

STAKEHOLDER ENGAGEMENT AND PERFORMANCE OF AEROSPACE SAFETY  
AUTOMATION PROJECTS: A CASE OF KENYA CIVIL AVIATION AUTHORITY

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A research project report submitted in partial fulfilment of the requirements for award of the  
degree of Master of Arts in project planning and management of the university of Nairobi

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## DECLARATION

This is my original work and has not been presented for a degree award in any other university.

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This report is submitted for examination with my approval as the university supervisor.

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Date

## **DEDICATION**

This is devoted to my late parent, Sarah Cheron Maiyo who invested heavily in my basic education, committing every resource she had to nurture my initial academic years despite never attending any formal education herself. This is also to Capt. Stephan Kruger my beloved husband and my children Stephanus, Samantha, and Daniel, this is for you and thank you for the encouragement.

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## **LIST OF ABBREVIATIONS AND ACRONYMS**

AFDB	African Development Bank
CDCF	Constituency Development Catalyst Fund
CDF	Constituency Development Fund
CRM	Customer Relations Management
IBRD	International Bank for Reconstruction and Development
ICAO	Chicago Convention on International Civil Aviation
ICT	Information and Communications Technology
IDB	Inter-American Development Bank
IFC	International Finance Corporation
KAA	Kenya Airports Authority
KIIs	Key Informant Interviews
KCAA	Kenya Civil Aviation Authority
KeNHA	Kenya National Highways Authority
KFS	Kenya Ferry Services
NEMA	National Environmental Management Agency
NGOs	Non-Governmental Organizations
PMC	Project Management Contractors
UNEG	United Nations Evaluation Group
WASH	Water Sanitation and Hygiene

## ABSTRACT

Projects are usually considered successful regardless of the outcome of the project so long as the expectations and needs of the stakeholders are met during the project's lifetime. Under the guidance of its corporate strategic plan, Kenya Civil Aviation Authority has been implementing various ICT projects to realize its strategic objectives and align most of its functions to its broader corporate strategy. However, despite the automation of its systems and structures challenges have emerged regarding the use of the automation systems thereby preventing the delivery of service and mandate to help achieve a vibrant aviation industry. The authority has sought to include various stakeholders both internal and external to get their inputs and consequently build an effective automated safety and security oversight system. The study examined how stakeholder engagement influenced the performance of safety automation projects at the Kenya Civil Aviation Authority. The objectives were to examine in what way engaging stakeholders in the project initiation, planning, execution, and monitoring and evaluation have influenced the performance of the civil aviation safety automation project. The study relied on both stakeholder theory and institutional theories that argue that everyone who has a genuine interest in participating in a project does so because of the interest and benefits they will obtain from participating in the project and by managing their interest in a strategic manner they generate maximum benefits for the project as well as improving project performance and success. The study relied on a case study research design of the explanatory type in this endeavor sampling 220 respondents from a target of 870 staff and affiliates of KCAA composed of steering committee members, project managers, airworthiness inspectors, personnel licensing inspectors, flight operation inspectors, air traffic controllers and flight dispatchers using random stratified sampling techniques. Questionnaires and key informant interview were used in the study and the collected data cleaned and formatted before conducting analysis using SPSS software. Inferential and descriptive statistics including a multivariate regression to check how stakeholders engagement influence the performance of the civil safety automation project. The study results show that engaging stakeholders in project initiation positively influences the performance of the safety automation project even though the influence was not significant ( $\beta=0.13$ ,  $p\text{-value} > 0.05$ ). Stakeholder engagement in project monitoring and evaluation positively affects ( $\beta= 0.081$ ,  $p\text{-value} > 0.05$ ) the performance of safety automation project even though, the effect is not significant. In addition, having stakeholders in project execution has a significant negative effect ( $\beta=-0.103$ ,  $p\text{-value} < 0.05$ ) on the performance of the safety automation project. Similarly, having stakeholders engaged in project planning negatively impacts the performance of the project ( $\beta= -0.079$ ,  $p\text{-value} > 0.05$ ) even though the effect is insignificant. The study concludes that, engagement of stakeholders in initiation, planning, execution and monitoring and evaluation of the safety automation project at KCAA influences its performance. Recommendations from the study are that it is essential to involve stakeholders in project initiation and project monitoring and evaluation of automation projects due to the positive relationship with the performance of safety automation projects. The study also recommends that measures and guidelines aimed at reducing or eliminating the negative impacts associated with engagement of stakeholders in project execution and project planning of automation projects be implemented at KCAA.

## CHAPTER ONE

### INTRODUCTION

#### 1.1. Background to the Study

In Africa the aviation sector has seen an upsurge of up to 80% in-flight traffic and 45% in total passengers in recent years (AFDB, 2012). In Kenya, between 2005 and 2010 there was a 22.5% increase in passenger traffic to a high of 7.2 million passengers out of which, 2.3 million were local users, 3.7 million international travelers with 1.2 million of these consisting of transiting passengers (KCAA, 2012). Between the period July 2017 and July 2018, the number of aircraft movements into and out of the country grew from 27,179 to 27,955 and passengers increased by 1,077,546 within the same period (KAA, 2018). With the increase in passengers and air traffic, the higher the workload for aviation personnel hence a need to introduce the use of automation technology to cope with the increased air demand (Jumi, 2019). Groover, (2008) defines automation as the technological process and procedures that allow one to perform a task with minimal human assistance. Increased automation has been attributed to the increased safety records and improvement within the aviation industry (Dehais et al., 2015). Human performance in the aviation industry improved with the advancements in aviation safety resulting from the integration of automation (Norman, 1990).

Kenya Civil Aviation Authority (KCAA) is a state corporation whose primary function is to provide technical, economic, and safety regulation and air navigation services to the air transport and providing aviation training through the East African School of Aviation (KCAA, 2012). The authority's functions and activities are aligned to the requirements of the Chicago Convention on International Civil Aviation (ICAO) and any other international conventions and protocols relating to civil aviation (Jumi, 2019). In the execution of its mandate, the authority is responsible for providing regulatory safety and security oversight on all operators, aerodromes, aircraft maintenance or organizations, aviation training organizations, air navigation services, and the licensing of all personnel working in the aviation industry. The authority is also responsible for ensuring that the air traffic management systems are developed to ensure safe movement of planes and aircraft within the country's airspace and with the projected growth, KCAA is expected to implement the necessary initiatives to ensure that aviation travel is safe and secure (KCAA,2012).

In the quest for a safe and secure airspace, KCAA is expected to promote the aviation industry in order to achieve a vibrant industry that contributes to the aspiration of the Vision 2030 (KCAA, 2012). KCAA has implemented several ICT projects aimed at improving the delivery of their services and mandate in the aviation industry to help achieve a vibrant sector and help the industry achieve the aspirations of Kenya's vision 2030 (Republic of Kenya, 2020). Some of the implemented projects have affected the way the authority has been delivering and providing its services in the industry. A review of the implementation progress has established that in the period between 2011-2016 the authority has been able to make significant improvements in automating most of its processes (KCAA, 2012).

Automation projects are sophisticated and have special aspects and requirements that need to be considered for the execution to succeed. As an organization transitions from paper to automation of its services engagement of stakeholders becomes essential for achieving a satisfactory outcome even though during the development and implementation issues and influences are encountered while developing automated systems (Needham, 2002). However, implementation of automation projects at times negatively impacts the project outcomes as such projects usually face the paradox of productivity in which worker's productivity may go down as an organization makes more investment in information technology (Pellerin, et al., 2013). This is attributed to several factors and in most cases is due to the gap and differences between the actual investment and the results witnessed in terms of outcome in productivity, poor management of the newly adopted information technology, or poorly qualified workforce (Dewett and Jones, 2001).

These projects are usually defined by a set of objectives that need to be achieved within a certain time frame, within budget, of a given quality and standard, and within certain safety standards (Ika, 2012). In many organizations, stakeholder engagement is mostly ad hoc, and most institutions do not adhere to the concerns involving every stakeholder hence failures in most areas of project concerns (Karimi, Mulwa, and Kyalo, 2020). The role of stakeholders in project implementation, therefore, becomes an essential component. In automation projects, stakeholder representatives provide a means of ensuring that a focus is maintained on the end-user of the application, ensure a constant presence of the end-user that is visible by providing transparency to external stakeholders, and maintaining the credibility of the project with the stakeholders through communication (Needham, 2002).

Stakeholders vary from project to project. They vary based on the organization, business, or project setups and include shareholders, regulatory or government agencies, business owners, customers, employees, suppliers, boards of directors, beneficiaries, and suppliers (Durham, et al., 2014). They have a unique perspective regarding what needs to happen for the project to succeed. This requires their engagement in the project cycle accompanied with consistent communication between the internal and external stakeholders and the project as well as the management clearly outlining expectations and centering the project around the stakeholder engagement (IDB, 2019). Stakeholder consultation adds value to the project, in that it captures the views and perceptions of those with interest or may be affected by the project, acts as an important source of validation and verification of any data obtained anywhere, helps the stakeholders understand their rights and responsibilities to the project, enhances trust, project acceptance and gives rise to local ownership, it is a requirement by many donors and project sponsors and funders, and in most cases, it is essential for the credibility and legitimacy of implementing agencies (IDB, 2017).

Stakeholder involvement is usually dependent on the project setup. The management of the participation of stakeholders has to be within a standardized framework and methodology for their central role to be relevant in ensuring the successful delivery of projects (O'Halloran and Menoka, 2014). Since project performance ensures that the organization maximizes its profits while minimizing risks and uncertainties in the process of achieving project objectives (Kululunga and Kuotcha, 2010), the roles and the interests of the project stakeholders have to be managed in a way that promotes effective contribution. However, the management of stakeholders can be characterized by casual and temporary actions that may not be principally instituted within the organization. In such situations, challenges like unfair competition, conflict of interest, inadequate commitment, poor communication, inexperienced managers, misunderstanding, and limited appreciation of the project leadership severely impact the work of the organization (Atiibo, 2012).

Stakeholder engagement within a project helps to anticipate their different desires and wishes. However, this is only effective if it is performed within a developed framework that allows for effective preparation and presentation of stakeholder's ideas, in a way that clarifies the roles of the various project participants and their involvement in a manner that reduces the variation in the perceptions of what they contribute towards the project performance and the organization (Menoka, 2014). Giving priority to stakeholders as well as acknowledging that both stakeholders and organizations are essential to each other in any project process assumes that both these parties

are responsible for assuring the production of high-quality outputs (Matu, Kyalo, Mbugua, and Mulwa, 2020). In this regard, the process of stakeholder engagement and management should be prioritized before issues of risk and profit for the venture are even considered (Gardiner,2014). However, engaging stakeholders may present challenges in terms of vested interests, power dynamics, and differentials that need to be considered especially in cases where vulnerable populations are involved (IDB, 2019).

Projects are usually faced with varied problems. Disagreement among stakeholders, improper systems for stakeholder consultations, antiquated projects created with no clear goal direction, failure to remain within project costs, lack of proper evaluation and monitoring systems, and inability to effectively respond to an unexpected crisis, among others are some of the major challenges facing projects in the developing world (Munns and Bjeirmi, 2016). In some cases, the poor relationships between projects and stakeholders can be attributed to political instability, bureaucratic inefficiency, and high transaction costs which makes interaction of stakeholders a costly affair (Menooka, 2014). The effective judgement of project success is based on how it overcomes these challenges and keeps within the allocated budget, time frame, and scope, as well as ensuring achievement of the required technical standards for quality, functionality, environment protection, and standard safety (Flanagan and Norman, 2003).

## **1.2. Statement of the Problem**

KCAA aims deliver efficient and effective aviation services that create new value to business and improve customer satisfaction by delivering quality services through automation. Under the guidance of its corporate strategic plan, the authority has identified automation as a key driver for realizing its objectives, and that the performance of the project is also aligned to the broader corporate strategy. However, a substantial portion of the authority's regulatory and oversight of aviation safety and security functions are still being carried out manually and need to be automated to make the operations of the authority efficient within the industry.

Despite the substantial improvement in the automation of its systems and structures, some issues need to be addressed to mitigate against potential staff resistance to the use of the new automation systems and consequently help in improving the delivery of service and mandate to help achieve a vibrant aviation industry to help achieve the aspirations of Kenya's Vision 2030. To resolve the issues associated with using the automation systems, the authority has included stakeholders both

internal and external to get their inputs and consequently overcome these challenges in future. In this regard, understanding how stakeholder engagement has influenced the performance of safety automation projects at the KCAA becomes relevant as the authority works to invest in its people and systems to enhance quality service provision as a priority by automating all its services.

