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CRITICAL SUCCESS FACTORS INFLUENCING THE PERFORMANCE OF INFRASTRUCTURE PROJECTS IN THE AVIATION INDUSTRY IN KENYA; A CASE OF MOI INTERNATIONAL AIRPORT

Isaiah Gichohi Mwangi and Dr. Johnbosco Mutuku Kisimbi

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Critical Success Factors Influencing the Performance of Infrastructure Projects in The Aviation Industry in Kenya; A Case of Moi International Airport

[1*]Isaiah Gichohi Mwangi
Postgraduate Student: The University of Nairobi
*Corresponding Author's E-mail: gichohi.isaiah@gmail.com
[2]Dr. Johnbosco Mutuku Kisimbi
Lecturer, School of Open and Distance Learning, The University of Nairobi

ABSTRACT

Purpose: Aviation sector in Kenya facilitates both international and domestic trade, promotes tourism and foreign investment thus contributing to government revenue and employment opportunities. Therefore, improving airport infrastructure would help reduce travel time, improve connectivity. The high rates of project failure have become a major concern for stakeholders hence the need to identify key factors that promote project success or failure. This study seeks to assess the critical success factor influencing the performance of construction projects in Kenya.

Methodology: The study adopted quantitative method to examine critical success factors for the performance of aviation construction projects in Kenya. Descriptive case study research design was adopted and self –administered questionnaires were used to collect quantitative for analysis. The variables of interest include timely financing project activities, competency of contractors, participation of stakeholders, and management skills. Descriptive analysis and inferential tests were conducted with the aid of IBM SPSS version 23 software.

Results: The study found that timely financing, contractor competency, stakeholder participation, and management skills have positive and significant influence on the performance of aviation construction projects. Descriptive results suggest that tractors competency, timely financing, management skills, and stakeholders' participation have a strong positive influence on project performance. The study has also established a significant contribution of contractor competency to the successful performance of aviation construction projects. It was also noted that participation of key stakeholders in projects identification, decision making, and resource mobilization can enhance the success of aviation construction projects. It was observed that these factors account for over 54.9% of changes in project performance.

Unique contribution to theory, policy and practice: In light of these results, the study recommends industry players to put measures in place that would allow timely provisions of finance for all project activities. It is also important to source for competent and experienced contractors, engage key stakeholders in decision making about the project, and recruit a competent and skilled project manager. The study results have a significant contribution to practitioners in the aviation construction sector in Kenya. The study provides the practitioner with the most critical variables likely to influence the performance of aviation construction projects. It further acknowledges that external factors also influence the success of these projects. In light of this, the practitioners can

institute contingency plans to mitigate the risks to ensure successful completion of their projects. To the academic, the current study has filled literature gap on critical success factors for aviation project performance. Given the upcoming mega project in aviation sector around the world, these factors provide the basis for future research in this area to ensure these projects are executed successfully within budget and schedule.

Keywords: *Timely financing, contractor's competence, stakeholder participation, management skills, performance, aviation infrastructure projects.*

1.0 INTRODUCTION

The global aviation construction projects are largely faced by overruns in time and resources resulting from multiple barriers responsible for the delays and extended cost during performance of infrastructure projects. The success of these projects can be guaranteed by identifying and managing adverse effects of barriers to project success. Babu (2015) identified contractor competence, funding, constraints, management support, stakeholder participation, and airport environment, and skills shortage of construction and engineering skills as critical factors for project success. But the extent and challenges also differ from one country to another. A study by Basheka and Tumutegyereize (2011) observed that financial constraints affect timely acquisition of necessary tools and equipment for project construction. Babu and Sudhakar (2015) argued that inadequate or delayed financing results in project delays hence overrun in costs. Delayed completion of Islamabad international airport was a result of delayed unavailability of project funds (Shahid et al. 2015). The conflicting interests of key players can lead to project failure (McKinsey, 2013). Incompetent contractors cause project cost and time overruns and even the delivery of poor-quality projects (Babu & Sudhakar, 2015). Related to competency stretches to the poor project design due to lack of the required skills by the designers necessitating alterations leading change of project scope as well as cost and time overrun.

Studies around the world have demonstrated that project success or failure is determined by many external and internal factors. The fundamental ones relate to a well-organized project team, the quality of the implementing contractors, management skills in monitoring the progress of the project, timely availability of funds, and the role played by key stakeholders. It is vital to have an efficient system of project management and also being flexible to emerging situations and needs. Studies at global level has demonstrated that involving stakeholders in the project, selecting qualified and competent stakeholders, timely availability of project funds and skilled management staff can lead to improved performance of aviation construction projects (Babu & Sudhakar, 2015). As observed by scholars such as Shahid et al. (2015), construction of the New Islamabad International Airport in Pakistan. In their analysis, they noted that the performance of the project delayed because of inadequate funding and increase in material prices. In their research on critical success factors influencing performance of airport infrastructure projects, Babu and Sudhakar (2015) noted that inadequate or delayed financing results in project delays hence cost overrun. The impact of finance availability on project performance was noted in the performance of the New Pakistan International airport was affected by a lack of funding (Shahid et al., 2015). Besides, according to Babu and Sudhakar (2015) poor original project design resulted in the alterations in the design causing cost and time overruns in the performance of the new airport terminal in Kuala

Lumpur, Malaysia. Overall, multiple factors; ranging from funding, leadership, and so forth affects performance of global infrastructure projects.

