

**DETERMINANTS OF IMPLEMENTATION OF SAFETY
OVERSIGHT PROGRAM IN AERODROMES TOWARDS
ENHANCING SAFETY. A CASE OF JOMO KENYATTA
INTERNATIONAL AIRPORT**

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**A RESEARCH PROJECT REPORT SUBMITTED IN PARTIAL
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2020

DECLARATION

I declare that this research project report is my original work and has not been presented before for any academic award in any University.

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DEDICATION

I dedicate this research to my wife Pamela, my beloved children Sifa, David & Sian and all those who daily commit their lives and resources to ensure oversight of Aerodromes with a view of enhancing safety of the travelling public by air.

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ABBREVIATIONS AND ACRONYMS

AGA	Aerodromes and Ground Aids
AAMLE	ANS, Aerodromes and Meteorology Legislation and Enforcement
ANS	Air Navigation Services
ANSPs	Air Navigation Service Providers
CE	Critical Elements
CMA	Continuous Monitoring Approach
EI	Effective Implementation
GAT	Global Aviation Training
GSIE	Global Safety Information Exchange
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
JKIA	Jomo Kenyatta International Airport
KAA	Kenya Airports Authority
KCAA	Kenya Civil Aviation Authority
MOU	Memorandum of Understanding
OECD	Organization for Economic Co-operation and Development
PANS	Procedures for Air Navigation Services
SARPS	Standard and Recommended Practices

ABSTRACT

Implementation of oversight programs in Aerodromes towards enhancing safety is becoming critical in the aviation industry due to increased air travel overtime. The need for quicker means of travel consequently has led to more flights but with constrained ground infrastructure to handle the huge number of passengers. This requires a systematic approach to ensure unsafe practices in aerodromes / airports do not negatively affect the gains resulting from growth in air travel. Jomo Kenyatta International Airport being the biggest international hub in the region has experienced rapid growth in air passenger traffic. However, there has been a lag in an equal development of infrastructural capacity to address the emerging needs occasioned by increased passenger growth and ensure lack of compromise on safety. All aviation stakeholders need to offer necessary support systems to create a synergy required towards enhancing safety. The research examined the determinants of implementation of safety oversight program in aerodromes toward enhancing safety at Jomo Kenyatta International Airport. Four objectives considered were; - to establish extent to which stakeholders' involvement determines implementation of safety oversight program in aerodromes and to examine extent to which personnel training determines implementation of safety oversight program in aerodromes. Thirdly, to assess the extent to which Safety communication determine implementation of safety oversight program in aerodromes and finally, to evaluate extent to which regulatory framework determine implementation of safety oversight program in aerodromes. Descriptive research design was adopted for the study. 91 respondents drawn from 8 departments in the Airports Authority and Civil Aviation Authority of Kenya comprising of a total population of 163. Questionnaires were used to gather data with a return rate of 91% achieved. The collected data was analysed through descriptive and inferential statistics with tables and narrations used to display study outcomes. The study findings indicated that personnel training determined the implementation of safety oversight programs in aerodromes to the greatest extent with a significant positive change of 0.627, followed by safety communication at 0.511 significant change on the dependent variable. Stakeholders' involvement and regulatory framework gives a moderate positive change to the extent of 0.373 and 0.325 respectively. Analysis of Variance (ANOVA) tested the hypothesis of each objective. Personnel training and safety communication had a relatively high significance while those of stakeholders' involvement and regulatory framework had moderately determinacy the dependent variable respectively. The multivariate regression analysis established the relative contribution of the independent variable resulting to a model $Y = 2.54 + 5.21X_1 + 7.67X_2 + 6.32X_3 + 4.94X_4 + \text{Error Term}$ The study recommends that Kenyan Airports Authority and Civil Aviation Authority should improve personnel training and safety communication as they have higher impact on implementation of safety oversight programs in aerodromes towards enhancing safety. Researcher envisions the carrying out of further studies in different context for verification of findings.

Key words: *Implementation of safety oversight program, stakeholders' involvement, personnel training, safety communication and regulatory framework.*

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

The International Civil Aviation Organization (ICAO) is a specialized agency of United Nations (UN) which deals with promoting development of a safe and orderly International Civil Aviation. It enables promulgation of Standards and Recommended Practices (SARPS) to facilitate aviation safety regulations, harmonized globally among others. In its State Aviation Safety 2011 report, ICAO provided indicators and safety trends that were analysed at a high-level for use by contracting states, air travellers and the larger aviation community. It thus endears to improve safety outcomes by a number of coordinated activities, which includes key safety trend checks and pointers and implementation of agendas to deal with safety concerns among others. In recent years, scheduled commercial flights numbers increased by 4.5 % globally. This necessitates implementation and developments that is at per with the growth that enables coordinated progress and expansion towards new safety initiatives. To achieve this, ICAO on a systematic manner uses Universal Safety Oversight Audit Program in monitoring the member states address of issues related to safety. In the implementation of SARPS, ICAO developed eight areas of audit for effective oversight of state safety. ICAO expects that the state through the regulatory agency address all the eight elements regarded as critical, and representing the all-inclusive spectrum of activities in the civil aviation system (ICAO, 2011).