The interaction and relevance of stakeholders on performance of projects have been examined before with the common conclusion that stakeholders are essential to the performance of the project. However, these projects have largely focused on infrastructural and developmental projects and have neglected examining automation projects. This study comes in to look at how stakeholder engagement affects the performance of automation project by assessing how engaging stakeholders influence the performance of automation projects. This study will do so by looking at how stakeholder engagement influence the performance of the safety automation project at the Kenya Civil Aviation Authority.

### **1.3. Purpose of the Study**

The study aimed to determine the influence of stakeholder engagement on the performance of civil aviation safety automation project at the Kenya Civil Aviation Authority.

### **1.4. Objectives of the Study**

The objectives of the study were,

1. To determine the influence of stakeholder engagement in project initiation on the performance of safety automation project in Kenya Civil Aviation Authority.
2. To establish the influence of stakeholder engagement in project planning on the performance of safety automation project in Kenya Civil Aviation Authority.
3. To determine the influence of stakeholder engagement in project execution on the performance of safety automation project in Kenya Civil Aviation Authority.
4. To determine the influence of stakeholder engagement in project monitoring and evaluation on the performance of safety automation project in Kenya Civil Aviation Authority.

### **1.5. Research questions**

The study sought to respond to the following research questions:

1. What are the effects of stakeholder engagement in project initiation of automation projects in Kenya?



2. How does stakeholder engagement in project planning influence the implementation of safety automation projects in Kenya?
3. To what degree does stakeholder engagement in project execution affect the implementation of safety automation projects in Kenya?
4. In what ways do stakeholder engagement in project monitoring and evaluation affect the execution of safety automation projects in Kenya?

## **1.6. Hypothesis Testing**

The study tested the following hypothesis at 95% level of significance

- a. H<sub>1a</sub>: Stakeholder engagement in project initiation has a significant effect on the performance of the safety automation project at KCAA.
- b. H<sub>1b</sub>: Stakeholder engagement in project planning has a significant effect on the performance of the safety automation project at KCAA.
- c. H<sub>1c</sub>: Stakeholder engagement in project execution has a significant effect on the performance of the safety automation project at KCAA.
- d. H<sub>1d</sub>: Stakeholder engagement in project monitoring and evaluation has a significant effect on the performance of the safety automation project at KCAA.

## **1.7. Significance of the Study**

The study highlights how stakeholders influence the performance of safety automation projects and in so doing, add to the overall body of literature on project management. This is relevant to project managers, researchers, academics, and those with an interest in project management research and studies.

The study is relevant for further policy development regarding the implementation of safety automation projects as well as overall stakeholder engagement policy. The findings are relevant in augmenting existing policies on stakeholder management and engagement strategies providing new and relevant information for future automation projects.

Conclusion from the study instigate further research on how stakeholders influence performance of automation projects and how engaging stakeholders influences the performance of projects in general.

### **1.8. Limitations of the Study**

Since certain respondents may be untruthful during the data collection process or may refuse to cooperate during the data collection process, this study acknowledges this as a limitation. This is because, during the conducting the research and collecting data from the respondents, some of the stakeholders may view the exercise as an audit of their performance and level of engagement in the project and will not be enthusiastic about participating in the study or provide accurate and credible information. Due to these reasons and bias, this may affect the overall response rate reducing the number of study participants thereby skewing the findings as some of the responses will be skewed based on what the respondent thinks is the best response that puts them in good light.

### **1.9. Delimitations of the study**

Restricting itself to the KCAA safety automation project, this study only examined the performance of the civil aviation safety automation project and not any other project that may have been or is currently being implemented by the authority.

The study will also delimit itself to only the identified internal and external stakeholders for the civil aviation safety automation project. In addition, the study will only focus on performance issues of safety automation projects and nothing else.

### **1.10. Basic Assumptions of the study**

The study worked with the assumption that participants gave consent and provided truthful information concerning the study objectives and research questions.

The study also assumed that the study respondents will not view the study as an assessment of their participation and involvement in the safety automation project and thereby not become hostile and deliberately provide misleading or incorrect information.

### **1.11. Definition of significant terms as used in the study**

Automation meant any process or development that aids the reduction in human effort needed in conducting or performing any kind of process, procedure, or task.

Stakeholders was used to mean all those people who have vested interest or stakes and could affect, be affected, or benefit from the outcome of a project and will include all those internal and external

to the implementing organization. It will include all those groups whose actions can be influenced by or could alter the activities, products, services, or functions of the organization during the implementation of a project.

Stakeholder engagement was used to mean the actions and process of systematically identifying, analyzing, planning, and implementation of activities by the project organization aimed at seeking out those with interest in the project to seek their opinion, views, and recommendations concerning the activities surrounding the project.

The project was used to mean a set of clear activities aimed at achieving specific objectives within a given period within specified costs and the desired quality aimed at improving the quality of life.

Project initiation was used to mean all the activities undertaken in the definition and determinations of parameters needed by the project to establish the appropriate requirements and the necessary environment and conditions needed for a project to be completed.

Project planning was used to mean the activities involved when breaking down the essential project activities and networking and arranging these activities in their logical sequence, in a manner that indicates what needs to happen first sequentially until the last from start to finish.

Project execution was used to mean phases of the project of inception, implementation, and phasing out and involves the mobilization, utilization, and management of the project resources and operations in the manner proposed in the project plan.

Project monitoring and evaluation was used to mean all the activities and processes used in the gathering, analyzing, and presentation of project activity information aimed at identifying the status and performance of the project to determine if the project is still on course.

### **1.12. Organization of the Study**

This report has five chapters. The first outlines the introduction and background. The second details the review of empirical and theoretical literature. The third chapter details the study's research methodological approach.

The fourth chapter focusses on the results of the analyzed data presenting the findings and discussions. The fifth and final chapter details the conclusions, summary, and recommendations from the study adding any relevant areas for future studies on the topic.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1. Introduction**

This chapter presents the analysis of literature for the study including both the conceptual and theoretical framework that guided the study.

#### **2.2. Stakeholder engagement and performance of projects**

Stakeholders are all those groups whose actions can alter or influence the organization, activities, products, services, or performance. Engagement of stakeholder is the procedure through which organizations find the appropriate stakeholders and involves them in their activities to achieve the expected results by using those stakeholders whose interest may be harmed due to the execution or completion of the project (Oleanders & Landin, 2015). Given that stakeholders are always interested in the project outcomes, it is essential to recognize and involve these stakeholders to ascertain what they need, their expectations and properly handle their influences regarding what is needed for the project to succeed (Irvin & John, 2015).

In examining how stakeholders involved influence the management and performance of projects, Mandala (2018) studies how stakeholders affect outcomes of road construction projects. Focusing on Bondo and taking a descriptive research methodological approach as well as a cross-sectional survey design, she tries to understand how engaging stakeholders in project identification processes, planning, initiation, and participatory monitoring influences how the road construction projects performs. Selecting a representative sample from 48,002 local inhabitants of Bondo county and 30 project managers from Bondo and using both survey questionnaires and key informant interviews she obtains and analyzes the data to conclude that involving stakeholders in all aspects of the road projects is beneficial to the performance of the project in Bondo Sub County. She adds that involving stakeholders in meaningful ways in various aspects of the project enhances their commitments to their obligations as stakeholders pointing out that the roles they play in monitoring and evaluation regarding cost and quality control, procurement administration helps improve the project performance.

Stakeholder engagement in projects requires bringing of both people and resources to allow them to accomplish the project objectives and goals within the specified time (Bartle, 2007). Usually

presented by all those who have a stake and hope for a favorable outcome from the project (Matu *et al.*, 2020). The desire for most stakeholders in any project setting is to see the accomplishment of the given project and their participation has negative or positive consequences (Newcombe,2003). Their participation can take place at various points in the project cycle interacting at different levels and can take various forms within the project setup (O'holloran,2014). Their contribution ranges from providing inputs during project planning and design, sharing information, decision making, consultations among other things indicating that their participation is a means to an end (Githinji, Ogolla, and Kitheka, 2020). With regards to means, the stakeholder participation process allows communities and people to collaborate in the projects and programs development while as an end, it empowers the communities and people to acquire skills, knowledge, and the necessary experience for attaining higher levels of self-reliance and self-management ( Irvin & John, (2015) and (Karimi, Mulwa and Kyalo, 2020).

Maina (2018), investigates how effective management of stakeholders affects how well a project performs by focusing on upgrading of the open-air markets in Nyeri county. Applying descriptive and exploratory designs of research methodology in 6 major markets in each constituency in Nyeri county, she finds that stakeholder participation positively enhances project performance to a larger extent, in comparison to stakeholders needs, management of conflict, and communication in that order with all the associated coefficients indicating positive and significant relationships with the performance of open-air market projects. She recommends that covering aspects of stakeholder involvement during the feasibility study of any project significantly improves project performance.

In any project, the performance is largely associated with the commitment of the organization to stakeholders involvement and most projects fail if there is a lack of stakeholder involvement during implementation. Proper involvement and participation at all levels of the project are crucial in ensuring that stakeholders have confidence and feel involved in all aspects of the project being implemented (Karimi, Mulwa, and Kyalo, 2020). This is a common practice done to put the stakeholder in a position where they can actively engage and participate in the activities of the organization (Greenwood, 2007). Having both internal and external stakeholders is not uncommon as their engagement assists in solving problems such as getting more funding for the project or introducing essential assets needed by the project (Rodriguez-Melo & Mansouri, 2011).

Mkahaye (2016) examines the risks imposed by involving stakeholders in water infrastructure projects. She looks at the influence and involvement of key stakeholders in the management and teamwork in Umgeni water infrastructure projects. Using a qualitative research paradigm conducting in-depth interviews among the project teams she finds that applying and using new ways of thinking that focus on learning and understanding new landscapes should help to alleviate the conflicts between the stakeholders and project implementors. She adds that much of the focus in stakeholder engagement needs to be on how project systems and stakeholders relate as these stakeholders are different, are dependent on each other, and need to interact continuously and constantly to improve performance and stay competitive.

Nyakoyo & Odhiambo (2020) study how stakeholder empowerment plays in the execution of food security projects. Targeting 769 members of sweet potato, cassava, and sorghum projects in Nyando Basin Kenya as well as additional project team members who support the implementation of the community food project. In their findings, they show a meaningful statistical connection between stakeholder empowerment and project implementation but it only accounts for 16.4% of the changes. In their view, prioritizing stakeholder empowerment in community food projects not only makes them successful but also needs to be integrated into the policies and frameworks for sustainable food security policies.

### **2.3. Stakeholders in project initiation and performance of projects**

Commencement of projects involves overall clarification of boundaries of the project, establishing the appropriate project management style, and determine the quality environment required to complete the project (AIDCO, 2004). During the project initiation, various activities take place that includes: the identification and definition of the project scope, identify preliminary budget, defining the schedule of the project, the quality and determining the standards needed to complete the project; possible projects risks identification ; development of overall plans including the identification of relevant stakeholder and means of communicating with them and; confirming the necessary approvals needed to help the project move to the next phase, as well as securing the necessary resources needed to begin the project (Nguyen and Aguilera, 2010).

Stakeholder involvement in project initiation is crucial for project performance. Irvin & John, (2015) add that for effective engagement of stakeholders, participation of key stakeholders is useful if it is organized per the schedules and meeting norms of those involved be they influential

and non-influential members of the community as it helps in determining results of the ecosystem management projects in India and Sri Lanka. In Mathira East Constituency, Wamugu and Ogolla (2017) find that allowing stakeholders to take part in project initiation and planning is positively related to the performance of CDF development projects. On the same matter, Adan (2012) argues that stakeholders including CDFC officials, PMC officials, and other relevant government officials have a vital role in the implementation process, while assessing the role of various stakeholders on the outcomes of CDF funded projects while developing recommendations and measures for strengthening the use of CDF funds.

Njogu (2016) reveals that involving stakeholders in project identification is significant in influencing performance on Automobile Emission control projects. He studies how immersion of stakeholders in identification of automobile control projects affects its performance by applying a descriptive research design methodology and sampling 181 respondents including NEMA representatives, the Ministry of Energy, automobile vehicle companies, environmental management organizations, and petroleum refining companies. Collecting both primary and secondary data, and applying content analysis techniques, inferential analysis, and regression analysis they find that by engaging stakeholders in project identification improves the performance concluding that allowing stakeholders to participate in project monitoring also influences the project. He adds that enhancing engagement of stakeholders in the project cycle helps in the reduction of emission rates, operating costs, cost-efficiency, and increased customer satisfaction.