Regionally, there is resurgence in African air transport in Africa and aviation is set to become the next infrastructure frontier in this region. The resurgence of African air transport is driven by several factors, including growing urbanization, positive economic growth, and rising middle class population. It is further estimated that Africa will become the world's fastest passenger growth over the next 20 years (Mbarawa, 2016). The deepening regional integration with creation of larger trade zones and linking of Africa to the regional and global value chains implies a high growth potential for freight traffic across the region and beyond. Increased air transport connectivity across Africa is necessary to cater for the rising demand for air transport in the region and reducing the cost of trade and travel. This is calls for the need to improve the aviation infrastructures such as airport through construction of new projects and renovation to expand the capacity of existing ones to accommodate increased number of flights.

Several factors, including availability of finance are impacting regional construction projects leading to time and cost overrun. For instance, the findings by Kamanzi et al. (2015) on projects in Tanzania indicate that poor budgetary allocation for the resident engineer slowed down the progress of the rehabilitation works on the Julius Nyerere International Airport (JNIA). In Rwanda for instance, the unavailability of finances stalled the construction of the Bugesera International airport (Nyasetia, 2016). It is evident that regional projects are influenced by some critical factors including availability of finance, stakeholder involvement, and competence of contractors among other factors.

Aviation sector in Kenya facilitates both international and domestic trade, promotes tourism and foreign investment thus contributing to government revenue and employment opportunities (Mbarawa, 2016). In Kenya, the Medium- Term Expenditure Report noted that out of the 67% of the civil works on projects undertaken by the Ministry of Works, 39% of them had both time and cost overruns. The issue of overruns in the performance of infrastructure projects is a global occurrence, but its extent differs from one country to another. In their study, Odhiambo and Kaibui (2016) noted that the construction of the waiting bay at the Lodwar airstrip was to take 9 months but the project was delivered two months behind schedule with significant cost overrun.

Performance of infrastructure projects encounters hurdles and risks which combine to test the project managers' capability to perform. The management plays a supportive role in influencing the performance of infrastructure projects at airports. The role of involving key stakeholders in infrastructure project in Kenya was noted in some literatures. For instance, Omondi and Kimutai (2018) alluded to the fact that the successful performance of infrastructure projects requires effective communication channels between all the stakeholders. A similar study by Odhiambo and Kaibui (2016) noted that in Kenya, the involvement of stakeholders impacted the execution of air safety projects by the Kenya Airports Authority (K.A.A). As an important stakeholder, the government through KAA and ministry of transport officials plays a critical role in influencing the performance of infrastructure projects at airports in Kenya. Project success or failure is a function of various factors hence the proposal seeks to examine critical success factors performance and construction of airport infrastructural projects in Kenya. Empirical gap on critical factors

influential performance of construction projects in Kenyan aviation construction projects is evident. It is important to determine whether these findings applied to the Kenyan context.

1.1 Statement of the problem

The problem to be researched is the high level of project cost and schedule overrun in the of airport infrastructure projects resulting to poo project performance. The project is focused on whether the participation of stakeholders, contractor competency, timely availability of project funds, and management skills influence the success or failure of airport infrastructure projects in Kenya. The case of Moi Airport infrastructure project is selected as current one under innovation and accessibility to the researcher. The role of these factors in project success and failures have been demonstrated in global, regional, and even national studies. However, there is scanty literature in the Kenyan context particularly in aviation infrastructural projects. It is hence vital to assess whether this is also the case in the aviation industry of Kenya.

However, Odhiambo and Kaibui (2016) observed that most infrastructure projects in developing countries do not involve stakeholders, makes use of incompetent contractors, and characterized by delays in releasing project finance. Furthermore, some managers in the aviation industry are lacking in skills and competencies necessary to manage stakeholders involved in project performance. Consequently, the projects are characterized by project overruns time and schedule and failure to achieve desired outcomes. The high rates of project failure have become a major concern for stakeholders hence the need to identify key factors that promote project success or failure. Hence, the proposed study seeks to fill empirical gaps by assessing whether these factors are critical to the performance of infrastructure project in Kenyan aviation industry.

1.2 Purpose of the study

The purpose of the study was to examine the challenges facing the performance of the aviation construction projects in Kenya, case of Moi International Airport, Mombasa.

1.3 Objectives of the study

The study was guided by the following specific objectives:

i. To establish the extent to which timely financing influence the performance of infrastructure projects in aviation industry.
ii. To assess the influence of contractor's competence on performance of aviation infrastructure projects in Kenya.
iii. To establish the influence of stakeholder participation on performance of aviation infrastructure projects in Kenya.
iv. To determine how management skills influences performance of aviation infrastructure projects in Kenya.

1.4 Research Questions

In order to meet the purpose of the research, the researcher sought to answer the following research questions:

i. To what extent does timely project financing influence the performance of aviation infrastructure projects in Kenya?
ii. What are the effects of stakeholder participation on performance of aviation infrastructure projects in Kenya?
iii. How does the level contractor's competence affect the performance of aviation infrastructure projects in Kenya?
iv. How do management skills influence the performance of aviation construction projects in Kenya?