The elements are categorised as establishing and implementing critical elements. They form the basis of a system of a safety oversight in which ICAO through the Universal Safety Oversight Audit Program determines the States' compliance to determined provisions through regularly reviewed protocol questionnaires and site visits in audit areas. The elements that establishes an aviation safety are the primary legislations, supporting regulations, civil aviation system of a state and safety oversight functions, training and qualification of aviation personnel, and guidance materials, tools and provision of critical information towards safety. Certification, licensing, approvals, obligations coupled with surveillance and resolving safety concerns forms the implementing critical elements. (ICAO, 2016).

Globally, Inter-Agency task force on financing for Development as published by ICAO Safety report, 2016 reveals low level of Aerodromes and Ground Aids Effective implementation (AGA EI) particularly in international aerodromes certification requirements. Gaps existing in aviation infrastructure accounted for the low performance in AGA EI with the following main reasons; - poor aerodrome regulatory framework among states, lack of robust aerodrome certification and safety assessment mechanism. In addition, inadequate staffing of aerodrome regulatory authorities coupled with training deficiencies to ensure appropriate mix of technical disciplines, obsolete aerodrome infrastructure not meeting international standards and non-adherence of the aerodrome operator to certification processes contributed to low performance. Despite the above and the economic benefits of air transport, there has been little funding for the air transport infrastructure accounting for a mere 4.2 % compared to 54.7 % of donor funding for economic infrastructure in road transport. Safety oversight in aerodromes remains a challenge with negligible effective implementation. Global Safety Information Exchange (GSIE) identified and organized accidents into eight categories of which runway safety and ground safety recorded the highest number of accidents at 41% and 20% respectively. This is within the aerodromes audit area and requires concerted efforts to reduce the high accident rates (ICAO, 2016).

Africa has had remarkable progression in the aviation arena over the last few decades owing to the growing economy and consequently the demand for domestic and foreign air travel. Between 2003-2012, the number of flights to and from the continent increased by 103 % translating to approximately five times of the global growth in aviation during the same period (Boehmer,2013). Africa continent only accounts for 3% of the global aviation. However, it has historically held one of the poorest safety records among all the regions. This accounts for approximately one accident per 270,000 flights compared to global average of one accident in 5,000,000 flights. This result from social issues that hinder growth and implementation of better infrastructure and safety initiatives (Pasztor, 2014). IATA and ICAO have pointed out to nationalistic interests and lack of cooperation between African states (Boehmer, 2013). Of the accidents reported between 2004 -2013 in Africa, 80% took place in Eastern and Southern parts of the continent (Amadou, 2015). However,

ICAO has been in communication with stakeholders and there are concerted efforts to improve safety oversight through Regional Groups and Oversight Organizations (ICAO, 2016). (Michael, 2007) highlights Civil Aviation Safety and Security oversight Agency (CASSOA) in East African Community (EAC) as an organization mandated with improving safe air transport in Africa.

Kenya adopted/ratified the convention to International Civil Aviation Authority in Chicago on 1st May 1964 henceforth becoming a signatory state and thus obligated to comply with provisions of ICAO according to the 37th article to the convention. As a result of the ICAO protocol, Kenya as a signatory is required to put in place oversight system towards safety that is effective and reflecting the joint charge of the State and the aviation community in broad. This is done though addressing all the eight ICAO critical elements (CEs) representing the activities included in the civil aviation of a state. Following the ratification, Kenya formed the Directorate of Civil Aviation (DCA) being the sole body to regulate the Aviation industry. However, it was a challenge in effectively carrying out their safety oversight obligation under the Ministry of Transport. This led to ICAO Assembly raising concerns that were cutting across member states because of inadequate civil aviation establishments and insufficient oversight activities. The amendment to the Civil Aviation Act in 2002 led to the establishment of Kenya Civil Aviation Authority on 24th October 2002. It took over roles of Ministry of Transport's Directorate of Civil Aviation (DCA) and the Civil Aviation Board (CAB). KCAA was mandated as the state agency for the management of aviation safety in Kenya with the objective of economically and efficiently planning, developing and managing civil aviation, regulating and operating a safe civil aviation system in Kenya (KCAA, 2013).