Buertey, Amofa, and Atsrin, (2016) find that the impact of the stakeholders is insignificant especially when they have not received adequate explanations of the project background when assessing the barriers that prevent stakeholders from taking part in development projects at the most basic level in Ghana and its impact on the projects. They find that without having the appropriate materials associated with the technical and material specifics of the project before initiation of the project promotes inability and difficulty in participating in debates and reluctance among the project implementors to allow stakeholders take part in making of project decisions.

Sharing the relevant information and securing the necessary resources needed to begin the project with stakeholders during project initiation is essential in determining project performance and its sustainability. Nyandika and Ngugi (2014) examine this approach in the performance of road projects while examining how stakeholders participate in road projects in KeNHA. They find that

prequalified contractors, KeNHA's management, and prequalified consultants linked awareness creation, feasibility studies, and attending conferences and seminars on how the road user will be involved to the positive performance of KeNHA road projects. Ouma & Mburu (2017) look at how stakeholder involvement influences the sustainability of projects funded by the constituency development funds in the constituency of Nakuru Town East. In their investigation, they find no significant influence of involving stakeholders in implementation and the sustainability of CDF projects. However, involving them during project identification shows a 75% positive significance on project sustainability. Similarly, Temba (2015) arrives at the same conclusion while looking at how stakeholders promote sustainability of donor-funded projects in Tanga where he finds that to promote sustainability stakeholders involvement should be initiated from the beginning of the project even though their role on donor-funded projects is limited.

#### **2.4. Stakeholders in project planning and performance of projects**

Before project commencement, considerations of all aspects of the project are necessary. Ahamed (2010), argues that during project planning the project is divided into several distinct activities that can be pursued individually or simultaneously and are each measured in terms of effort required for completion, the amount of calendar time needed as well as the cost needed for the activity to be completed. During the planning process, stakeholders are mostly involved in determining how to plan, how to select the team, developing work breakdowns, work schedules, defining the logical sequence of activities, anticipating the risks of the project, and seeking formal approval to begin work (Harold, 2010) and (Rosario, 2000). These works define a suitable strategic model for more effective project execution and include allotment and determination of outcomes of the projects, the methodology of the project the evaluation of the project outcomes (Ondieki 2016). In automation projects, the planning process involves estimating the size of the software work products, the resources needed, product schedule, identification, and assessment of automation risks, as well as the development of the automation plan (Ahamed, 2010).

Matu et al., (2020) assess how stakeholders' involvement road transport infrastructure influence their completion. Using a mixed research method applying both correlational and descriptive research designs, they collect data from targeted 1593 respondents. They find that involving stakeholders can only explain slightly more than two-thirds (70.3%) of the performance of the infrastructure projects and is linked with allowing stakeholders in the planning of these projects.



They conclude that participatory planning positively affects the completion of the infrastructure projects and increasing awareness and training regarding participatory planning will improve the performance of future projects. However, this has to be done within a developed policy document outlining how stakeholders should participate in road construction to discourage any reservations during implementation.

The role of stakeholders in project planning is important as it impacts the various project goals. In Japan, Nobeoka & Cusumano (1995) find that the involvement of stakeholders has an impact on the goals of software planning, project planning, and resource allocation decisions and hence project performance in their assessment of the stakeholders association in project planning and its effects on the performance. Mungatu and Mulyungi (2017) find that participatory planning is attributed to the project outcome in their evaluation of the levels of contribution of stakeholders in project cycle management of WASH projects in Rwanda. This is similar to what Githinji, Ogolla, and Kitheka, (2020) find in Kenya in their examination of how stakeholders having participation rights in planning various Kenya Ferry Services projects where it is clear that project planning positively relates significantly to project performance and how they take part in decision making is influential in determining project performance.

Ruwa, (2016) argues that involving stakeholders in various aspects of the project planning and initiation creates a perception of ownership increasing the project's acceptability which affects the performance of the project. The benefits of doing so include reduction of distrust on the project outcomes, reinforced devotion to the project, and increase believability of the performance as well as the formalization of the formal approval processes and procedures (Wamugu and Ogolla, 2017). During this process, the project officials receive approval after which they can work on the budgets, work plans, and establishing the projects bank accounts (Ondieki, 2016).

Heravi, et al, (2015) find that improving the effective participation of stakeholders in the project planning phase is important as some stakeholders easily participate in the planning process compared to others. In Saudi Arabia, an inadequate definition of scope occurs when some stakeholder's input is omitted either deliberately or by accident while keeping the dominating inputs from influential stakeholders (Fageha and Aibinu, 2016). They conclude that even though soliciting feedback from all stakeholders is expensive and tedious due to the variation in terms of interest and requirements, the project managers should always ensure that they develop a project

scope that satisfies the expectations of the stakeholder hence establishing a clear project scope before determining if the project implementation process should proceed. On the contrary, Ruwa (2016) finds that increased participation of stakeholders during the planning phase negatively influences project performance as it leads to delays, overspending with no assurance about the project sustainability.

## **2.5. Stakeholders in project execution and performance of projects**

Execution of projects takes place in three phases of inception, implementation, and phasing out all of which involve mobilization, consumption, and management of funds and project operations (AIDCO, 2004). These phases are important as they ensure the smooth, efficient, and effective execution of projects in a way that ensures commitment is built among all the parties involved (Nguyen and Aguilera, 2010). During project execution, varied activities are carried out and include setting up the management unit, mobilizing the personnel, initiating the project, conducting project activities, conducting project control, regulating budgets and expenses, monitoring and evaluation, preparing progress reports, and managing the relations with the stakeholders (AIDCO, 2004) and (Nguyen and Aguilera, 2010).

Project execution is the most critical aspect in any project undertaking as it involves the coordination of people and resources towards the achievement of the project objectives. It has been observed that in project execution stakeholders helps to change the planned project objectives into an organized set of activities, resource allocation in an effective manner for efficient utilization and ensures proper conducting of activities and use of resources in a synchronized manner to achieve the project goals (Duncan, 1996). However, it is important to concede that project execution usually takes place in unpredictable environments and circumstances that may prevent the project from meeting its targeted objectives or goals, some of which may either be endogenous to the projects, arise from external stakeholders, or come up from other technical and external risks (van Merrewijk et al., 2008).

Nyabera (2015), studies how stakeholders' participation impacts implementation of projects in the Mwingi sub-county. Collecting data from 391 respondents from four compassion-assisted projects on a descriptive research methodology, they find that projects that had stakeholder representatives in governance structures during project initiation, planning, execution, and monitoring and evaluation had positive correlations with project performance. The findings show participation in

planning correlates to 0.79 of the project performance, participation in project execution correlating with project performance at 0.61, while the engagement in participatory evaluation and monitoring shows a weak influence at 0.35. The study suggests that continuous training regarding stakeholder analysis and participation in projects will allow for the possibility of stakeholders taking part in the project to improve project performance.

During the execution phase, stakeholder involvement becomes vital as it is here where unforeseen turbulence within the project stakeholders emerge something that may go beyond managerial issues, or the way the project sponsors fail to manage unforeseen risks and happening, or the difficulty in establishing a common understanding among the widely dispersed stakeholders (Eweje and Kerzner, 2012) and (Chang, 2013). In this stage resolving and managing the differing and competing aspects, pacts, concerns, ideals, and beliefs of both internal and external stakeholders are necessary before they create an ambiguous culture within the project (Takim, 2009). Any misalignment of the implementation process and failure to either communicate or conduct decision making brought about by this ambiguous culture due to poor stakeholder involvement causes underestimation of costs, duration, and other risks that may lead to project failure (Njogu, 2016).

Despite these pitfalls, stakeholder involvement in project execution is still important as a project is only viewed as successful if what the stakeholders need and expect are met during project execution. In Ghana, not involving stakeholders in the designing of the Korle Lagoon Ecological Restoration Projects resulted in the old Fadama community resisted the project citing abuse of their procedural rights. Daud, (2017) finds a definite connection between the involvement of stakeholders and completion of the projects in Balambala constituency funded by the constituency funds.

Low & Tan (1996) indicate that the attitudes and pledges of the stakeholders during execution affects the project and if stakeholders lack commitment to effectively execute their responsibilities the project is likely to fail. The stakeholder's participation is thus important to project success and their claims and interests during implementation are largely required to achieve project objectives (Joaquin *et al.*, 2010). However, the effect of stakeholders in project implementation may have a two-way effect, in that the stakeholders can wield their influence on the project, and in return, the

project can to some extent affect the stakeholder's environment in terms of outcomes (Magassouba, et al., 2019).

Mulyungi and Mungatu (2017) evaluate the effects of stakeholders taking part in project management of WASH projects in Rwanda, where they find a direct link to the project outcome. Githinji, Ogolla, and Kitheka, (2020) investigate how stakeholders impact project performance at the Kenya ferry services and find that having stakeholders take part in project funding correlates positively to the project performance. In addition, considering concerns of all stakeholders instead of focusing only on what is demanded by national governments and spelling out procedures for involving stakeholders reduces misunderstanding on what each should do while also outlining how they should participate in the management process positively affects how the project performs.

Kobusingye, (2017) while determining how involving stakeholders on the outcome WASH projects in Rwanda finds that involving stakeholders in project activities by procuring materials, resources, coordinating people, evaluating risks, and implementing projects as per the outlined framework, have a positive relationship on the project outcome. In Kenya, Maina, (2013) assess the title role of public input on implementation of education projects, finds a causal link as there was successful implementation of education projects in the various schools targeted as public involvement enhanced successful implementation.

## **2.6. Stakeholders in project monitoring and evaluation and performance of projects**

Allowing stakeholders to take part in monitoring strengthens the project and stakeholder relationship has given that it handles any decision-making related to stakeholders, within the project context, performance, and progress (Flanagan & Norman, 2003). Project monitoring helps to compares if the planned works correspond with the actual results to determine the progress and performance (Cleland, & Ireland, 2002). In this effect, monitoring and evaluation are necessary to find out if the project is operated properly or not something that affects the quality of the project (Robins and Coulter, 2002). The aim of monitoring and control is designed to estimate the effects of each of the factors and analyze the performance of each of the elements for the project's success (Magassouba, et al., 2019).

The involvement of stakeholders in monitoring provides an opportunity for project proponents to adopt frameworks and procedures that support the project (Katiku, 2011). Monitoring in a project context is done to point out the shortcomings in a manner that allows for prompt mitigation of

issues that may hinder the achievement of the project goals to prevent further deterioration of the project performance (Mandala, 2018). Stakeholder involvement in monitoring and evaluation is a continuous process that includes observation, information gathering, analysis, documentation, and assessment of changes with the project cycle and requires proper development of project management and leads to the development of project management and evaluation systems (Ondieki, 2016).

Karimi et al., (2020) examine how engaging stakeholders in monitoring and evaluation impacts how literacy and numeracy in primary education programs are performing. They seek to understand why learners have experienced minimal achievements even though there have been improvements among the sponsors to improve performance. Adapting a correlational and research methodology, collecting information from a sample of 2035 made up of teachers and senior teachers, syllabus support officers, and others they find that engaging stakeholders is significant and accounts for only 48% of the project with other factors accounting for the remaining 52%. In conclusion, letting stakeholders take part in evaluation and monitoring stimulates the performance of the education programs correlates and statistically significant and that in literacy and numeracy educational programs the learners should explore more on their own to improve their performance.

Githinji, Ogolla, and Kitheka, (2020) find that engaging stakeholders in monitoring significantly and positively affect the performance while investigating how stakeholders affect project performance in Kenya Ferry Services (KFS). Njogu (2016) concludes that letting stakeholders take part in resource monitoring for the automobile emission control projects in Kenya helps in cost efficiency, reduction in project cost reduction, reduction in operation costs, within the project. This was because, during the monitoring process, stakeholders were able to take action to collect project errors and identified deviations of the project performance which would have ultimately influenced the project performance.