2.0 LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Stakeholder theory

Stakeholder theory was originally advanced by organizational theorists Ian Mitroff in 1983 in his book titled 'Stakeholders of the Organization Mind'. It was later refined and published in California Management Review journal by Business Administration professor Edward Freeman later in 1983. This theory is used to explain different roles, power, and interest if stakeholders in an organization. The theory is applicable and relevant in the context of project management to assess the role of important groups including contractors, project designers and managers, project users and sponsors as well as the community and the state. The involvement of stakeholders is required to ensure that the project meets specifications in terms of quality and scope. Stakeholders influence the performance of infrastructure projects in the aviation industry. As noted by Vuorinen & Martinsuo (2019), these stakeholders may include project sponsors, customers, the community, and the implementing companies. The stakeholder theory helps in shaping the behaviour of institutions to be socially accountable to the local community and different partners (Bridoux & Stoelhorst, 2014). Through this theory, organizations are guided by government blueprints standard operating procedures, waste disposal, procurement, and compensation processes. The stakeholder theory applies to this study because it underscores the importance of organizations to abide by the laws, patterns, standards and practices, organizational culture, and regulations concerning acquiring, coordinating and deploying resources to attain improve output.

2.2.2 Systems theory

The system theory looks at phenomenon or the project as a whole rather than individual parts comprising it. The general system model was introduced by Katz and Kahn in 1966. In the contexts of this study, the success of a construction project is a collective effort of various players functioning as a whole to achieve the set objectives. The systems theory can provide the reasons behind the failure of many infrastructure projects undertaken by the government. According to this theory, these projects fail due to the different processes that are innate in the structure which must be complied with before the project is completed (Ahern et al, 2014). The funding process of the project is one of these processes. This theory advances the notion that everything is part of a larger autonomous arrangement. According to the systems theory, the successful performance of projects needs a seamless funding structure that identifies the various stages and activities to be funded (Davies & Mackenzie, 2014). This theory applies to this study because it specializes in organization systems, utilizes researched data, and it is the most common model used in examining

the delivery of services in the public sector. Therefore, the execution of aviation infrastructure projects succeeds or fails to achieve their objectives due to the constraints. In other words, constraints influence the execution of infrastructure projects at airports. The constraints in this theory relate to stakeholder support, finance, project design, contractors' competence, and management support.

2.1.3 Theory of triple constraint

Triple constraint is a model identify time, cost, and scope as the key constraints to successful management of projects. The model was coined by the Institute of project management to guide effective management of projects. According to this theory, the successful performance of a project is affected by its cost, deadlines, and features. To successfully implement infrastructure projects, there is a need to balance project budget, time and scope (Tinoco, Sato & Hasan, 2016). This theory applies to the performance of infrastructure projects at airports in Kenya because it provides a guideline that project team members agree with. The theory provides limits in which team members work and push the project ahead while providing room for necessary alterations during the project life cycle. On the other hand, Rugenyi (2016) argued that altering or constraining one of the key elements of the triple constraint variables makes it necessary for planning. To achieve the desired quality, one of the elements of the triple constraint must be susceptible to exploitation. Overall, the theory of triple constraint can be presented as a triangle made up of deadlines, budgets, and features upon which the accomplishment of every project is based.

2.2 Empirical Literature Review and Research Gaps

The table 1 outlines a summary of empirical literature review and research gap

Table 1: Summary of Empirical Literature Review and Research Gap

Objective	Author/topic	Findings	Research gap
Influence of timely availability of project finance on the performance of infrastructure projects in the aviation industry.	Fiedler and Wendler (2016). Berlin Brandenburg Airport. In Large Infrastructure Projects in Germany	Aviation project delay resulted from poor project planning and lack of timely funding	Focused on Developed country- Germany hence the need to assess whether it applies to developing countries
	Babu and Sudhakar (2015). Critical Success Factors Influencing Performance of Construction Projects.	Inadequate and delayed financing cause delays and cost overrun in road construction projects	It was centred on aviation construction projects hence to assess if it applies to aviation projects
Influence of contractor's competence on the performance of	Kamanzi et al. (2015). Airport Rehabilitation in Tanzania.	Design error cause delays in the performance of aviation rehabilitation project	The study left out other important competencies required from the contractors

aviation infrastructure projects in Kenya.	Helen et al. (2015). Factors Influencing the Performance of Construction Projects in Akure, Nigeria.	Inadequate skilled personnel, poor leadership, lack of proper site management, and frequent equipment breakdown an affect the contractor's ability to implement a road infrastructure project	The study focused on road construction projects and not aviation infrastructure projects
Influence of stakeholder participation on the performance of aviation infrastructure projects in Kenya.	Othman & Ahmed (2013). Challenges of mega construction projects in developing countries.	Conflicting individual priorities and objectives of stakeholders affect the performance of aviation projects	The study failed to identify specific conflicting stakeholder objectives and priorities affecting performance
	Brombal et al. (2017). Evaluating public participation in Chinese EIA.	Successful performance of aviation infrastructure projects should strive to fulfil the needs and expectations of the community around the airport.	The study focused on the community around the airport thus leaving out several stakeholders
Influence of management skills influences the performance of aviation infrastructure projects in Kenya	Nakitare (2016). Factors influencing Completion of Construction Projects Funded by Constituency Development Fund (CDF) in Secondary Schools.	Poor estimation of project cost contributes to project failure in Kenya	The study centred on CDF road and classroom projects and not aviation infrastructure projects
	Locatelli et al. (2017). Project characteristics and performance in Europe	Successful execution of aviation infrastructure projects required managers who are skilled, creative, highly flexible, happy, and effective communicators.	The study focused on developing countries of Europe, It is important to establish if these factors apply in Kenyan context