KCAA performs regulatory functions of safety, security and economic oversight of Air Services, providing Air Navigation Services (ANS) and training in aviation among others. This is realised through promotion of a regulatory atmosphere encouraging advancement of a competitive and vibrant industry for air transport. In addition, KCAA offers infrastructure for air navigation services and facilities for training at East African School of Aviation. It aims at ensuring the aviation industry in Kenya achieves highest compliance with ICAO provisions. This is achieved though ICAO - USOAP by ensuring that global

aviation standards are achieved by each signatory state. ICAO audited Kenya under the USOAP in 2008 and 2013. These audits revealed an interesting trend in relation to the effective implementation of critical elements (CEs). ICAO noted that although Kenya had performed well in the critical elements establishing a regulatory system, the CEs concerning implementation such as, surveillance and resolution of Safety issues remained low at 61 and 51 % respectively. Although there has been considerable effort in the review of primary legislation to ensure effective implementation, supporting regulations, adequate guidance material and qualified personnel derails the attainment of enhanced safety oversight function. There is need to strengthen the regulatory functions of KCAA in the face of the increasing traffic and geared towards enhancing safety (KCAA, 2013).

1.2. Statement of the Problem

Kenya Civil Aviation Authority (KCAA) is charged with safety oversight in Kenya air transport system as stated in its slogan ‘efficiently managing air safety’. This objective is achieved through adoption and incorporation of International Civil Aviation Organization (ICAO) requirements that are in form of Annexes and their supporting documents. These SARPS becomes a key component to the legislation governing the aviation industry besides the Civil Aviation legislation as enacted by Parliament. ICAO is thus in charge of oversight of states in the implementation of a robust aviation systems including safety oversight programs in aerodromes. Globally, a number of countries have managed to develop an effective safety oversight program in aerodromes by providing the necessary infrastructure and procedures that are key to safety such as, adequate aerodrome data, required infrastructure, obstacle restriction and removal procedures, aerodrome operational services equipment and installations, aerodrome maintenance and qualified personnel. The success of the above requires close coordination between the State Civil Aviation Authorities and the regulated entities among them the aerodrome operators.

Despite the efforts by ICAO in provision of Annexes and guiding materials towards safety oversight, effective implementation of a safety oversight program in aerodromes remains a challenge. Stakeholders’ response to safety hazards and risks, encroachment of airport lands and development of properties in obstacle free zones, continue to introduce new challenges in safety oversight strategies. According to International Civil Aviation

Organization, Kenya continues to perform poorly in the implementation of certification, surveillance and resolving safety concerns as highlighted by the ICAO USOAP audit 2013 bringing into question the effectiveness of the regulatory framework and communication. In addition, certification, licensing and registration of aerodromes continues to be a challenge over the years putting into question compliance to safety standards. Reports on recent incidences such as fire at the arrival terminal, extended closure of airport due to disabled aircraft on the runway at Jomo Kenyatta International Airport puts into question the effectiveness of the safety oversight program.

Aviation industry is highly regulated both at the local, regional and International level with requirement for collaboration to meet the utmost notch of harmonization and standardization for regulatory framework, processes as well as practices. Such standardization and harmonization are expected to bring relatively the same results. However, this is not the case and thus the need to question stakeholders' involvement, personnel training, safety communication and the regulatory framework as some of the key issues that would determine the implementation of safety oversight program. It is on this background that the research was conducted on determinants of the effective implementation of safety oversight program in aerodromes towards enhancing safety of the travelling public.

1.3. Purpose of the Study

The purpose of the study examined determinants of implementation of safety oversight program in aerodromes towards enhancing safety, a case of Jomo Kenyatta International Airport.

1.4. Objectives of the Study

The study was directed by the following specific objectives:

- i. To establish the extent to which stakeholders' involvement determines the implementation of safety oversight program in aerodromes.
- ii. To examine the extent to which personnel training determines the implementation of safety oversight program in aerodromes.

- iii. To assess the extent to which Safety communication determines the implementation of safety oversight program in aerodromes.
- iv. To evaluate the extent to which regulatory framework determines the implementation of safety oversight program in aerodromes.

1.5. Research Questions

This study sought to respond the following research questions:

- i. To what extent does Stakeholders' involvement determine the implementation of safety oversight program in aerodromes?
- ii. To what extent does personnel training determine the implementation of safety oversight program in aerodromes?
- iii. To what extent does Safety communication determine the implementation of safety oversight program in aerodromes?
- iv. To what extent does regulatory framework determine the implementation of safety oversight program in aerodromes?

1.6. Research Hypothesis

The study tested hypothesis at 95% significance level as follows:

- i. H₁. Stakeholders' involvement significantly determine the implementation of safety oversight program in aerodromes.
- ii. H₁. Personnel training significantly determine the implementation of safety oversight program in aerodromes.
- iii. H₁. Safety communication significantly determine the implementation of safety oversight program in aerodromes.
- iv. H₁. Regulatory Framework significantly determine the implementation of safety oversight program in aerodromes.