Madeeha & Imran, (2014), state that participation of stakeholders in participatory monitoring of the Baku-Tbilisi-Ceyhan project resulted in improved performance of the project as it led to well-informed NGOs something that helped satisfy stakeholders concerns and promote transparency in the IFC and IBRD project. Ruwa (2016) finds that engaging stakeholders positively impacts projects if they are allowed in monitoring and evaluation since they can hold implementors

answerable effectively ensuring efficiency, reduction in cost as well as assuring project sustainability. Robins and Coulter, (2002) add that organizations are required to have a role in project monitoring and supervision because of the strong positive relationship between engaging stakeholders in monitoring and project performance and how doing so reflects on the overall project performance. Stakeholders are good at identifying hindrances and challenges surrounding the project and organizations can use stakeholders in monitoring as an opportunity to influence and support project success (Katiku, 2011).

## **2.7. Theoretical framework**

There are various theories used to examine existing systems work and how projects work. This study relied on both the stakeholder theory and institution theories which fundamentally explain the interaction between the study variables.

### **2.7.1. Stakeholder theory**

The stakeholder theory argues that in any business, everyone involved has a genuine interest in participating in the business by obtaining benefits without having any one set of interests and gains overriding the other. This theory is attributed to Edward Freeman and is based on his understanding of how businesses really work and recognizes and identifies stakeholders in an organization and defines how their welfares need to be managed for the business to succeed (Freeman, 1984). The theory suggests that using those affected by or can affect the activities in the organization as a unit of analysis, then it is possible to examine and understand the interconnected business problems (Parmar, et al, 2010). The theory states that coordination of interests and needs of the various parties should be organized for the business to benefit through their collaboration (Freeman, Harrison, and Wicks, 2007). In theory, the business is made up of relationships of those with vested interests in the organization's pursuits (Freeman, 1984). The relationship has more to do with all parties involved work together to create value for the business or enterprise they are involved in (Parmar, et al, 2010).

Freeman, (1984) argues that it is the work of the management to handle and shape these relationships in a way that enables the creation of as much value as possible for the business. The theory adds that in situations where conflict of interest arises between the various groups and individuals, the management needs to find a solution so that the desires of the larger group of those who have an interest are addressed and in turn be able to create maximum values for each group

(Harrison, Bosse, & Phillips, 2010). If necessary, the management should be able to make tradeoffs for the benefit of all the groups and ensure that the tradeoff works for all the parties involved (Freeman, Harrison, & Wicks, 2008). The theory enables managers to understand how to manage the stakeholder, engaging them in a strategic manner that generates maximum benefits (Ketokivi & Mahoney, 2016). The emphasis is on the importance of the stakeholder and the projects executive management, and the need understand the effects that stakeholders have on the success of the project or initiative (Moldogaziev and Resh, 2016) and (Wu and Wokutch, 2015).

The theory offers an effective means by which the influence of stakeholder engagement on the implementation of civil aviation safety automation projects can be understood and explained. From this theory, it is possible to comprehensively examine how the various stakeholder engagement activities interact and affect the implementation of the civil aviation safety automation project at KCAA. This is because the theory works on the principles that a relationship between the stakeholders and the decisions of the project itself; that the main concern is on the nature of the relationship in terms of results and procedures of the stakeholders; that intrinsically the value of stakeholders supersedes and overrules the interest of any specific group; and that the overall focus is on the decisions made by the management (Bridoux and Stoelhorst, 2014).

### **2.7.2. Institutional theory**

The institutional theory explains the reasons and procedures for organizational behavior and how the behavior affects the organization as a whole. The theory is attributed to John Meyer and Brian Rowan works in the 1970s and explores how organizational behaviors fit with and are related to, and how they are shaped by highlighting on the schemes, standards, and procedures that become established guidelines for all institution action and behavior (Guth, 2016).

The theory argues that organizations are influenced by prescriptive pressures that come from both within and outside the organization and are later transformed and become legitimized elements developed from operating procedures, required certification and state requirements that often direct task performance (Zucker, 1987). The theory works on the assumptions that organizational behavior is copied and reproduced resulting in norms and routines that are eventually standardized becoming the widespread standardized expectations of practice for the organization (Guth, 2016). The theory is grounded on the principle that unofficial rules, arrangements, interactions and interpretations, guide how managers make decisions forcing them to make decisions and choices

in a particular manner making organizations act out of socially constructed ideas of what is beneficial rather than what is rational (Scott, 2005).

This theory is valid in examining stakeholder engagement at the KCAA and the performance of safety automation project. From the theory, it is clear that involving stakeholders in implementation of organizational projects is beneficial from the institutional point of view since it is the norm and the routine in a project implementation process. In that regard involving stakeholder engagement is an institutionalized behavior and is a normalized action needed to achieve targeted project results.



## 2.8. Conceptual framework

This work is directed by the shown conceptual framework that indicates the connection as well as the interactions of the variables under study.

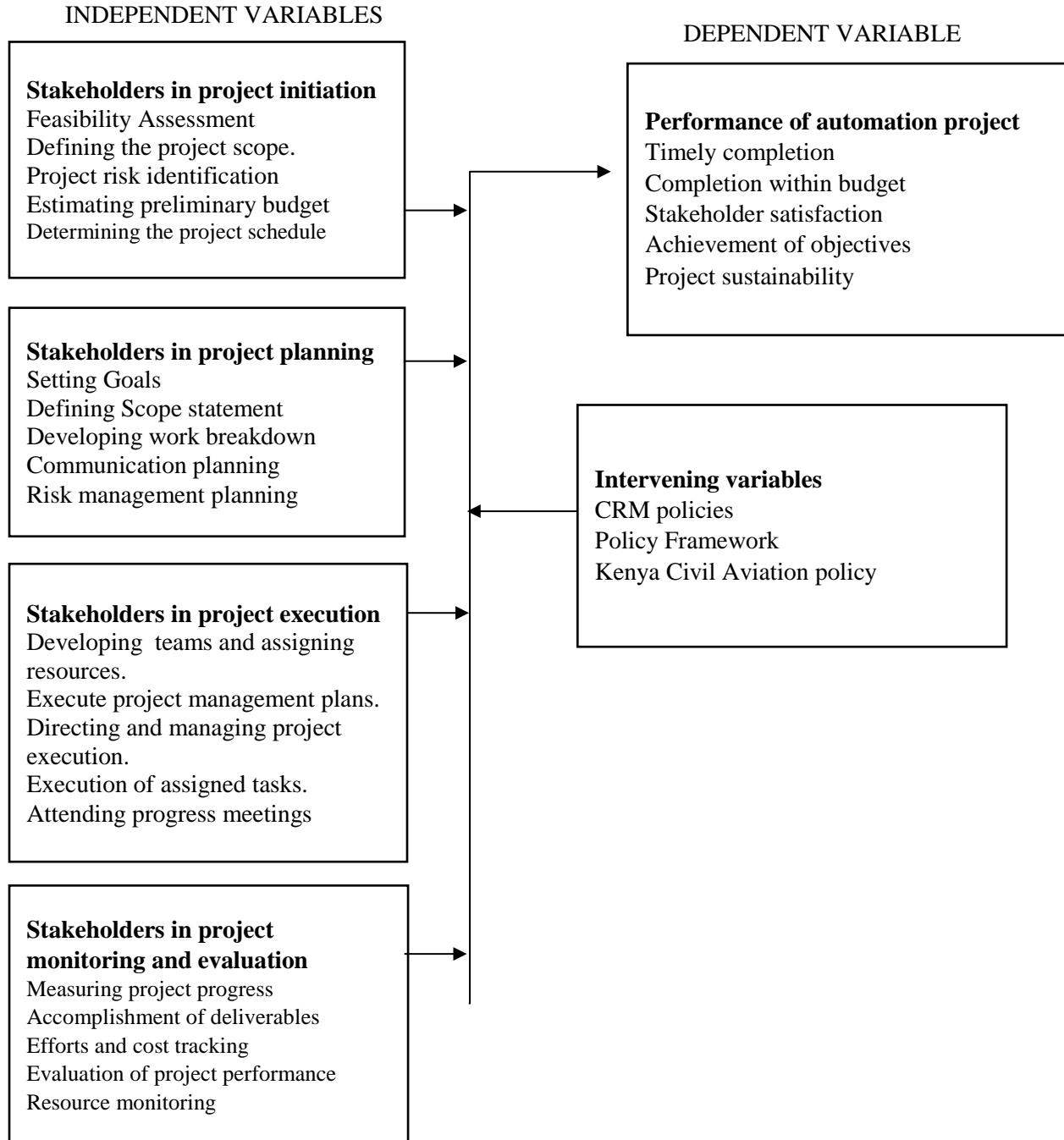


Figure 1: Conceptual Framework

## 2.9. Knowledge gap

The table below summarizes reviews of previous studies regarding the relationship between stakeholders and the performance of projects bringing out the key gaps.

Table 2-1: Summary of the literature review and knowledge gaps

Author and Year	Research Focus	Methodology	Findings	Research Gaps
Gichohi (2015)	Stakeholders involvement in the 21 <sup>st</sup> century for academic excellence.	Applied an Ex-post facto research design	Majority of the schools welcomed stakeholder involvement, and this led to the active involvement of school management committees during the process of decision-making.	The study was based on the school's academic performance and excellence and not the implementation of a project or program
Githinji, Ogolla and Kitheka (2020)	Influence of stakeholders Involvement on project performance focusing on Kenya Ferry Services.	Applied a descriptive research design	The involvement of stakeholders in project cycle activities positively affects project performance.	The study findings cannot be generalized for the implementation of automation projects.
Golicha (2014)	Participation of stakeholders in project formulation focusing on NGOs supporting	Adopted a descriptive research design	In these projects' stakeholder participation constitutes empowerment and stakeholders should always have a say on	Examines involvement in stakeholder involvement in project formulation leaving out

	secondary school education.		decision making if it affects their way of life.	other aspects of the project cycle.
Kobusingye (2017)	Relationship between stakeholder involvement and outcome of WASH projects in Rwanda	Adopted a descriptive survey design.	Participation of stakeholders in project initiation, planning, and implementation, is positively related to the overall performance.	The study did not examine automation projects thus findings for WASH projects may not be generalized to other or similar studies.
Njogu (2016)	Influence of stakeholders on the performance of NEMA Automobile Emission Control projects in Nairobi.	Adopted a descriptive survey design	Having stakeholders in the project identification, planning, and implementation phases significantly improves the performance and outcome of the project.	The findings cannot be generalized for the implementation of automation projects.
Nyaguthi and Oyugi (2013)	Influence of community participation on successful implementation of CDF projects in Kenya	Adopted descriptive research design	Community members need to be involved in CDF project phases to bring about successful project implementation.	CDF-funded projects are not the same as automation projects and thus findings cannot be generalized.

## **2.10. Summary of Literature Review**

Involvement of stakeholders directly links with the overall outcome projects. The common theme is that the project largely depends on the commitment of an organization, institution, or project to involve stakeholders in the entire project cycle activities regardless of who is implementing the project for its performance. Most projects do not succeed due to a lack of stakeholder engagement during the initiation, execution, and phasing out of the project. In this regard, stakeholder involvement has a significant, positive if not direct link to the project performance and project outcomes.

However, the involvement of stakeholders may not be adequate in assuring positive project performance. In some cases, extensive involvement of stakeholders in projects has led to delays, overspending, with no clear assurances of project sustainability. Despite this possibility, the involvement of stakeholders is still necessary as a project is only viewed as successful regardless of the outcome if the expectations and needs of stakeholders are met during the project life cycle. Any misalignment of activities or failure to communicate or conducting activities without consultation of the project stakeholders breeds an ambiguous culture within the project that causes underestimation of costs, prolonged duration of project activities, and brings about risks that correlate with poor project performance or project failure. The presence of other circumstances, regulations either within or outside of the project environment may impact the project performance regardless of how well the project stakeholder engagement occurs.

In any project, project managers are required to determine how stakeholders get involved and relate within the project life cycle. Most studies agree that stakeholders have different and varied interests, and management of the project has to ensure that no particular stakeholder's interest replaces the interest of any other and that the nature of the relationship between the various stakeholders is examined by looking at the outcomes and process of their relationship. The project organization, through its decisions, has to manage and shape the relationships between the various project stakeholders in a manner that adds value to the project. In cases of conflict of interest, or disagreements, it is the management who needs to seek proper solutions so that the needs of the larger group with an interest in the project are addressed and in turn become able to create maximum value for each group.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1. Introduction**

This chapter outlines the research methodology applied in the study. This section also describes the sampling procedure, data collection procedure, research instruments used and the ethical considerations applied.

