of the model. The assumption of ANOVA is that the p-value has to be less than the accepted threshold of 0.05 for the study to be significant and fit in estimating the implementation of the project. Table II below shows the results.

TABLE II: ANALYSIS OF VARIANCE (ANOVA)

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	12.211	4	3.053	45.567	.000 ^b
Residual	6.726	89	0.067		
Total	18.936	93			

a. Dependent Variable: Performance of Livestock Projects

b. Predictors: (Constant), Project Scope Management, Project Funds Management

The results in Table II indicate that the model was significant since the p-value (0.000) was less than 0.05 thus the model is statistical significance in explaining the change of performance of livestock projects at ILRI,

i). Regression Analysis

Regression analysis was done to identify the value of the dependent variable when the independent variables changes. The Beta coefficients are significant if the p-value is less than the threshold of 0.05.

The following multiple regression model was used.

$$y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon \dots \dots \dots (iii)$$

The following regression coefficients were obtained as shown in Table III

TABLE III: COEFFICIENTS OF REGRESSION

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error			
(Constant)	.724	.238		3.042	.003
1 Project Scope Management	.313	.162	.299	1.932	.000
Project Funds Management	.210	.131	.224	1.601	.002

a. Dependent Variable: Performance of Livestock projects

$$PP = 0.724 + 0.313 PSM + 0.210PFM + \epsilon \dots \dots \dots (iv)$$

From Table III above, Project Scope Management (B 0.313, P 0.000) and, Project Funds Management (B 0.210, P 0.002). All the predictor variables had their p-values less than the threshold of 0.05, this implies that they are all significant in the model. The beta coefficients of the variables were: Project Scope Management ($\beta = 0.313$), Project Funds Management ($\beta = 0.210$), and the value of the constant is 0.724.

VII. CONCLUSION

The study attempted to establish the influence of Project Time Management on performance of Livestock Projects in the International Livestock Research Institute. On the influence of project scope management on the Performance of the Livestock Projects in the International Livestock Research Institute, there is a significant relationship between them. Project scope management helps ensure a project includes what is required and only what is required for the successful completion of the project. Scope management relates to other areas in project management such as cost, time, and risks. Scope management is essential for conducting project activities thus, a lack of a mechanism for requirement gathering results in project failures as the requirements once documented become part of the project plan. Thus, it can be emphasized that the scope management plan is a component of the project plan and it describes the definition of the scope, development, control, and validation. It shows how definition, validation, and control of the project scope will be done. On the influence of project funds management as a component of project time management on the performance of livestock projects in the International Livestock Research Institute, there is a significant relationship. Project funds management influences the performance of projects to some extent. Funds management practices have a significant positive impact on project performance. Funds management also has a significant positive correlation with the performance of projects. Funds allocation also helps to reduce the overall risk of the projects as each asset class in a project carries a different risk. Too many bureaucratic procedures on how funds are released lead to excessive demands of resources and time wastage.

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