2.3 Conceptual framework

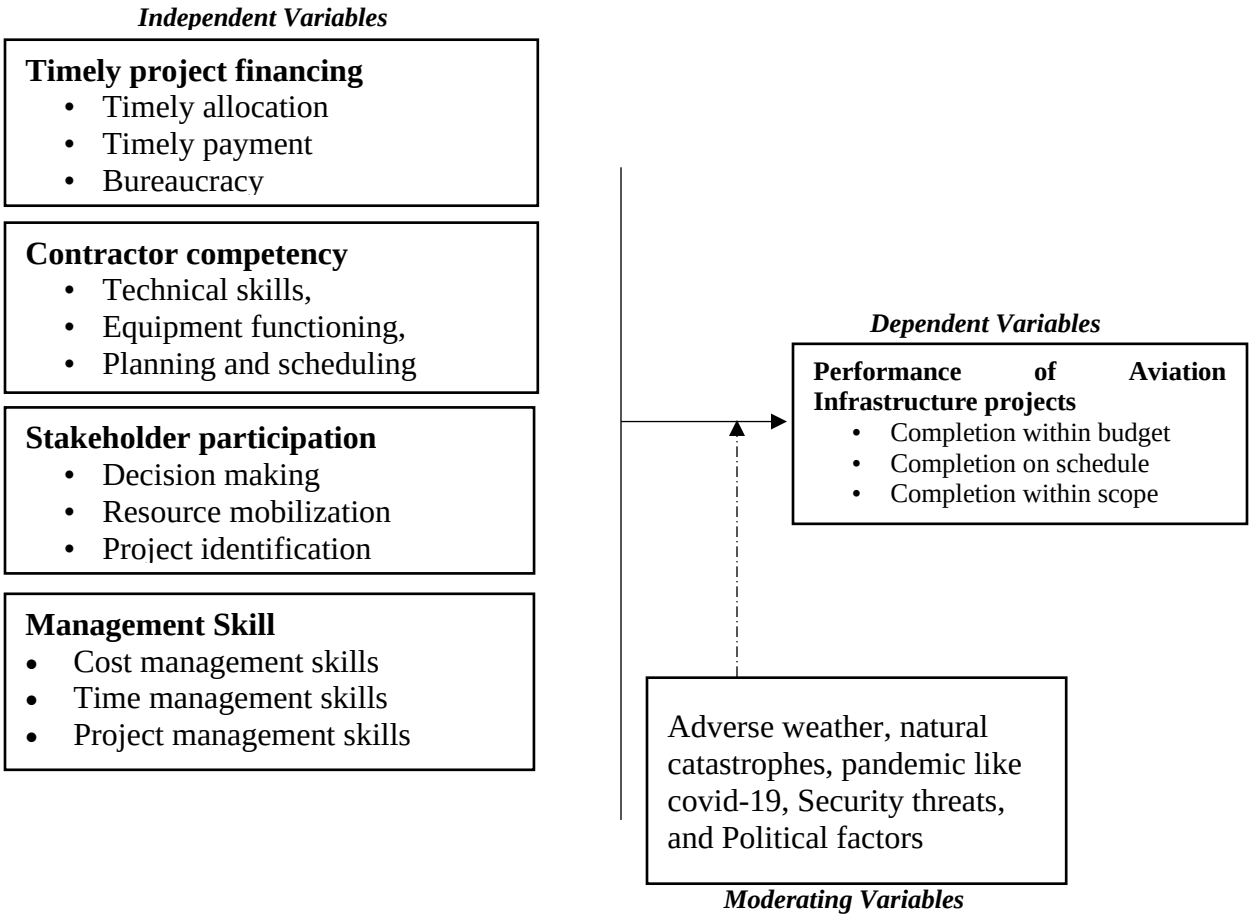

Figure 1: Conceptual Framework Diagram

3.0 RESEARCH METHODOLOGY

The study adopted quantitative method to examine critical success factors for the performance of aviation construction projects in Kenya. Descriptive case study research design was adopted and self –administered questionnaires were used to collect quantitative for analysis. The variables of interest include timely financing project activities, competency of contractors, participation of stakeholders, and management skills. According to Engineering institute report (2019), there are about 90-100 competent local and foreign firms with the capability to construct airport projects operating in Kenya. The construction consultants in this area are approximated at 70-80 while there are about 40 KAA airport managers and technical staff attached in the infrastructure project construction and management.