#### **3.2. Research Design**

Kothari, (2004) specifies that the outline that conceptualizes how a research study is done and involves all processes that include collection, measurement, and analyzing the collected data is known as a research design. A case study research design of the explanatory kind was used as the main research framework of the study. This research design is useful in probing deeply and analyzing interactions between the factors that explain the present status that influence the study variables (Bent, 2011). The choice of using the explanatory case study type is grounded on its ability to explain the causal link between the independent variable and the dependent variable (Yin, 2003).

#### **3.3. Target Population**

Newing (2011), points that the sampling units from which a researcher has a great interest while conducting a study are all taken from the target population. In this study, the target population of interest was the employees and affiliates of Kenya Civil Aviation Authority who are taking part in the civil aviation safety automation project. These included a total of 830 personnel composed of steering committee members, project managers, airworthiness inspectors, personnel licensing inspectors, flight operation inspectors, air traffic controllers and flight dispatchers who are part of the organization implementing the automation project. The distribution of the study population is presented as follows.

**Table 3.2: Target Population**

Category	Population	% of Population
Steering Committee Members	12	1.4%
Project Manager	1	0.2%
Department Heads	5	0.6%
Airworthiness Inspectors	22	2.6%
Flight Operations Inspectors	26	3.2%
Personnel Licensing Inspectors	11	1.3%
Air Traffic controllers	204	24.5%
Flight Dispatchers	550	66.2%
Total	831	100%

### 3.4. Sample Size and Sampling Procedure

A sample has to be selected correctly. The fraction of the target population identified by the researcher for analysis from which the researcher uses to make inference about the population is the desired sample (Borg & Gall, 1989). To get the correct sample, the researcher needs to have some prior knowledge of the target population to determine the sample needed to correctly answer the research objectives (Mera, Thompson & Prasad, 1998).

#### 3.4.1 Sample size Determination

The required  $n$  units out of the total population were determined using the Yamane (1967) formula for the appropriate sample as follows:

$$n_0 = \frac{N}{1 + Ne^2} = \frac{831}{1 + 831 (0.05)^2} = 270.024 \approx 270$$

Where:

$N$ : is the population size.

$n$ : is the sample size.

$e$ : the acceptable sampling error = 0.05

### 3.4.2. Sampling Procedure

To get the appropriate sample, random stratified sampling was used. The target population from which the sample was drawn, comprised of unidentical group requiring comparison between the various sub-groups hence the use of stratified sampling (Mugenda and Mugenda, 2003). To correctly pick the required 270 sample units, this study computed the required proportions for each sub group as shown in table 3.2.

**Table 3. 3 : Sample size distribution**

Study Population	Population (N)	Sample (n)
Steering Committee Members	12	4
Project Manager	1	1
Department Heads	5	2
Airworthiness Inspectors	22	7
Flight Operations Inspectors	26	8
Personnel Licensing Inspectors	11	4
Air Traffic controllers	204	66
Flight Dispatchers	550	178
Total	831	270

### 3.5. Research instruments

Both survey questionnaire and KII guides were applied to collect the data needed. This contained a set of well-designed questions for collecting the necessary information from the study respondents (Gilham, 2008). The choice to use a questionnaire is based on the idea that they are easy to use, analyze and are economical in comparison to other forms of data collection tools and allow for uniformity when asking the study questions, and allows for greater comparability of responses (Mugenda and Mugenda, 2003).

The research instruments used both nominal and Likert scale to collect the necessary information. Nominal scale collected demographic data regarding the respondents while the Likert scale was used to collect information on study variables. Likert scale was used because of its simplicity and ability in producing highly accurate results during analysis (Brace, 2003).

This study used key informant interview guides for collecting qualitative data. This had a set of questions designed to elicit a response and deeper answers to the questions under study to help in answering the research objectives. The choice to use KIIs is based on the understanding that they can collect rich and detailed data, and the respondents can clarify the questions and answers as well as establishing rapport with the interviewer enabling the respondent to answer in a detailed manner (Ali, David, and Ching, 2013). The interview guide collected qualitative information from the key informants which included the department heads, members of the steering committee, and senior staff. This is because the department's heads, the steering committee members, and senior managers are conversant and well informed regarding the engagement of stakeholders in the implementation of the civil aviation safety automation project at the Kenya Civil Aviation Authority.

### **3.5.1. Pilot testing**

To determine if the research design and the questionnaire are adequate to correctly answer the research questions, the study conducted pilot testing. To see if the study questions in the data, tools were easily understood the study conducted pre-testing, and this allowed for correcting and modifying the questionnaire to remove any problems with the questionnaire (Cooper and Schindler, 2006). 27 respondents were selected for the pretesting representing 10% of the sample size as advised by (Hertzog, 2008), who advise the use of 10% - 15% of the sample size for pretesting.

### **3.5.2 Validity of research instruments**

Validation is necessary to in determine the extent to which the results instruments used produce results that embody the phenomenon under study (Creswell, 2005). This is to determine if the study instrument measure what it says it wants to measure and how accurately it does the measurement such that the data from the study represents the variables of interest (Saunders, Lewis, & Thornhill, 2009). This study applied content validity to assess the degree to check if questions in the research instrument are reflective of the contents of the study and how they relate to the overall study area (Straub, Boudreau, & Gefen., 2004).

Content validity uses experts and other well informed individuals to gauge if the research instrument is in order (Mugenda and Mugenda, 1999). The study supervisor and other relevant experts in the field assisted in validating the research tools. To test for validity, this study applied



a criterion-related validity to determine how well the scores from the questionnaire correctly predict a known outcome (Taherdoost, 2016). This study used correlations to determine the existence of criterion-related validity by correlating the scores from the instruments with items that they are known to predict and check the correlation coefficient to determine if criterion-related validity exists (Bhattacharjee, 2012).

### **3.5.3. Reliability of research instruments**

To ascertain how consistent and reliable the research instruments produced consistent and reliable data after repetitive use and trials this study assessed the reliability of the research instruments (Mugenda and Mugenda, 2003). In doing this, the study checked for the level of internal consistency and stability over time (Borg and Gall, 1989). Cronbach's Alpha was used to determine the reliability of the research tools measure, where a score of 0.7 and above indicated higher reliability and 0.5 and below showing low reliability of the research instrument (Hinton *et al*, 2004).

### **3.6. Data collection procedures**

Research instruments were sent by email to all targeted respondents. This mode of data collection was used because the self-administered questionnaires were fast to transmit and had a faster response turnaround for busy respondents who may not have time for face-to-face interaction with an interviewer (Kent and Brandal, 2003). A consent letter was included with the survey questionnaire detailing the nature of the research and need for data collection clarifying what was required from each respondent. A list of responses was used to track the number of questionnaires filled and also to differentiate who had already filled the questionnaire and who had not.

### **3.7. Techniques of data analysis**

Data from the surveys was checked for errors, formatted, and saved forming the quantitative data used in analysis. Checks were performed to see if the data was complete, and if there were inaccuracies, and other errors before the start of the analysis (Pallant, 2011). Central measures of tendency, measures of dispersion, and correlation were used to examine and analyze the study variables in readiness for interpretation against the study objectives. Inferential data analysis as well as a 95% (5% error) confidence level was applied for this study and the necessary level of significance measured using the p-value and considerable significance was taken at less than 0.05.

A regression to ascertain the individual and combined impact of the independent variables on the dependent variable i.e., the influence of stakeholder engagement on performance of civil aviation safety automation projects was applied. The results provided additional statistics including the R<sup>2</sup>, adjusted R<sup>2</sup> square, F-statistics, and students t-test that were important in the analysis of the study. The regression model used was as follows,

$$y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4 + \varepsilon$$

Where:

$y$  = Performance of the automation project

$x_1$  = Stakeholder engagement in project initiation

$x_2$  = Stakeholder engagement in project planning

$x_3$  = Stakeholder engagement in project execution

$x_4$  = Stakeholder engagement in project monitoring and evaluation

$\beta_n$  = estimated coefficients

$\varepsilon$  = the error terms

### **3.8. Ethical considerations**

Ethics in research as the appropriate behavior concerning those who become the subject or are affected by your work Saunders Lewis and Thornhill, (2001). To ensure credibility the study followed ethical considerations. For this study, all the respondents were notified of the purpose of conducting the study.

A letter of introduction was also shared with the respondents and their consent sought. All the data collected was held in confidence reassuring them of the safety of their information and only used for the study.

### 3.9. Operationalization Table of Variables

Table 3.4: Operationalization of Variables

Objectives	Type of Variable	Indicators	Data collection instrument	Analysis Type
To evaluate the impact of stakeholder engagement in project initiation on the performance of safety automation projects in Kenya.	Independent variable	<b>Stakeholders in Project Initiation.</b> Feasibility testing Defining the project scope Project risk identification Estimating preliminary budget Determining the project schedule	Questionnaire	Descriptive statistics
To establish how stakeholder engagement in project planning affects the performance of safety automation projects in Kenya.	Independent variable	<b>Stakeholders in Project Planning</b> Setting Goals Defining Scope statement Developing Work breakdown structures Communication planning Risk management planning	Questionnaire	Descriptive statistics

<p>To measure the effects of stakeholder engagement in project execution on the performance of safety automation projects in Kenya.</p>	<p>Independent variable</p>	<p><b>Stakeholders in Project Execution</b>          Develop team and assign resources.          Execute project management plans.          Directing and managing project execution.          Execution of assigned tasks.          Attending Progress meetings</p>	<p>Questionnaire</p>	<p>Descriptive statistics</p>
<p>To determine how stakeholder engagement in project monitoring and evaluation influences the performance of safety automation projects in Kenya.</p>	<p>Independent variable</p>	<p><b>Stakeholder Engagement in Project</b>          Monitoring and Evaluation.          Measuring project progress          Accomplishment of deliverables          Efforts and cost tracking          Resource monitoring          Evaluation of project performance</p>	<p>Questionnaire</p>	<p>Descriptive statistics</p>

## CHAPTER FOUR

### DATA ANALYSIS, PRESENTATION, INTERPRETATION, AND DISCUSSION

#### 4.1. Introduction

This chapter details presents the data analysis, presentation of the findings, including interpretation and discussions of the study. The findings are in tables in the chapter.

#### 4.2. Response Rate

270 respondents consisting of steering committee members, project manager, department heads, airworthiness inspectors, flight operations inspectors, personnel licensing officers, Air traffic controllers, and flight dispatchers formed the targeted sample for the study. The questionnaires were distributed to all 270, and 220 respondents filled and returned representing 81.5% response rate. This is an acceptable response rate as at least 50% response rate is adequate for statistical analysis and inferencing about the target population (Kothari, 2004). The breakdown is presented in table 4.1

**Table 4.1: Response Rate**

Study Population	Sample (n)	Response (n)	Response rate (%)
Steering Committee Members	4	4	100%
Project Manager	1	1	100%
Department Heads	2	2	100%
Airworthiness Inspectors	7	7	100%
Flight Operations Inspectors	8	7	87.5%
Personnel Licensing Inspectors	4	4	100%
Air Traffic controllers	66	56	84.8%
Flight Dispatchers	178	139	78.1%
Total	270	220	81.5%

### 4.3. Background Information

The respondents background information included information on their age, gender, and level of education. The results are shown in table 4.2.

**Table 4.2 : Respondents Background Information**

Background Information	Frequency	Percent
<i>Gender</i>		
Male	130	59.1
Female	90	40.9
<b>Total</b>	<b>220</b>	<b>100</b>
<i>Age Bracket</i>		
25 years and below	28	12.7
26 to 35 years	79	35.9
36 to 45 years	79	35.9
46 to 55 years	28	12.7
Above 55 years	6	2.8
<b>Total</b>	<b>220</b>	<b>100</b>
<i>Highest level of education</i>		
Postgraduate degree	25	11.4
Bachelors	83	37.7
Diploma	108	49.0
Certificate	4	1.9
<b>Total</b>	<b>220</b>	<b>100</b>

59.1% of the respondents were men while 40.1% were women. Those who were older than 25 years but younger than 36 years accounted for 35.9% of those interviewed, while those aged 36 and 45 years represented 35.9%, 12.7% said they were aged below 25 years while another 12.7% indicating they were aged between 46 and 55 years with 2.8% indicating they were older than 55 years. This implied that majority of those working at KCAA were aged between 26 and 45 years and accounted for 71.8% of all those working at KCAA

In relation to the highest education level of the respondents, 11.4% said they had obtained attained postgraduate degrees, 37.7% indicated that they had obtained bachelor's degrees , 49% of the respondents were diploma holders while 1.9% were certificate holders. The results show that majority of those interviewed had obtained undergraduate degrees and diplomas.