1.7. Significance of the study

The study is of great significance to KCAA, Aerodrome Inspectors, aviation industry stakeholders such as Aerodrome operators and owners of telecommunication masts, wind turbines, solar farms and power lines among others as it is set to outline the determinants of implementation of safety oversight programs. Recommendations from this study can be used in the planning of development around airports to ensure synergy and enhance safety

of operations in and out of Kenya aerodromes. Aviation entities in the international arena may use the outcome of the study to identify challenges and establish mitigation measures in achieving synergy in the implementation of a safe and effective oversight system. The study supplement the body of knowledge available to Researchers and academicians as reference materials for future research on related topics. The research outcome covers an essential feature of aviation industry and the recommendations of the research useful in the policy formulation to achieve synergy among stakeholders and improve safety oversight of aerodromes.

1.8. Delimitation of the Study

The study was discrete to Jomo Kenyatta International Airport, operated by Kenya Airports Authority, and handles scheduled commercial international and domestic flights and Kenya Civil Aviation Authority in implementation of safety oversight program in this aerodrome. This study concentrated on four determinants for the implementation of safety oversight program in aerodromes namely; - stakeholders' involvement, personnel training, safety communication and regulatory framework.

1.9. Limitation of the Study

The research project run into various challenges including delay in getting necessary authorization to conduct the research owing to sensitive nature and security restrictions in the industry. The researcher overcame this by sending reminders. The respondents had tight schedules and were mostly shift workers due to the high regularization of the aviation industry. The researcher liaised with the duty managers to assist in collecting the research instruments from various shift in addition to extending the expected time of response. Other limitations was time constraints which was countered by taking leave from work and procuring services of research assistant which made it possible to undertake the research within reasonable timelines.

1.10. Basic Assumptions of the Study

The finding confirmed a significant relationship from the information given by respondents that enabled the researcher to make reasonable conclusions and recommendations useful to improve implementation of safety oversight in Aerodromes as per the assumptions of

the study. In addition, the respondents understood and adequately returned the filled questionnaires that enabled the researcher to analyze data and make reasonable conclusions and recommendations.

1.11. Definitions of Significant Terms Used in the Study

Aerodrome –A defined area on land or water that includes any buildings, equipment and installation intended for use either wholly, or partially to facilitate aircraft’s arrival, departure and surface movement.

Stakeholders Involvement– The act of persons, groups/organizations having concern and taking part in the process and outcomes of an organization and with inputs that facilitates achievements of its goals.

Safety Communication – Course of conveying information, concepts, views and appraisals from either one individual or group to a different group in order to control or reduce associated risk related to an operation or activity.

Safety –A state in which threats connected with aviation events in direct support or related to aircraft operation are controlled and reduced to a tolerable level.

Personnel training–A planned process aimed at modifying Organizational staff s’ approach, understanding and skills because of learning practice imperative to achieving effective enactment of an action or a group of actions.

Regulatory framework – A model used to reform and enact regulations effectively and in a logical way.

Safety oversight – A function executed by a government to ensure persons and entities executing an aviation activity complies with national rules and code of practice related to safety

1.12. Organization of the Study

The study was organized into five chapters. Chapter one is introduction and comprises of the background of the study, statement of the problem, purpose of the study, objectives of the study, research questions and researchers’ hypotheses. It also includes the basic assumptions of the study, limitations and delimitation of the study, definition of significant terms and organization of the study. The second chapter dealt with the literature review connected to the study thematically in line with the objectives, conceptual framework, and

knowledge gap in addition to the summary of literature review. Third chapter presented the research methodology, describing the research design, sampling techniques and sample size. In addition, it described research instrument validity and reliability, procedures for collection of data and techniques for analysis of data used in the study. The fourth chapter highlighted analysis and presentation of data, interpretations of results and discussions of the findings. Lastly, the fifth chapter contained findings summary, discussions in general, study conclusions and recommendations. In addition, suggestions for further research in the area of oversight of aerodromes safety.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents review of appropriate writings on stakeholder's involvement, personnel training, safety communication and regulatory framework and how they determines implementation of safety oversight programs towards enhancing safety in aerodromes. The review of each determinant forms the basis of theoretical framework through identification of existing knowledge gap and consequently the formulation of conceptual framework.