Table 2: Study Population

Cluster	Frequency	Percentage
Airport Contractors	94	36
Construction Consultants	76	28
KAA officials	58	22
Material suppliers	36	14
Total	264	100

The model by Morgan and Krejcie (1970) was used to calculate the minimum sample size of 156 for the study. Taking into consideration the attrition of the participant, the study opted for a sample size of 160 to be used in the study as respondents. The sample was proportionally selected based on the sampling ratio from each stratum/category to ensure that all sectors charged with the performance of airport construction projects are represented in the study sample. The sampling ratio is the proportion of sample size to the target population

Table 3: Sample Size for the Study

Cluster	Frequency	Sampling ratio	Sample size
Airport contractors	94	0.61	57
Consultants	76	0.61	46
KAA officials	58	0.61	35
Material suppliers	36	0.61	22
Total	264	0.61	160

The instruments to be used in this study are questionnaires for collecting primary. The questionnaire had closed-ended questions to ensure consistent responses are gathered from the participants. The questionnaire instrument was administered to eight participants from Jomo Kenyatta International for piloting where the revision was key in achieving the content validity. The instrument was finally discussed with my MBA supervisor to get a further expert opinion. Reliability of the survey questionnaire was assessed through to the piloting using the Cronbach's Alpha. The coefficient is 0.7 and above on all the items within the instruments is considered reliable (Mohajan, 2017). A construct composite reliability co-efficient for the items predicting project performance was above .70 indicative of reliability.

Table 4: Reliability Analysis

Variable	Cronbach's alpha
Timely financing	0.781
Contractor competency	0.824
Stakeholders participation	0.771
Management skills	0.726

The reliability results reveal that contractor competency was the most reliable variable as the by the highest alpha value of 0.824. It is followed closely by timely financing and stakeholder participation with coefficients of 0.781 and 0.771 respectively whereas management skills scored 0.726 on the alpha scale. These results demonstrate that questionnaire instruments used in the study was a highly reliable measure of airport construction project performance.

Descriptive and inferential tests were carried out to analyze quantitative data using IBM SPSS version 23 software. Descriptive statistics will also generate the mean, standard deviation and range of the various variables. Multiple regression analysis was used to generate inferential statistics. The regression model was useful in assessing the effects of independent variables on the dependent variable. The independent variables include timely financing, contractor competency, stakeholder participation, and management skills while aviation project performance was the dependent variable. Descriptive analysis and inferential tests were conducted with the aid of IBM SPSS version 23.0 software.

4.0 FINDINGS AND PRESENTATION

4.1 The Response Rate

A total of 160 survey questionnaires administered to participants through online platforms distributed as follows: 57 Contractors and sub-contractors, 46 consultants, 35 KAA managers, and 22 for others comprising of designers, architects and engineers. The response rate was 90% or 144 participants. Accordingly, 54 contractors and subcontractors, 36 consultants, 32 KAA officials, and 19 material suppliers managed to return filled questionnaires which were used in the analysis. The 90% response is good representative conforming to the Bresler and Stake (2017) stipulation of at least 50 per cent as an adequate response for analysis.

Table 5: Response Rate

Respondents	Sample Size	Response
Contractors and subcontractors	57	54
consultants	46	39
KAA officials	35	32
Material suppliers	22	19
Total	160	144

A total of 160 survey questionnaires administered to participants through online platforms distributed as follows: 57 Contractors and sub-contractors, 46 consultants, 35 KAA managers, and 22 for others comprising of designers, architects and engineers. The response rate was 90% or 144 participants. Accordingly, 54 contractors and subcontractors, 36 consultants, 32 KAA officials, and 19 material suppliers managed to return filled questionnaires which were used in the analysis. The 90% response is good representative conforming to the Bresler and Stake (2017) stipulation of at least 50 per cent as an adequate response for analysis.

4.2 Performance of Airport projects in Kenya

Table 6: Project Performance

	Yes	No	Total
Involved in the construction of Airport projects	123 (85.4%)	21(14.6%)	144(100%)
Are airport construction project completed on schedule?	41(28.4%)	103(71.6%)	144(100%)
Are the airport constructions projects complete within budget?	19 (13.1%)	125(86.9%)	144(100%)
Do the project outcomes meet the expected quality and scope?	57 (39.5%)	87(60.5%)	144(100%)

It was vital to have participants that have been directly involved in the construction of airport projects. The results indicate that majority of selected respondents have been directly involved in the aviation construction project hence have relevant information for the study. It was also observed that most aviation construction projects are not meeting the schedule and budget. However, a substantial proportion of these projects meet the required quality and scope.

4.3 Descriptive Analysis of Dependent variable

This section presents descriptive results on participants' agreement or disagreement on statements capturing key measures of construction project performance. These factors include completion within time, budget, and scope and meeting the required quality. A five-point Likert scale was used to measure the level of agreement with statements measuring these variables where 1 represent a strong disagreement and 5 represent a strong agreement with the various statements.

Table 7: Agreement or disagreement with Aviation Project Performance

No.	Statements/description	Mean	Std. Dev.
1.	Most airport construction project in Kenya completed on schedule	2.814	0.914
2.	Most airport construction project in Kenya is completed on budget	3.042	0.874
3.	Most airport project outcome meets expected quality	4.283	0.451
4.	Most airport construction projects are completed within the scope	3.747	0.413

According to the presented results, the high mean score of greater than 3.5 indicates a strong agreement of participants with respective statements. Hence, there is a strong agreement by respondents that outcome of airport construction projects meets expected quality as shown by a mean and standard deviation of 4.283 and 0.451 respectively. Besides, the means and standard deviation of 3.747 and .413 supports the view that most of these projects are completed within the expected scope. However, project completion within expected time and budget was rated moderate by respondents. Hence, these results suggest that a considerable proportion of airport projects experience time and cost overrun.