#### 4.4. Stakeholder engagement in project Initiation

One objective of the study was to determine the influence of stakeholder engagement in project initiation on the performance of safety automation project in KCAA.

##### 4.4.1. Extent of stakeholder engagement in project initiation

Respondents needed to show their respective involvement and participation in the project initiation process of the safety automation project. Table 4.3 shows the results.

**Table 4.3 : Stakeholder engagement in project initiation**

	Frequency	Percent
Very low Extent	4	1.9
Some Extent	42	18.9
Great Extent	124	56.6
Very Great Extent	50	22.6
<b>Total</b>	<b>220</b>	<b>100</b>

From the results, 56.6% confirmed that they had been involved in project initiation to a great extent, 22.6% considered their involvement as being to a very great extent, 18.9% recorded their involvement as to being to some extent while 1.9% stated that their involvement in project was very low.

When asked to indicate how they had been involved in various aspects, the respondents highlighted their involvement in various aspects of project initiation of the safety automation project at KCAA as presented in table 4.4.

**Table 4.4 : Stakeholders involvement in various aspects of project initiation**

	None (1)	Low extent (2)	Some extent (3)	Great extent (4)	Very great extent (5)	Mean	Std. Deviation
Feasibility assessment	1.9	3.8	26.4	45.3	22.6	3.68	1.40
Defining the project scope	3.8	1.9	24.5	41.5	28.3	3.45	1.34
Project risk identification	1.9	3.8	26.4	37.7	30.2	3.80	1.37
Estimating preliminary budget	72.3	14.1	4.7	6.4	2.5	1.53	1.01
Determining the project schedule	8.3	10.2	51.5	23.3	6.6	3.1	0.96

Most respondents pointed out that they had been involved in project risk identification to some extent as represented by a mean of 3.8 and standard deviation of 1.37. The respondents to some extent they had also been involved in feasibility assessment based on a mean of 3.68 and standard

deviation of 1.40. Clarification on their involvement in definition of project scope showed that respondents were only involved to some extent based on a mean of 3.45 and standard deviation of 1.34. Moreover, involvement in the determination of the project schedule was only to some extent according to most respondents as the mean value was 3.10 and standard deviation of 0.96. However, involvement in preliminary budget estimation was very minimal according to the mean value of 1.53 and standard deviation of 1.01.

The study also examined how stakeholders in project initiation affected the performance of the safety automation project, the key informants clarified that it had enabled them to identify the possible risks associated with the project something that had enabled project managers to become proactive in anticipating possible issues that were likely to arise during the project, enabling them to properly design future projects.

*“Involving external stakeholder in project initiation of safety automation project increases likelihood of identifying possible pitfalls that in one way or another may derail the performance of the project something that may not even be in the purview of the those who deal with the project on a daily basis” – key informant*

When asked if there had been challenges in involvement of stakeholders project initiation the key informants indicated that it was important to conduct sensitization during project initiation in order to enable them to participate as most stakeholders were not able to participate in project initiation processes.

*“Even though challenges are always expected, we have guidelines and procedures including action points on what to do when such occurrences take place. Moreover, we have sensitization meetings to get everyone on board and up to speed regarding what we expect from them. I mean we are well covered in that area and even though some are not IT experts they still seek clarification on some things” – key informant*

#### **4.5. Stakeholder engagement in project planning**

The next objective of the study aimed at establishing the influence of stakeholder engagement in project planning on the performance of safety automation project at KCAA.



#### 4.5.1. Extent of stakeholder engagement in project planning

The respondents were tasked with indicating their involvement in project planning of the safety automation project at KCAA and the results are presented in table 4.5.

**Table 4.5: Extent of stakeholder engagement in project planning**

	Frequency	Percent
None at all	4	1.9
Very low Extent	8	3.8
Some Extent	59	26.4
Great Extent	83	37.7
Very Great Extent	66	30.2
Total	220	100

The results show that 37.7% of the respondents considered their involvement in project planning to being to a great extent, 30.2% said it was to a very great extent compared to 26.4% who felt that their involvement in project planning was only to a very low extent. However, for 1.9% there was no involvement in project planning of the safety automation project of the safety automation project at KCAA.

The respondents also highlighted their involvement in various aspects of project planning of the safety automation project at KCAA, and the results presented and indicated in table 4.6.

**Table 4.6 : Stakeholder engagement in aspects of project planning**

	None (1)	Low extent (2)	Some extent (3)	Great extent (4)	Very great extent (5)	Mean	Std. Deviation
Setting of goals	1.89	3.77	22.64	54.7	16.98	2.13	1.35
Developing Scope Statement	1.89	3.77	26.42	47.17	20.75	2.32	1.36
Work Breakdown Structures	1.89	1.89	32.08	41.51	22.64	2.42	1.29
Communication Planning	1.89	3.77	35.85	33.96	24.53	2.62	1.29
Risk Management Planning	1.89	5.66	28.3	39.62	22.64	2.83	1.75

The results point that the bulk of the respondents acknowledged involvement to some extent in risk management planning of the project indicated by the mean of 2.83 and standard deviation of 1.75. Involvement in communication planning was also to some extent based on the mean values of 2.62 with a standard deviation of 1.29. This was also the case for involvement in development of work breakdown structures with a mean of 2.42 and standard deviation of 1.29 confirming involvement by the respondents only to some extent.

Participating in developing of project statement was also to some extent among the respondents based on a mean of 2.32 and standard deviation of 1.36. Respondents pointed out that they were less likely to participate in setting of project goals based on the mean of 2.13 with the standard deviation of 1.35.

In addition, the study sought to know how involving stakeholders in project planning influenced the performance of safety automation projects, the key informants mentioned that by engaging stakeholders in the project planning phase, they were able to determine, plan, select and plan activities in a sequential manner thereby easily directing the project team enabling them to invest properly on project activities and as a result minimize wastage of resources as well as ensuring that they develop a detailed plan that ensures project success.

*“The stakeholder become the driving force by becoming the key pillars that lead to better implementation and thus help to control the duration of the project greatly increasing the success to a great extent. They contribute to corrective actions, const variations, timelines and re-scheduling of plans” – key informant*

*“They enable identification of actual pain-points unlike during hypothesis and assumptions. By personally participating in planning, they create a strong influence on the performance by introducing vital perspective that help direct the automation team to invest in the right direction to minimize wastage of resources” – key informant*

#### **4.6. Stakeholder engagement in project execution**

The third objective aimed at determining the influence of stakeholder engagement in project execution on the performance of safety automation project at KCAA.

##### **4.6.1. Extent of stakeholder engagement in project execution**

The respondents needed to show their extent of involvement in the project execution of the safety automation project and the results shown in table 4.7.

The results show that 43.4% of the reported their engagement to be of a great extent while 30.19% confirmed their involvement in project execution was to a very great extent. Moreover, 20.8% reported that their involvement in project execution was only to some extent with 3.8% reporting that they were only involved in project execution only to a very low extent.

**Table 4.7 : Extent of stakeholder engagement in project execution**

	Frequency	Percent
None at all	4	1.89
Very low Extent	8	3.77
Some Extent	46	20.75
Great Extent	96	43.4
Very Great Extent	66	30.19
Total	220	100

The respondents also highlighted their involvement in various aspects of project execution and the results presented in table 4.8.

**Table 5: Stakeholder engagement in various aspects of project execution**

	None (1)	Low extent (2)	Some extent (3)	Great extent (4)	Very great extent (5)	Mean	Std. Deviation
Develop teams and assign resources	5.66	9.43	18.87	49.06	16.98	2.32	1.46
Execute project management plans	39.62	22.64	16.98	16.98	3.77	1.32	1.36
Directing and managing project execution	1.89	5.66	41.51	30.19	20.75	3.25	1.72
Execution of assigned tasks	1.89	1.89	20.75	43.4	32.08	2.96	1.82
Attending progress meetings		3.77	22.64	56.6	16.98	2	1.22

Directing and managing project execution was the main activity in which the respondents were involved in under project execution, as the mean value was 3.25 and standard deviation of 1.72. This was followed by involvement in execution of assigned tasks based on the mean of 2.96 and standard deviation of 1.82 showing varying participation to some extent among the respondents. Respondents also confirmed that they were to a lower extent involved in development of teams and assigning resources based on the mean of 2.32 and standard deviation of 1.46.

Similarly, their attendance of progress meeting was at a lower extent according to the mean response of 2 and standard deviation of 1.22. However, there was minimal involvement among the respondents in the execution of project management plans based on a mean of 1.32 and standard deviation of 1.36.

When told to further state how engaging stakeholders in project execution influenced the performance of the safety automation project at KCAA. The key informants were of the opinion that involving stakeholders creates effectiveness of the project because of their active involvement, with their involvement they are able to identify their needs being able to develop and deliver a quality product in the very first attempt, and that they are of great value during project execution

as they hold each other accountable and that the input from the stakeholders is used to make informed decisions on the scope of automation.

*“Stakeholders are of great value during project execution as they hold each other accountable, bringing to light the challenges that may arise during implementation” – key informant*

*“Ensures that the actual results match with targets by enabling, identifying, recording then categorizing and assessing emerging risks. They are hands on, on every step of the project something that ensures inclusion and coordination of safety protocols from all players during implementation and their input is used to make informed decisions on the scope of automation that is still required ” – key informant*

They added that involving stakeholders introduces a vital perspective that help direct the automation team invest in the right direction to minimize wastage of resources, also adding that engaging stakeholders reduces the challenges and hinderances encountered during the execution of safety automation project acting as a feeder to the project minimizing errors in the project.

*“The bottlenecks likely to be encountered are dealt with at the execution stage. It is here where we deal with and analyze their needs to develop and deliver a quality product in the first attempt by collecting the necessary information to have a strategic view of various possible issues” – key informant*

*“This being the most critical phase of safety automation project, stakeholders expectations are met resulting in increased overall performance by realizing the gaps of the project if any thus acting as a feeder to the project and minimizes errors cumulatively assisting in ensuring that the objectives of the automation project are met” – key informant*

When asked to indicate if there had been challenges experienced in engaging stakeholder in project execution in the safety automation project, the key informant highlighted that they rarely faced challenges as there was an existing policy on how to engage the stakeholders.

*“We have procedures that ensure that tasks are delivered on time, conflicts are minimized, and change is managed properly. Also, we ensure to that we have the managements buy in for the various project activities” – key informant*

#### 4.7. Stakeholder engagement in project monitoring and evaluation

The fourth objective aimed at determining the influence of stakeholders engagement in project monitoring and evaluation of the performance of safety automation project at KCAA.

##### 4.7.1. Extent of stakeholder engagement in project monitoring and evaluation

The respondents needed to indicate their involvement in project monitoring and evaluation of the safety automation project and the results presented in table 4.9.

**Table 6: Extent of stakeholder engagement in project monitoring and evaluation**

	Frequency	Percent
None at all	4	1.89
Very low Extent	4	1.89
Some Extent	67	30.2
Great Extent	108	49.06
Very Great Extent	37	16.98
Total	220	100

The findings show that 49.1% of the respondents were greatly involved in monitoring and evaluation of the project, 16.98% stated that they were to a very great extent involved in monitoring and evaluation. On the other hand, nearly one-third (30.2%) clarified that their involvement in monitoring and evaluation was only to some extent with 1.9% highlighting that they engaged in monitoring and evaluation to a very low extent. For 1.9% of the respondents there was no involvement in monitoring and evaluation.

The respondents needed to show how they were involved in various aspects of monitoring and evaluation and the results are presented in table 4.10.

**Table 7: Stakeholder engagement in various aspects of project monitoring and evaluation**

	None (1)	Low extent (2)	Some extent (3)	Great extent (4)	Very great extent (5)	Mean	Std. Deviation
Measuring project progress	1.89	3.77	30.19	45.28	18.87	2.34	1.33
Accomplishment of deliverables	1.89	1.89	16.98	47.17	32.08	2.79	1.82
Efforts and costs tracking	3.77	3.77	33.96	35.85	22.64	2.55	1.29
Evaluation of project performance	3.77	3.77	37.74	37.74	16.98	3.09	1.70
Resource monitoring	1.89	1.89	24.53	50.94	20.75	2.21	1.32

Involvement evaluation of project performance was mostly to some extent among the respondents based on the mean of 3.09 and standard deviation of 1.70 that indicated varied involvement among

the respondents. Accomplishment of deliverables was also to some extent among the respondents with the mean of 2.79 and standard deviation of 1.82 that signifies varied participation by the respondents in this aspect.