2.2 Safety Oversight Program in Aerodromes

Safety oversight is a role by means of which a Country ensures that personalities and establishments carrying out aviation activities comply with domestic laws and protocols governing safety (ICAO, 2017). US department of transport and FAA describes this process as a way of ensuring aviators and aviation organizations such as aerodrome operators among others accomplish their functions in a safe and responsible manner (Mark, 2008). He further cites promotion and protection as key parts of safety oversight mission that are largely complementary. To realize protection and promotion, a state needs to create a trustworthy system of aviation that encourages a disposition for public use. Broderick (2002) highlights the challenges faced by aviation industry before the advent of the ICAO Universal Safety Oversight Audit Program. Following January 1990 Avianca flight 52, accident, United States investigation revealed lack of enforcement mechanism for the ICAO convention and thus the assumptions that countries which had acceded to the Chicago convention were largely erroneous. He gives a brief history of safety oversight as follows; He notes that safety oversight dates back to years before 1920 that involved the U.S Air mail services. Because of accidents involved, there was need to have an oversight program with the aim of reducing accidents. In 1921, Herbert Hoover noted that the aviation industry favored being regulated by the government as it required legislative action to define the rights of all those affected by the industry which could only be provided by the government. FAA regulations did not require foreign carriers to comply with ICAO standards, which made regulation to be difficult. To seal these loopholes, a change of policy

to allow for closer examination of capabilities of foreign civil aviation authorities to meet their surveillance and oversight responsibilities under International law was required. In 1938, there was enactment of Civil Aeronautics Act for the regulation of aviation industry. It led to the emergence of accident investigations, which became a major source of evidence in the performance of oversight system. Investigations identified shortcomings that included; - failure to follow safety rules, failure of the rules. This later became a major impetus for review of the oversight system. In early 1990s, FAA developed a program known as International Aviation Safety Assessment (IASA). However, it only focused on Personnel licensing, Aircraft Operations and Airworthiness. There was an assessment of State's compliance and public announcement of results. This led to the realization of need for an assessment program that was acceptable to states i.e. 'a more balanced multilateral approach rather than the unilateral program of the United States'. Although ICAO convention and Annexes remained the fundamental basis for promoting safety, many governments had not recognized their safety oversight obligations and had not committed resources to fulfill such obligations. As a result, United States and Canada co-sponsored a working paper for the 29th ICAO assembly to address the deficiencies in safety oversight in 1992. This led to change of policy that saw a number of countries support an ICAO assessment program that later was endorsed in the 31st ICAO assembly in October 1995 and came to be known as ICAO-USOAP.

Belai cites concerns that made states incapable of effectively realizing safety oversight accountabilities namely; - deficient depth of ICAO assessment and transparency, confidentiality and the voluntary nature of USOAP. These challenges were wide spread and not limited to any specific region (ICAO, 2003). The voluntary program was inadequate and ICAO continued to develop means of strengthening the program with a view of having a mechanism to make mandatory audits acceptable to states. The international conference on aviation safety and security held in January 1997 in Washington, DC recommended a program to verify and improve compliance of safety oversight systems with international safety standards with the view of ensuring ICAO had greater authority to determine compliance of states. The 32nd ICAO assembly approved the regular and mandatory assessments of the Annexes dealing with Personnel licensing, Aircraft Operations and Airworthiness and later expanded to include Aerodromes, Air

Traffic Services and selected provisions of Aircraft accident and incident reporting by the 33rd ICAO Assembly in 2001. Since inception in 1995, USOAP has truly become an effective audit program as it has provided a proactive indicator of safety performance (ICAO, 2011). Monitoring and analysis of safety indicators is only achievable through execution of explicit ingenuities, tools, training undertakings and programs. This is to promote global aviation safety resulting from improved directed safety endings through the civil aviation working purviews. To achieve this goal, ICAO has a comprehensive regional network aimed at cultivating strategic partnerships with interested parties to facilitate provision of the best operative and functioning support to contracting states. Training and regional cooperation are key to enhance putting into practice the oversight programs towards enhancing safety. USOAP has since transited to a Continuous Monitoring Approach (CMA) which embodies a long-standing, elastic, worthwhile and sustainable mode of; safety deficiency identification, assessment of associated risks, assistance strategy development and improvement prioritization. This then called for a continuous reporting of States' effective implementation rather than the snapshot assessment carried out once in six years through comprehensive systems approach (ICAO, 2016).

2.2.1 Stakeholders Involvement and Program Implementation

Stakeholders are personalities, groups and/or establishments with interested in the course and outcomes of an entity and whose contributions aid attainment of the aims of such an entity (Freeman, 2007). Harrison (2013) argues that organizations striving to uplift their stakeholders manage to preserve their participation and support making them flourish in the end. He posits that focusing on stakeholders and managing their interests creates value for the firm and improves performance. Recognizing that stakeholders have divergent interests that may not be harmonious with each other's' interests and examining how such interests influence stakeholders' relationships to a course is recommendable. Therefore, commitment of stakeholders is paramount in the view of overlapping interests, hence, need to address and coordinate (Freeman, 2015).