4.4 Descriptive Analysis of Independent Variables

The following section presents descriptive results on factors influencing the performance of airport construction project in Kenya as analyzed in detail in my report. These factors include timely financing of the project, contractor's competency, stakeholders' participation, and management

skills. A five-point Likert scale was used to measure the level of agreement with statements measuring these variables where 1 represent a strong disagreement and 5 represent a strong agreement with the various statements.

4.4.1 Timely financing of project Activities

The researcher examined how timely financing of various activities of Airport construction projects influence project performance. Study participants were expected to indicate their level of agreement of disagreements with various statements on items measuring timely financing on a Likert scale. The results from these respondents are presented in table 8.

Table 8: Influence of Timely Financing on the Performance of Aviation Construction Project

Items measuring Timely Financing	Mean	Std. Dev.
Timely allocation of funds to project activities is necessary for the successful performance of aviation projects	3.824	0.414
Timely payment of materials and labour is key to the success of airport construction projects	4.142	0.694
Reduced bureaucracy in the processing of projects improve performance	4.031	0.527
Price inflation of aviation construction project have adversely effects performance	3.355	0.413

The results across all the measures of timely financing have a high mean greater than 3.5 indicative of strong support by participants of these statements. Accordingly, timely payment and reduced bureaucracy in financial matters have means of 4.142 and 4.031 respectively. Still, timely allocation of finds to project activities and price inflation also had means of 3.824 and 3.355. Hence, these results underscore the importance of timely financing of project activities as important for the successful performance of airport construction projects.

4.4.2 Contractor's Competency

The study assessed the influence of contractors' competency on the performance of airport construction projects. On a five-point Likert scale for agreement or disagreement, study participants were expected to indicate their level of agreement of disagreements with various statements on items measuring the competency of contractors. The results from these respondents are presented in table 9.

Table 9: Influence of Contractor Competency on the Performance of Aviation Construction Projects

Statement measuring contractor's competency	Mean	Std. Dev.
The level of the contractor's technical skills is essential for the successful performance of aviation construction projects	3.607	0.514
Reducing equipment failures during construction improves the performance of aviation projects	4.013	0.794
Proper planning and scheduling of airport construction projects is key to successful performance	3.783	0.527
The level of the contractor's team management skill is essential for the successful performance of aviation construction projects	3.153	0.513

The results across all the measures of contractors' competency have a high mean greater than 3.5 except for the management skills. These results indicate strong support by participants of statements measuring the competency of contractors. Accordingly, reducing equipment failures is the most important item with a mean and standard deviation of 4.013 and 0.794 respectively. Still, proper planning and technical skills also had high means of 3.783 and 3.607 respectively. However, managerial skills had the least mean score of 3.153 and standard deviation of 0.513 respectively. Hence, these results suggest the need for players to select competent contractors if they want to achieve the successful performance of these projects.

4.4.3 Stakeholder participation

The study further assessed the influence of stakeholders' participation in the performance of aviation construction projects in Kenya. Specifically, stakeholders can participate in the identification of project, mobilization of resources for the project, and decision making on key issues likely to affect project performance.

Table 10: Influence of Stakeholders' Participation in Airport Construction Projects

Influence of stakeholder participation	Mean	Std. Dev.
The participation of key stakeholders in decision making of construction project improves its success	4.212	0.801
The participation of stakeholders in resource mobilization generates the successful performance of the project	3.919	0.604
Participation of key stakeholders in the identification of projects improves project performance	4.118	0.522

The results for the three measures of stakeholder participation have a high mean greater than 3.5. These results indicate strong support for the participation of stakeholders in aviation construction projects through decision making, resource mobilization, and identifying projects to construction and renovation. Participation in decision making of the project had a mean and standard deviation of 4.212 and .801 respectively. Participating in project decision making makes stakeholders own and be part of the project. This was followed by participating in project identification with a mean of 4.118 whereas resource mobilization scored 3.919. The results support the importance of including key stakeholders in critical decisions about construction projects.

4.4.4 Management Skills

The study also sought to assess how management skills influence the performance of airport construction projects. These include technical skills, leadership skills, financial and cost management skills, and time management skills.

Table 11: Influence of Management Skills on Performance of Aviation Construction Projects

Items measuring management skills	Mean	Std. Dev.
Financial/ Cost management skills are essential in enhancing the successful performance of aviation construction project	3.264	0.517
Leadership skills are critical in attaining performance success in airport construction projects	4.277	0.441
Time management skills help to improve aviation projects success by facilitating timely completion	3.162	0.651
Project management skills are essential for the successful performance of aviation infrastructure projects	4.154	0.595

The results for the measures of management skills have varying mean scores. These results indicate strong support for leadership and project management skills in aviation construction projects. These items have a mean score of 4.277 and 4.154 for the leadership and project management skills respectively. However, financial/cost and time management skills had a moderate mean score of 3.264 (S.D = .517) and 3.162 (0651) and respectively. These results suggest the need for managers to have strong leadership and project management skills to gain high performance of aviation construction projects.

4.5 Multiple Regression Analysis

Multiple regression analysis was used to determine the effects of independent variables on the performance of airport construction projects. The independent variables include timely financing, contractor's competency, stakeholder participation, and management skills.

Table 12: Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. The error of the Estimate
1	0.712	0.618	0.549	0.570

The model summary has an R square value of 0.549 indicating that independent variables account for 54.9% of the variation in the performance of aviation construction projects. The R square is used to show variations independent variable explained by the regressions. Therefore, the model accounts for 54.9 of changes independents variables, suggesting there are external factors influencing variations in project performance.