Participation in tracking of efforts and cost tracking by the respondents was also to some extent based on 2.55 mean value and standard deviation of 1.29. In addition, respondents were to a lower extent involved in measuring of project progress as per the mean value of 2.34 and standard deviation of 1.33. Involvement in resource monitoring was also to a low extent as shown by the mean of 2.21 and standard deviation of 1.32.

Respondents were required to describe how engaging in project monitoring and evaluation influenced performance of safety automation project at KCAA. The key informants were of the opinion that involving stakeholders ensures accountability and responsibility as respondents are know what is going on in the project pointing out what needs corrective actions, and the results are shareable with others. It also presents the relevant and necessary data to guide the strategic planning, designing and implementation of projects and how to allocate resources in a better way.

*“Stakeholder engagement in monitoring and evaluation of safety automation project influences sustainability as the effectiveness of the project is effectively boosted due to stakeholders understanding the subject matter, and stakeholder feedback in meeting and reports ensures corrective action is taken something that ensures that resources are used efficiently and enhances transparency as accountability is guaranteed” – key informant*

*“Stakeholders evaluate the test results for compliance with user requirements ensuring that safety is not sacrificed for speed, and the feedback results into project improvement and new design features in the process flow ” – key informant*

*“ It is crucial for developing objective conclusions regarding the extent to which programmes can be judged to be a success. It also provides the necessary data to guide strategic planning, design, and implement programmes projects and allocation of resources in better ways” – key informant*

The key informants also added that engagement of stakeholders in project monitoring and evaluation helps in comparing planned works with the actual results and in a way makes it easier to identify the challenges surrounding the project thereby guaranteeing project performance.

*“The KCAA are able to get feedback and areas of improvement and they are able to know what is happening in the programme, which aspects needs corrective actions and the lessons learned are shared with one another assessing user friendliness and achieving the intended results” – key informant*

#### **4.8. Performance of automation project at KCAA.**

Performance of safety automation project at KCAA, was the dependent variable for this study and the respondents were asked to score the various aspects of the performance of the project. The scores ranged from poor to excellent based on a scale of 1 to 5. The results are in table 4.11.

**Table 8: Performance of the safety automation project at the KCAA.**

	Poor (1)	Fair (2)	Good (3)	Very Good (4)	Excellent (5)	Mean	Std. Deviation
Timely completion of the project	1.89	1.89	32.08	37.74	24.53	3.32	1.63
Completion within budget		11.32	24.53	33.96	30.19	2.62	1.24
Stakeholder satisfaction	1.89	5.66	24.53	45.28	22.64	3.43	1.63
Achievement of objectives		3.77	22.64	52.83	20.75	3.08	1.19
Project Sustainability		5.66	18.87	49.06	26.42	2.91	1.27

The project meeting stakeholder satisfaction was ranked as being good as per the mean response of 3.43 and standard deviation of 1.63. Timely completion was ranked second that was also ranked as being fairly good with a mean of 3.32 and 1.63 standard deviation. For both timely completion of the project and stakeholder satisfaction there was varied opinions as observed based on the standard deviation values of each.

Achievement of objectives was also considered to be good with a mean of 3.08 and standard deviation of 1.19 showing that most respondent were of the view that the project had achieved what it was meant to do. Sustainability of the safety automation project was also considered to be fairly good as the mean response was 2.91 and 1.27 standard deviation. Completing the project within the budget was ranked as fair as determined by the mean response of 2.62 and standard deviation of 1.24.

#### **4.9. Influence of policy on performance of automation projects**

The study also needed to understand how influential the various policies within KCAA were influencing the performance of safety automation project and the results presented in table 4.12.

The various policies were indicated from not influential to extremely influential on a scale of 1 through 5.

**Table 9: Influence of KCAA policies on performance of safety automation project at KCAA**

	1	2	3	4	5	mean	Std. Deviation
Existing stakeholder engagement policy	3.77	3.77	13.21	50.94	28.3	3.55	1.76
Kenya Civil Aviation Policy		5.66	11.32	39.62	43.4	2.47	1.39
Customer Relations Management Policy		3.77	16.98	49.06	30.19	2.85	1.32

Existing stakeholder engagement policy framework was seen as being influential in influencing the performance of the safety automation project as it had a mean response of 3.55. The standard deviation was 1.76 and this indicates that respondents held varied opinions regarding how influential the existing stakeholder engagement policy was on the performance of the safety automation project.

Customer relations management policy was also considered as slightly influential with a mean of 2.85 and standard deviation of 1.32. In addition, the Kenya Civil Aviation Policy on engagement of stakeholders was considered to be slightly influential in also influencing the performance of the safety automation project based on a mean of 2.47 and standard deviation of 1.39.

#### 4.10. Multivariate Regression

To ascertain the individual and combined effect of the engagement of stakeholder on the performance of the safety automation project this study applied a multivariate regression model. The model was defined as

$$y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4 + \varepsilon$$

Where:

$y$  = Performance of the automation project

$x_1$  = Stakeholder engagement in project initiation

$x_2$  = Stakeholder engagement in project planning

$x_3$  = Stakeholder engagement in project execution

$x_4$  = Stakeholder engagement in project monitoring and evaluation

$\beta_{1...4}$  = estimated coefficients

$\varepsilon$  = the error terms



**Table 10: Model Summary**

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
1	0.548	0.3	0.242	0.168

The R square value indicates the variations in the dependent variable that are attributable to the changes and variations on a number of independent variables or factors under study. The R square value of 0.3 highlights that 30% of the changes in the dependent variable can be attributed to the variations of one or more of the independent variables.

This implies that engagement of stakeholders in different aspects the safety automation project at KCAA in terms of taking part in project initiation, project planning, project execution, and project monitoring and evaluation can only account for 30% performance of the project.

**Table 11: Analysis of Variance**

<b>Model</b>		<b>Sum of squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig</b>
1	Regression	0.578	4	0.144	5.146	0.002
	Residual	1.347	216	0.028		
	Total	1.925	220			

The results of the analysis of variance indicated that the study model was a good fit for the data ( $F_{4,216} = 5.146$ ,  $p < 0.002$ ) compared to the critical value of ( $F_{4,216} = 2.317$ ). The results point to significant effects on the dependent variable by the independent variables.

For this reason, the applied model can be used to predict the influence of stakeholder engagement in aspects of project initiation, project planning, project execution, and project monitoring and evaluation (independent variables) on the dependent variable (performance of safety automation project).

**Table 12: Estimated Coefficients**

	<b>Unstandardized Coefficients</b>		<b>Standardized Coefficient</b>	<b>t</b>	<b>Sig</b>
	<b>B</b>	<b>Std. Error</b>	<b>Beta</b>		
(Constant)	0.958	0.054		17.577	0.000
Stakeholder engagement in project initiation	0.13	0.087	0.277	1.493	0.142

Stakeholder engagement in project planning	-0.079	0.076	-0.187	-1.045	0.301
Stakeholder engagement in project execution	-0.103	0.027	-0.492	-3.873	0.000
Stakeholder engagement in project monitoring and evaluation	0.081	0.06	0.201	1.359	0.181

The results show that engagement of stakeholders variedly influence performance of the safety automation project. For instance, the regression results show that having stakeholders involved in in project initiation positively influences performance of safety automation project based on the estimated coefficient of 0.13 (p-value >0.05) even though the effect is not significant. Likewise, having stakeholders involved in project monitoring and evaluation of the safety and automation project also shows minimal positive influence on the performance as per the estimated coefficient of 0.081 (p-value >0.05) even though this influence is also not significant.

Having stakeholders participate in project planning negatively affect performance of safety automation project as it had an estimated coefficient of -0.079 (p-value > 0.05) and the influence was also not significant. Negative influence on performance of the safety automation project was observed in the involvement of stakeholders in project execution based on the estimated coefficient of -0.103 (p-value < 0.05) and this influence was significant. The findings point out that in the safety and automation project, other factors positively and significantly affect how the project performs based on the regression coefficient of the constant term of 0.958 (p-value <0.05).

**4.11. Discussion of the findings**

This sections provides the necessary discussions for the study comparing these findings with results from other scholastic studies on the engagement of stakeholders and performance of projects.

**4.11.1. Stakeholder engagement in project initiation**

Engagement of stakeholders in project initiation positively influences performance of safety automation project. This is consistent with what was found by Ondieki (2016) who found that involving stakeholders in project initiation helps in designing projects functions that ensure that

whatever is outlined and planned meets expectations of stakeholders who then proceed to actively participate in the project and as a consequence lead to higher project performance.

The stakeholders took part in project risk identification as per the study results, findings that are similar to what Kobusingye (2017) established that involving stakeholder in risk identification and evaluation has a positive relationship with the project outcomes. The findings shows that the stakeholders were involved in feasibility assessment which is in line with the findings of Wamugu and Ogolla (2017) who concluded that by letting the stakeholder get involved in feasibility testing and assessment of projects they are able to produce reports that assist the project managers in determining how to manage and proceed ad manage the various projects and thus leading to eventual project success.

The findings show that stakeholders took part in definition of project scope an assessment similar to the determination by Fageha and Aibinu (2016) who acknowledge that involving stakeholder in the definition of project scope that satisfies the expectations of the project helps in determining how the project proceeds thereby ensuring project performance. The findings also show that stakeholders were involved in determination of project schedules, findings that are consistent with Maina (2013) who found that involving stakeholders in updating and determining the project schedules assures maintenance of project timelines as all activities are conducted at the stipulated time and thus ensuring project success.

To lesser extent, stakeholders were involved in estimating the project preliminary budget findings that reflect what Mandala (2018) who also found that stakeholders were not involved in budgeting. However, these findings are inconsistent with what Heravi et al., (2015) concluded regarding participation of having stakeholders participate in budgeting as this ensures that there is an effective use of project finances ensuring completion of project within budget.

#### **4.11.2. Stakeholder engagement in project planning**

Stakeholders taking part in planning of the civil safety automation project negatively affects the performance of the project even though it is not significant. The results are contrary to findings of Wamugu and Ogollah (2017) who conclude that having stakeholders take part in the planning

translates to high likelihood of success of the project and ensures that it performs as expected. In addition, stakeholders took part in risk management planning findings that are consistent with the assertions of Bowen, Chudleigh & Phelps, (2020) who found that allowing stakeholders involvement in risk management planning enables the project to exploit new opportunities as they are able to ensure project success.

Similarly, the results are consistent with what Kululanga and Kuotcha, (2010) that involving stakeholders in risk management planning ensures that the organization maximizes its profits while minimizing risks and uncertainties in the process of achieving project objectives. The results also show that stakeholders were involved in communication planning which is consistent with what Njogu (2016) observe that by engaging stakeholders in communication planning it becomes possible to maintain and control the project activities through proper communication leading to better performance.

Stakeholders took part in the development of work breakdown structures, findings similar to what Atiibo (2012) found where he points out that by engaging stakeholders in creating the work breakdown structures the project managers are able to identify activities needed to be completed in the logical sequences and developing project schedules and thus ensuring the project are completed within the specified timelines hence ensuring project success.

Involvement in developing the scope statement and setting of project goals was to a lesser extent in the project. Fageha and Aibinu (2016) also come to a similar conclusion in that they state that involving stakeholders in developing the project scope as well as the development of projects terms of reference helps in establishment clear project objectives and goals that are essential for project success.

#### **4.11.3. Stakeholder engagement in project execution**

The findings show that engagement of stakeholder in project execution negatively impacts project success. The results are contradictory to what Kobusingye (2017) find involvement of stakeholders in project execution is essential for project success, similarly it contradicts the findings of Duncan (1996) who found that engaging stakeholders in project execution helps to change the planned project objective into a set of organized set of activities that ensures proper conducting of activities and use of resources in a manner to attain the project goals. Stakeholders were involved in directing and managing project execution this is similar to what Kongoro (2010) found that if stakeholders

execute their assigned tasks during project execution it becomes possible to track and proper tracking leads to improves project outcomes.