Turkulainen, (2015) places importance on stakeholders need to converse and pass information leading to rapport building and make contacts. This is necessary to attaining viable programs. He asserts communication is the basis for augmenting relationships and

expedient in making guarantees of advantageous to programs. Leung (2010) further cites that project team members contribute to its success. Consequently, necessary synergy is unattainable unless those involved, visualize or observe common goals. He continues to say that extraordinary commitment prompts great enactment and contentment while unceasing commitment aggravates intentions to abandon. Touzi (2016) cites that major stakeholders i.e. those who bear most responsibilities and obligations should not underestimate the role of other stakeholders as it would derail the project. A study by Sudi Nangoli (2016) on Stakeholders participation: an empirical review concludes that passive involvement of Stakeholders impact projects/programs sustainability negatively and thus need to have consultations throughout the project/program life. Kibera (2013) in her study on implementing software developments in Information and Communication Technology at Jomo Kenyatta University of Science and Technology alludes that getting stakeholders to participate leads to setting of realistic expectations, builds awareness and raises support while minimizing resistance to implementation. She asserts that stakeholders have a part to play in positive implementation.

2.2.2 Personnel Training on Program Implementation

Training is a prearranged process to alter attitude, awareness and skills through learning practice with a view of realizing real performance in a given undertaking or variety of activities. Training thus is concerned with enhancement and improvement of an employee's knowledge, skills, attitude and behavior such that he/she is able to conduct a task effectively and improve on-the-job performance. This requires doing, application or transfer of learning into work place (Altarawneh, 2016). In addition, Noe (2010) describes training as an intentional determination by an enterprise to enable an employee's grasping of work-associated aptitudes, such as knowledge, skills and behavior required for effective work performance. It is thus an essential tool in equipping an employee towards achieving organizational goals and objectives to enhance efficiency (Olubukunola, 2015).

Training has both direct and indirect influence to corporate strategy and objectives. Thus, training that enables workforces develop competencies required for their tasks directly influences a venture. Noe further highlights the need for trainees to take responsibility for learning and transfer, which includes; - preparation, engagement and application of training

requirements at work. In addition, trainees should review and work towards the training goals and be willing to change. Training has different perspectives and thus need Management and Training personnel to understand each perspective when coming up with training curricula. In an organizational viewpoint, training programs gears towards reaping paybacks for instance, employees' growth and performance primary to productivity of the organization. Thus, effective training programs are to overcome Organizational Performance Discrepancies (OPD). However, trainees' perspective to training program is with regard to acquisition of skills and knowledge that is beneficial to their career growth and development. This calls for consideration of both Organizational and Employee perspectives in training evaluation (Rasool, 2015).

A study by Gibbs (2017) reviewed the flight attendance competency-based training. The results indicated that training in aviation resulted to building of understanding, abilities and outlooks required for necessary performance. In consequent, the attendants were to handle varieties of challenges encountered in in-flight service to air travelers effectively. They cite that although the management were reluctant to invest significantly in training budgets, the minor improvement gave a viable lead in the aviation industry. The study concluded that training improved passenger satisfaction with in-flight service.

ICAO (2017) through various study and working groups indicates that augmenting personnel training necessitates noble training program with a diary of undertakings to realize inter alia training aims, learning intents, thematic requirements and means of valuation . Determination of key elements such as training needs assessment, progress work, learning chores and real-world use are important for developing training programs. ICAO further suggests review of previous personnel knowledge, preceding trainings and expertise while carrying out a training needs assessment to identify existing problems and challenges and enhance change in behavior that would result to better performance. ICAO cites lack of resources, redundancy, poor communication and coordination as some of the challenges facing training of personnel in the aviation. In addition, robust growth trend in the global air transport network results to clamor for experienced aviation personnel and hence the need for ICAO member states and training organizations to explore new

collaborations and partnerships in order to increase awareness in aviation training and address the persistent capacity gaps.

A study by Abawajy (2008) with regard to stakeholders' commitment concludes that merely giving training to workers is inadequate in awareness of information security programs. They advanced the need for Organizations to assess whether training programs are successful in changing behaviour citing the Kirk Patrick's reaction, learning, and behaviour and results learning model to measure learning effectiveness. They allude to ample proofs that training improves worker expertise to proper behaviour and pre-eminent practices that can enhance a program and reduce risks. Maina (2017) studying influence of Safety Management System on aviation systems performance in Kenya, identified safety promotion including training and effective communication with the workforce as key determinant to firms' performance as it result to employee's confidence and productivity.