Table 13: Analysis of Variance results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	83.88	4	27.220	57.168	0.000
	Residual	51.33	108	0.304		
	Total	135.21	111			

Analysis of variance reveals the model as a whole is significant as shown by a high F calculated value (57.168) than F-critical value (2.437). The p-value for the overall model was also less than 0.05 indicative of that whole model was significant. Model coefficients table generates the unstandardized and standardized coefficients for explaining the direction of the regression model as well as determinant significant levels of variables. The regression coefficients are captured in table 14.

Table 14: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	β	Std. Error	Beta		
(Constant)	0.852	0.357		3.587	0.014
Timely financing	0.743	0.492	0.681	3.446	0.026
Contractor competency	0.835	0.383	0.712	4.109	0.047
Stakeholder participation	0.756	0.347	0.639	3.274	0.036
Management skills	0.627	0.426	0.645	3.370	0.028

The general regression equation is expressed as $\mathbf{Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon}$ substituted with generated coefficients as:

$$Y = 0.852 + 0.743\mathbf{X_1} + 0.835\mathbf{X_2} + 0.756\mathbf{X_3} + 0.627\mathbf{X_4}$$

Where

$\mathbf{X_1}$ =Timely financing
$\mathbf{X_2}$ = Contractor competency
$\mathbf{X_3}$ = Stakeholder participation
$\mathbf{X_4}$ = Management skills

According to regression results, all independent variables (timely financing, contractor competency, stakeholder participation, and management skills) are significant correlated with the performance of aviation construction projects because they have p values of less than 5%. The findings further indicate that all variables have positive effects on project performance. Therefore, a unit increase in any of the study variables improves project performance. For instance, increasing timely financing of project activities generates an increase in performance scores by 0.743 unit and the relationship is significant at p-value = 0.026. Similarly, a unit increase in contractor competency generates a significant increase of .835 in project performance at p values of 0.047. Further, a unit increase in stakeholder participation also increases project performance by 0.756 with a p-value of 0.036. Finally, project performance is increased by 0.0627 when management skills are increased by one unit. Therefore, even though all the four variables have significant

influence on the performance of aviation project contractor competency had the greatest influence with a regression coefficient of .835. Of the four variables, contractors' competency is the key one that must be given priority to achieve project success.

5.0 SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary of the findings

5.1.1 Influence of Timely Financing

The study found a positive significant correlation between timely financing and performance of construction projects. This finding is consistent with earlier ones by Babu and Sudhakar (2015) which also concluded that inadequate and delayed financing cause delays and cost overrun in road construction projects. Moreover, a related study by Roshani, Gerami, and Rezaeifar (2018) also identified timely allocation of project funds, suitable financial support, stakeholder commitment and accountability, as local factors contributing to project success. Additionally, Fiedler and Wendler (2015) study found that megaproject encounter time delays with the cost exceeding the budget. The study attributes this delay to poor project planning and lack of timely project funding. However, as noted by Shahid et al. (2015) analysis, inadequate funding and increase in material prices are other factors delaying time completion and performance of these projects. Similarly, Kamanzi et al. (2015) study also found that poor budgetary allocation for the resident engineer slowed down the rehabilitation works on the Julius Nyerere International Airport (JNIA). Therefore, these studies support the relevance of timely financing and stakeholder participation as success factors for Airport construction projects in the Kenyan context.

5.1.2 Influence of Contractor Competency

The research also found that contractor competency is a significant factor influencing the performance of construction project in the aviation sector. As noted by Kulemeka et al (2015), the competence of the contractor is a key factor influencing the performance of infrastructure projects at airports. These authors also observed that incompetent contractors can lead to project cost and time overruns and even the delivery of poor-quality projects. A recent study by Orkomy and Sharbatdar (2020) also demonstrated the significance of technical aspects such as contractor competence for improved performance of airport construction projects. Still, on contractor competency and management skills, a study by Helen et al. (2015) noted that frequent equipment breakdown has adverse effects on the contractor's ability to complete an infrastructure project successfully. Contractor competency is supported by multiple scholars suggesting its relevance in achieving a successful performance of construction projects.

5.1.3 Influence of Stakeholder Participation

Several scholars acknowledge that stakeholders are influencers of infrastructure projects performance at airports. On stakeholders' participation, Othman and Ahmed (2013) noted that conflicting individual priorities and objectives of stakeholders affect the performance of aviation projects. The study is consistent with Odhiambo and Kaibui (2016) study in Kenya indicating that the involvement of stakeholders impacted the execution of air safety projects by the Kenya Airports Authority (K.A.A). A similar view was held by Omondi and Kimutai (2018) alluding that effective communication and coordination among key stakeholders foster the performance of

airport construction projects. The influence of community as key stakeholders was examined by Brombal et al (2017). These authors observed that successfully performance of aviation infrastructure projects at airports must incorporate the input from the local community through the participative planning process. These studies have demonstrated the significance of stakeholder participation in enhancing the successful performance of aviation construction projects in Kenya.