Stakeholders were involved in developing teams and assigning resources, something that is similar to what Kobusingye (2017) who found that by allowing stakeholders to assign and allocate resources of the project it becomes possible to improve project performance as it leads to effective utilization of the project resources and improved accountability all of which work to ensure success. The stakeholders were also attended the project progress meetings similar to findings by Luhombo, Mukanzi, and Senaji, (2019) who find that attending meetings is part of stakeholder communication as they stakeholders are made aware of their tasks, how to accomplish them as well as how to monitor the project progress.

Moreover, the stakeholders at KCAA were involved in execution of the project management plans even though to a smaller extent, findings that are similar to this is similar to what Kongoro (2010) who found that involving stakeholders in execution of project management plans help in the proper transformation of project objectives and policies in a rational manner that ensures project success.

#### **4.11.4. Stakeholder engagement in project monitoring and evaluation**

Having stakeholders in monitoring and evaluation of the safety automation project positively affects it performance. Similarly, Fageha and Aibinu (2016) came to a similar conclusion in that stakeholders in evaluation processes helps to enhance project's success. The results also indicate that the stakeholders were involved in tracking of efforts and costs associated with the project. Likewise, Heravi et al., (2015) outline that allowing stakeholders to track efforts and then provide the necessary feedback to the project managers provides means of knowing how each task is progressing and in turn they are able to improve project performance.

Furthermore, stakeholders took part in measuring of the project progress. This is same with the findings of Hart, (2007) who found that monitoring should be done with stakeholders throughout the project, and in so doing project success and performance is assured. DFID, (2010) comes to a consistent and similar finding where preparing, training, and supporting project stakeholders in the required processes of monitoring and evaluation have been known to produce accurate data for the project and hence keeping the project in check.

In addition, stakeholders took part in resource monitoring functions, findings consistent with Heravi et al., (2015) on the role of participatory stakeholder resource tracking that results in proper utilization of resources as stakeholders are able to hold the project managers accountable in use of the project resources thereby increasing stakeholders satisfaction.

## **CHAPTER FIVE**

### **SUMMARY OF FINDINGS, CONCLUSION, AND RECOMMENDATIONS**

#### **5.1. Introduction**

This chapter outlines the summary of findings, conclusions of the study, and relevant recommendations for both practice and policy.

## **5.2. Summary of the findings**

This section summarizes the findings of the study regarding how engagement of stakeholders in initiation, planning, execution, and monitoring and evaluation of the safety automation project affects its performance.

### **5.2.1. Stakeholder engagement in project initiation**

Engagement in project initiation by stakeholders positively affects the performance of the civil aviation safety automation project even though the influence is not significant. For the various aspects of project initiation, the study points out that at KCAA stakeholders were involved in risk identification, feasibility assessment, definition of the project scope as well as in determination of the project schedule. Involvement in estimation preliminary budget was very minimal among the stakeholders of the civil aviation automation project.

### **5.2.2. Stakeholder engagement in project planning**

Involvement in project planning of the civil safety automation project by the stakeholders influences the performance of the project negatively even though the influence is not significant. The results also show that the stakeholders were involved in risk management planning, communication planning, with lesser involvement in development of work breakdown structures and developing of the scope statement. The stakeholders were also involved in setting goals of the civil safety automation project although to a lesser degree.

### **5.2.3. Stakeholder engagement in project execution**

Engaging the stakeholders in project execution of the civil safety automation project, negatively influences the performance of the project. Stakeholders were involved in directing and managing project execution, they were also involved in executing their assigned tasks. In addition, the stakeholders were involved in developing teams and assigning resources for the safety automation project as well as attending progress meetings. However, there was less involvement in execution of project management plans among the stakeholders.

### **5.2.4. Stakeholder engagement in project monitoring and evaluation**

Involving stakeholders in monitoring and evaluation of civil safety automation project positively affects the performance. Their engagement was mainly in evaluation of the project performance and accomplishing of their respective deliverables. In addition, the findings show that stakeholders were involved in tracking of efforts and costs associated with the project and to some extent they were involved in measuring the project progress. Moreover, the findings also show that to some extent the respondents were involved in resource monitoring of the project.

### **5.3. Conclusion**

Engaging stakeholders in safety and automation project affects the performance of the project. Involvement in initiation and monitoring and evaluation of the safety automation project have been observed to be positively linked to performance while engaging them in project planning and project execution show negative influences. The magnitudes of the effects are minimal suggesting that even though engaging stakeholders affects performance, their influence is only to a minimal degree be it positive or negative. It is possible that the performance of the safety and automation project is highly affected by other factors not under consideration by the study.

Stakeholders who engaged in project initiation participated in project risk identification, feasibility assessment, definition of project scope, and in determination of the project schedule. However, they were less involved in the estimation of the preliminary project budget.

Those stakeholders who participated in project planning took part in the risk management planning, communication planning and in the development of work breakdown structures as well as in developing of scope statement and but were minimally involved in setting of the project goals.

Stakeholders who engaged in project execution took part in directing and managing project execution, executing their assigned tasks, developing teams as well as assigning resources and attending progress meetings, they were however, less involved in. However, there was little involvement in execution of the project management plans.

Those stakeholders who took part in monitoring and evaluation of the project took part in performance evaluation, accomplishment of the expected deliverables, tracking of efforts and cost associated with the project as well as measuring the projects progress with minimal involvement in resource monitoring.

### **5.4. Recommendations**



It is essential to involve more stakeholders in project initiation and monitoring and evaluation of safety automation projects as engagement in these aspects positively impact the performance of safety automation projects.

KCAA should invest in developing measures and policies to guide how to include stakeholders in project execution and planning of safety automation projects even though they have been seen to negatively impact performance. The measures and guidelines should be aimed at reducing or eliminating the negative impacts associated with engagement of stakeholders in project execution and project planning of safety automation projects at KCAA. The study found out that engaging stakeholders in policy frameworks that govern stakeholder engagement are influential in determining the performance of the civil safety automation project.

### **5.5. Areas of Further Research**

The main focus was to find out how stakeholder engagement in civil aviation safety automation project at KCAA influence the performance of the project. For this reason, the findings are not applicable to other automation projects in other organizations in the country. In retrospect, additional studies need to be done to further ascertain how stakeholders affect the quality, implementation, management, or outcomes of automation projects and systems designed for various functions in various institutions or organizations.

From the study, stakeholder engagement only accounts for 30% of the performance of the safety automation projects, this points to the possibility of other factors influencing how the safety automation project performs. In light of this, it is essential to ensure that further studies examine factors that determine the performance of safety automation projects.

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## **APPENDIX 1: Letter of Dissemination of Data Collection Instruments**

Mercy Chebichii,  
 Dept. of Management Science and Project Planning,  
 The University of Nairobi,  
 Nairobi

Dear Sir / Madam,

I am a postgraduate student at the Faculty of Business and Management Science at the University of Nairobi pursuing a Master of Arts Degree in Project Planning and Management. I am undertaking my master's project research on the *Influence of stakeholder engagement on the performance of civil aviation safety automation project: A case of Kenya Civil Aviation Authority*.

I have identified and selected you to participate in this short survey to assist me in gathering data and information that will be useful. All the details will be handled as confidential and held in strict confidence and your response will be anonymous no information regarding your identity will be recorded.

If you agree, please take your time to respond as accurately as possible. Department of Management Science and Project Planning

Yours faithfully,

Mercy Chebichii

## **APPENDIX 2: Questionnaire**

This survey collects data on the objectives of this study. The questions are used to ascertain how engagement of stakeholders alters the performance of civil aviation safety automation project a case of Kenya Civil Authority. Please read and understand the questions before answering by checking, rating, writing, or stating and answering the answers on the spaces provided.

### **SECTION I: Background Information**

1. What is your gender ?       Male       Female

2. How old are you?

- 25 years and below
- 26 - 35 years
- 36 - 45 years
- 46 - 55 years
- Above 55 years

3. What is your highest education level ?

- Postgraduate degree
- Bachelors
- Diploma
- Certificate
- Secondary

**SECTION II:**

**A : Stakeholder engagement in Project Initiation**

4. To what extent are you participating in the project initiation process of the safety automation project?

- None at all     Very Low extent     Some Extent     Great extent     Very Great Extent

5. Indicate the extent to which you are involved in the following aspects of project initiation of the safety automation project at the Kenya Civil Aviation Authority?

( 1: None at all, 2: Very Low extent, 3: Some extent, 4: Great extent, 5: Very great extent)

Aspects	1	2	3	4	5
Feasibility Assessment					
Defining the project scope					
Project risk identification					

Estimating preliminary budget					
Determining the project schedule					

**B: Stakeholder engagement in project planning**

6. To what extent are you involved in the project planning process of the safety automation project?

- None at all    Very Low extent    Some Extent    Great extent    Very Great Extent

7. To what extent are you involved in the following aspects of project planning of the safety automation project at the Kenya Civil Aviation Authority?

( 1: None at all, 2: Very Low extent, 3: Some extent, 4: Great extent, 5: Very great extent)

Aspects	1	2	3	4	5
Setting of goals					
Defining Scope statement					
Developing Work breakdown structures					
Communication planning					
Risk management planning					

8. How does stakeholder engagement in project planning influence the performance of the safety automation project at the Kenya Civil Aviation Authority?

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 .....  
 .....

**C: Stakeholder engagement in project execution**

9. To what extent are you involved in the project execution of the safety automation project?

- None at all    Very Low extent    Some Extent    Great extent    Very Great Extent

10. To what extent are you involved in the following aspects of the project execution of the safety automation project at the Kenya Civil Aviation Authority?

( 1: None at all, 2: Very Low extent, 3: Some extent, 4: Great extent, 5: Very great extent)

Aspects	1	2	3	4	5
Developing team and assign resources.					
Executing project management plans					
Directing and managing project execution					
Execution of assigned tasks					
Attending Progress meetings					

11. How does stakeholder engagement in project execution influence the performance of the safety automation project at the Kenya Civil Aviation Authority?

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**D: Stakeholder engagement in project monitoring and evaluation**

12. To what extent are you involved in the project monitoring and evaluation process of the safety automation project?

- None at all    Very Low extent    Some Extent    Great extent    Very Great Extent

13. To what extent are you involved in the following aspects of project monitoring and evaluation of safety automation projects at the Kenya Civil Aviation Authority?

( 1: None at all, 2: Very Low extent, 3: Some extent, 4: Great extent, 5: Very great extent)

Aspects	1	2	3	4	5
Measuring project progress					
Accomplishment of project deliverables					
Tracking of efforts and cost tracking					
Resource Monitoring					
Evaluation of project performance					

14. How does stakeholder engagement in project monitoring and evaluation influence the performance of the safety automation project at the Kenya Civil Aviation Authority?

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**E: Performance of the safety automation project at the Kenya Civil Aviation Authority**

15. How do you score the following in the performance of the safety automation projects at the Kenya Civil Aviation Authority? (5: Excellent, 4: Very Good, 3: Good, 2: Fair, 1: Poor).

	Excellent	Very Good	Good	Fair	Poor
Timely completion of the project					
Completion within Budget					
Stakeholder Satisfaction					
Achievement of Objectives					
Project sustainability					

16. How influential are the following policies in the performance of the safety automation projects at the Kenya Civil Aviation Authority? (1: Not at all influential, 2: Slightly influential, 3=: Somewhat influential, 4: Very Influential, 5: Extremely influential )

	Not at all influential	Slightly influential	Somewhat influential	Very Influential	Extremely Influential
The existing stakeholder engagement policy framework					
Kenya Civil Aviation Policy					
Customer Relations Management policies					

THANK YOU FOR YOUR RESPONSES

**APPENDIX 3: Interview Guide for the top management at Kenya Civil Aviation Authority**  
**Introduction**

This interview intends to enhance the data collection on how stakeholder engagement affects the performance of the civil aviation safety automation project at the Kenya Civil Aviation Authority.

### **Specific Information for the study**

1. How does involving stakeholders in project initiation influence the performance of the safety automation project?
2. What are the challenges faced in engaging stakeholders in the project initiation phase of the safety automation projects?
3. How does involving stakeholders in project planning influence the performance of safety automation projects?
4. What are the challenges faced in engaging stakeholders in the project planning phase?
5. How does involving stakeholders in project execution influence the performance of safety automation projects?
6. What challenges are experienced in engaging stakeholders in the project execution phase?
7. How do stakeholder engagement in project monitoring and evaluation influence the performance of safety automation projects?
8. What challenges are experienced in engaging stakeholders in the project monitoring and evaluation phase?
9. How does stakeholder engagement influence the performance of a safety automation project?