2.2.3 Regulatory framework and Program Implementation

Regulations are rules that seek to determine conduct of companies/businesses having aptitude of influencing the economy and normally overseen by government. They encompass inter alia extensive variety of laws sanctioned by regimes, principles fixed by way of sector watchdogs and limitation levied by professional establishments designed to guard public policy aims (World Bank, 2015)

Mehdi (2014) in their study on Iran regulatory framework argues that effective regulation, proficient oversight established order and a philosophy of compliance are the indispensable rudiments to a correctly operative aviation regulatory framework. They allude that a regulatory regime ought to align per the first-hand worldwide practices, cultivate operative engagement with broader aviation enterprise and answer to the requirements of the aviation sector among others. This agrees with Arnold (2011) who maintains that rules and regulations in a common intellect deal with interests and disquiets of the public and upsets; enactment, strategy, technology acceptance, distribution of resources and linkages among sectors. In addition, market openness, innovation, technology alteration and approval, resource apportionment and re-allocation are products of regulations and thus a need to minimize flaws in regulations to ensure they address public interests. They additionally state that regulations vary in different countries and zones and keep on shifting to enhance

efficacy and resource share, sustenance of great yield and advancements and at times protection of interests of special groups. Thus regulatory framework whether appropriate or inappropriate influences productivity and performance. Chocho (2009) had raised concern on the inadequacy of aviation regulatory system in Kenya because of inadequate legislation, policies and procedures for oversight of safety. However, from literature, regulatory framework has been under review from time to time and thus need to review their effectiveness. Regulatory environment is one factor related to economy's attractiveness and with continuous improvement be able to contribute additional steadiness, belief and power to regimes, private entities among others (OECD, 2007). This is in agreement with Chalk who notes that strong, thoughtful and evidence based regulations form the foundation of civil aviation success. He notes that ICAO is moving from the reactive approach of prescriptive regulations only to a combination of a more dynamic performance-based regulatory approach to improve safety margin. This ensures consideration of each regulated entity to its operating environment (Chalk, 2016).

2.2.4 Safety Communication and Program Implementation

Iacob (2017) defines communication as the method of conveying information, concepts, thoughts and appraisals from one person or group of persons to another. She argues that as an attribute of human beings, no activity is conceivable outside communication irrespective of their complexity. William (2003) states that communication associated to safety is the utmost real way to advance safety ethos in an business. Geller (2001) argues that the attitude that breaks down safety feedback in an organization is a feeling of lack of competency among Co-workers, as they do not want to create interpersonal conflicts with their seniors. A study by Vecchio–Sadus (2007) on Commonwealth Scientific and Industrial Research Organization (CSIRO) minerals showed that most work-related injuries resulted from unsafe working culture. She cited clear and constructive safety communication as key to prevent at-risk behaviour and improve safety culture. In addition, safety culture provided cohesion and supportive framework for purposeful performance at CSIRO Minerals, Australia. Vecchio-Sadus concluded that appropriate lines of communication and feedback mechanisms among others improved safety communication

at work place. This led to enhanced cooperation, support and increased participation in safety programs.

A study by Morrow (2014) investigating the connection between safety ethos and performance in nuclear and published in United States Nuclear Regulation Commission (USNRC) Safety Culture Trait Talk argues that effective safety communication is important in maintenance of safety culture. Willingness of employees to give and receive feedback is dependent on their regular communication with each other. The conflict caused by lack of clear communication cannot be overemphasized. In addition, exchange of information is essential to organization learning and safe operation. There is thus need to address communication barriers which has a greater influence to safe performance. The way we communicate influences safety process irrespective of whether we are understood or not and determines the acceptance or rejection of any process. Krivonos (2007) suggests the importance of communication as an integral function in aviation safety. This is because of crucial nature of communication. He cites the study done by Helmreich and Foushee on aircraft accident statistics, which concludes that 70% of calamities involved human miscalculation subsequent from failure in interactive exchange of information. This agrees with the study by Krifka, et al. (2003) that posits 80% of all aviation calamities in the last 20 years related to interpersonal communication.

2.3 Theoretical Framework

Theoretical framework is a set of terms and relationships within which formulation and solving of a problem is achieved (Pfeiffer, 2017). A theory, on the other hand, is a set of interconnected ideas, descriptions, and suggestions that bring forth an orderly outlook of phenomena by postulating relations between variables in order to elucidate or forecast the phenomena (Hornby, 2010). This study anchored on three theories that underpin implementation of safety oversight programs and the four independent variables. They include stakeholder theory, adult learning theory (ALT) and goal setting theory.

2.3.1 Stakeholder Theory

Richard Edward Freeman, an American Philosopher at the University of Virginia came up with the concept of Stakeholder Theory in 1984. Freeman was born in Georgia and trained

in mathematics and philosophy in Duke and Washington universities. He authored numerous books besides having an established career as a lecturer and professor. His published work are in the fields of strategic management, corporate strategy, management of stakeholders and business ethics among others. His work has been published by reputable publishers among them Cambridge University Press and Yale University Press (Miles, 2012).