5.1.4 Influence of management skills

Regarding the influence of management skills, an earlier study in Nigeria by Helen et al (2015) found that inadequate skilled personnel, poor leadership, lack of proper site management, and frequent equipment breakdown affect the contractor's ability to implement road projects. The results of the current study are also consistent with Roshani, Gerami, and Rezaeifar (2018) focused on manager's competency as a success factor in Airport construction projects. Similar to this study, these authors found that leadership, project financing and cost management skills among other skills as critical for the successful performance of aviation construction projects in Kenya. Additionally, a study by Helen et al. (2015) revealed that inadequate skilled personnel, poor leadership, lack of proper site management leads to project delay and cost overruns. The influence of management skills to construction project performance is supported by several empirical studies which underscore its significant for players in this field.

5.1.5 Intervening Variables

However, other factors are contributing to project failure classified under the intervening variables. These factors include bad weather, natural catastrophes and pandemics such as earthquakes and Covid-19, security threats and political interference. As noted in a study by Wahab (2014), political and security threats are other factors influencing the performance of construction projects in the Middle East region resulting in time and cost overruns. A similar study by Bluhm et al. (2018) also observed that noted that project delays are brought about by conflicting policies between the government and financier. These constitute other factors accounting the remaining variations in project performance revealed in the regression model. It is hence vital for the player to take note of these factors as influencing the performance of aviation construction projects.

5.2 Conclusion

The study has demonstrated the importance of timely financing of various project activities. Regarding this variable, key player in the airport construction sector need to assess and implement policies that facilitate the timely allocation of resources to projects tasks. Further to that, the significance of timely payments for materials and services such as labour is a key motivation to project team to expedite completion of the project. The cost overrun can result from delayed financing due to inflationary pressures; it is hence vital to put in place proper mechanisms to mitigate these challenges. In conclusion, the role of timely financing of project tasks and activities cannot be underrated by players, but rather accorded the significance it deserves to achieve project success.

The study has also established a significant contribution of contractor competency to the successful performance of aviation construction projects. Regarding this, the bidding and selection process needs to consider the competency of contractors in terms of their technical skills of contractors, their experience, the quality of their equipment, and team management skills. These considerations

are fundamental in ensuring that construction projects are performed smoothly and cost-effectively without any delays. In conclusion, the competency of contractors needs significant attention because they account for greater success in most construction projects.

The participation of key stakeholders in projects identification, decision making, and resource mobilization can enhance the success of aviation construction projects. Considering the varied influence and interest across stakeholders, striking the right balance is essential in avoiding project failure. The interest of powerful stakeholders like project sponsors needs to be prioritized. However, the interests of other stakeholders need also be incorporated by encouraging and allowing their participation in key decisions, project identification, and resource mobilization. In conclusion, the effective participation of various stakeholders in projects is necessary for achieving successful performance.

The influence of management skills including time and financial management skills, project management and leadership skills has been supported by the current study. Project managers play a key role in coordinating the project team to implement tasks and activities of aviation construction projects. Given the complexity and mega nature of aviation projects, there could be multiple sub-contractors and a large project team to manage. It is therefore important to have a highly competent project manager to achieve the required project's success. Besides, the project manager must also have skills and competencies to manage other factors likely to influence project performance such as political interferences, adverse weather and natural catastrophes and security threats.

5.3 Recommendations and Contributions of the Study

The current study aimed at determining critical factors influencing the performance of aviation construction projects in Kenya using a case study of Moi International Airport. The following recommendations are critical in gaining successful performance of construction projects in Kenya.

i. There is a need for the industry players to put measures in place that would allow timely provisions of finance for all project activities. As noted in the results, timely financial is a critical factor in driving project success. On the contrary, delayed financing results in budget and also delay completion of the project. Therefore, measures for ensuring the timely allocation of funds and timely payment would lead to the successful performance of aviation construction projects.
ii. The study has noted the contribution of contractor's competency to aviation construction project performance. In light of this, the study recommends the selection of competent contractors to undertake aviation projects. In particular, competency is assessed best on the rate of equipment failure and how it is addressed by the contractor. Technical skills of the contractors to implement project tasks are another consideration in selecting the project contractor. There is a need to consider planning and team management competencies in sourcing for contractors.
iii. The study further acknowledges the contribution of various stakeholders to the success of aviation construction projects. Because of this observation, there is a need to involve key stakeholders in making key decisions, identification of projects, and mobilization of project resources.

iv. The significant role of management skills in driving a successful performance of aviation construction projects has been noted in the study. It is recommended for players in this sector to assess the management skills of projects managers. Consideration should be given to those with excellent project management skills, leadership skills, financial and cost management skills, and time management skills.

v. The study has also noted that possible intervening variables also influence the performance of aviation construction projects. These include political factors, harsh weather conditions, security threats, and natural catastrophes such as earthquakes. It is important to assess the risk prospects for these conditions and put in place contingency measures to mitigate their possible effects on project performance.

5.3.1 Contribution to practice and Knowledge

The study results have a significant contribution to practitioners in the aviation construction sector in Kenya. The study provides the practitioner with the most critical variables likely to influence the performance of aviation construction projects. It further acknowledges that external factors also influence the success of these projects. In light of this, the practitioners can institute contingency plans to mitigate the risks to ensure successful completion of their projects. To the academic, the current study has filled literature gap on critical success factors for aviation project performance. Given the upcoming mega project in aviation sector around the world, these factors provide the basis for future research in this area to ensure these projects are executed successfully within budget and schedule.

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