Stakeholder Theory deals with organizational management in the ever-changing business environment. It addresses the morals and values required in the management of an organization. Conventionally, stakeholders are owners of an organization. Edward Freeman argued that besides owners, other parties also influence achievement of the goals of organization. They include employees, business associates, communities, governmental bodies, political groups, trade unions among others (Fontaine & Schmid, 2008). Stakeholder Theory categorizes the parties according to the degree of interest that they have in the organization or the extent to which they influence the decisions. Some stakeholders, such as belligerent local inhabitants' groupings, charitable, ecological organisations, and the law implementation organs wields a substantial amount of power via their legal clouts although not directly working in the firm (Miles, 2012).

The aviation industry in Kenya, and indeed world over, has many stakeholders whose interests are affected by implementation of safety oversight programs. Introduction, changes or withdrawal of regulations in the aerodrome operation is no exception as such moves draw concerns among the aerodrome operators, the users, airline operators and other service providers. Consequently, the success of such implementation and achievement of high standards of compliance to safety standards would depend on adequate engagement of major players.

2.3.2 Adult Learning Theory

An American educator, Malcolm Knowles in 1984, developed adult Learning Theory (ALT). As an adult educator who was also instrumental in the advance of the Humanist Learning Theory, he used the word andragogy, which is closely associated

with adult education (Knowles, 2005). Loeng (2018) cites Knowles description of andragogy as an art and science by which adults learn. It is thus an agreed concept on how adults acquire new expertise or information. Adults spend substantial quantity of time and energy as they discover the benefit they accrue from a learning activity and attendant costs. The process rather than content takes prominence because they best acquire new skills while engaging others about their experiences in life and their relationship to learning process. When there is need to gain knowledge or apply a given skill to facilitate effective and satisfactory performance, because of situations in life necessitating the same, adults develop a readiness to learn (Knowles, 2005).

The first mention of Greek philosopher Plato's theory of education was in 1833 by Alexander Kapp who coined the word andragogy by Alexander Kapp. This was in reference to the customary practice by which grown-ups take part in on-going education. In the 20th century, a number of cherished scholars such as Dewey, Linderman among others showed interest and followed up on theories of andragogy but greatly overlooked in the US. The effort of Knowles in championing and further expounding the conception changed the outlook of this theory in the 1980s. The assumption made relates to self-governing and leading of adults bearing their wide-ranging degrees of experience. It further assumes that adults incorporate learning to the mandate of their daily life, focus on instantaneous challenge centered methodologies and are driven further by inner than outside forces (Abela, 2009).

Learning and training are closely related yet may attract different views. Training is a prearranged course of action to alter outlook, expertise or proficient conduct through learning experience to attain operational performance in an action. It aim, in job circumstances, is to advance the capabilities of a worker and to fulfil up-to-date and prospective necessities of the organization. Training continues from recruitment of an employee to exit. Learning is the practice contained within an organism, the consequence of the ability to vary performance associated with experience instead of maturation (Wendy, 2007). According to Knowles (2005), training of adults should focus on usable requirements of the anticipated audience. All material delivered for training such as lesson

plans, should take account of the full picture and aim for learning. Activities based around real work experiences should clearly demonstrate benefits of learning.

This theory relates to personnel training as an independent variable in the implementation of safety oversight programs, just like in other organizations, the employed workforce are adults according to employment laws in Kenya. As such, andrology model of learning provides an ideal understanding of the variables in the learning of employees. This considers that adult learners can take initiative, and are inspired by their necessity to be acknowledged, demonstrate something to self and others, enhance and realize their capabilities (Beardwell, 2010). On the other hand, implementation of safety programs, largely, depends on employee knowledge and skills gained through training.

2.3.3 Goal Setting Theory of Motivation

Edwin Locke, advanced Goal Setting Theory of Motivation. He had immense contribution in business management and psychology (Locke, 2000). According to this theory, setting of goals positively links to the performance of a task. When a goal is set, it gives direction to staff about what they need to do and efforts required in achieving the goal. The theory accentuates the significant connection between goals and accomplishments. Research indicates that the most effective accomplishment is realized when specific and challenging goals assess performance, linking feedback on outcomes, and creating commitment and approval. Goals may be in the form of performance targets and should be specific, measurable and attainable. Targets are the desired level of performance an organization wishes to achieve as measured by indicators. The indicators represent success at achieving an outcome of a performance (Andrea Blass, 2015).

Organizations should adopt the approach that allows both management and employee participation in the setting of goals. This ensures that the set targets are realistic and owned up by the staff. The enthusiasm to work towards goal attainment is the main source of performance. This theory relates well with the study as safety standards are targets that Operators have to achieve and sometimes surpass. Aerodrome operators need to ensure high levels of compliance with safety standards for issue and maintenance of aerodrome

certificate. This requires staff motivated towards set targets that are learning oriented as they ultimately improve performance (Wentzel & Wigfield 2009).

2.4 Conceptual Framework

A conceptual framework is an interconnected set of thoughts forming the basis of understanding of how reality works that allows the deriving of relationships between variables (Svinicki, 2010). It is as highlighted in Figure 2.1

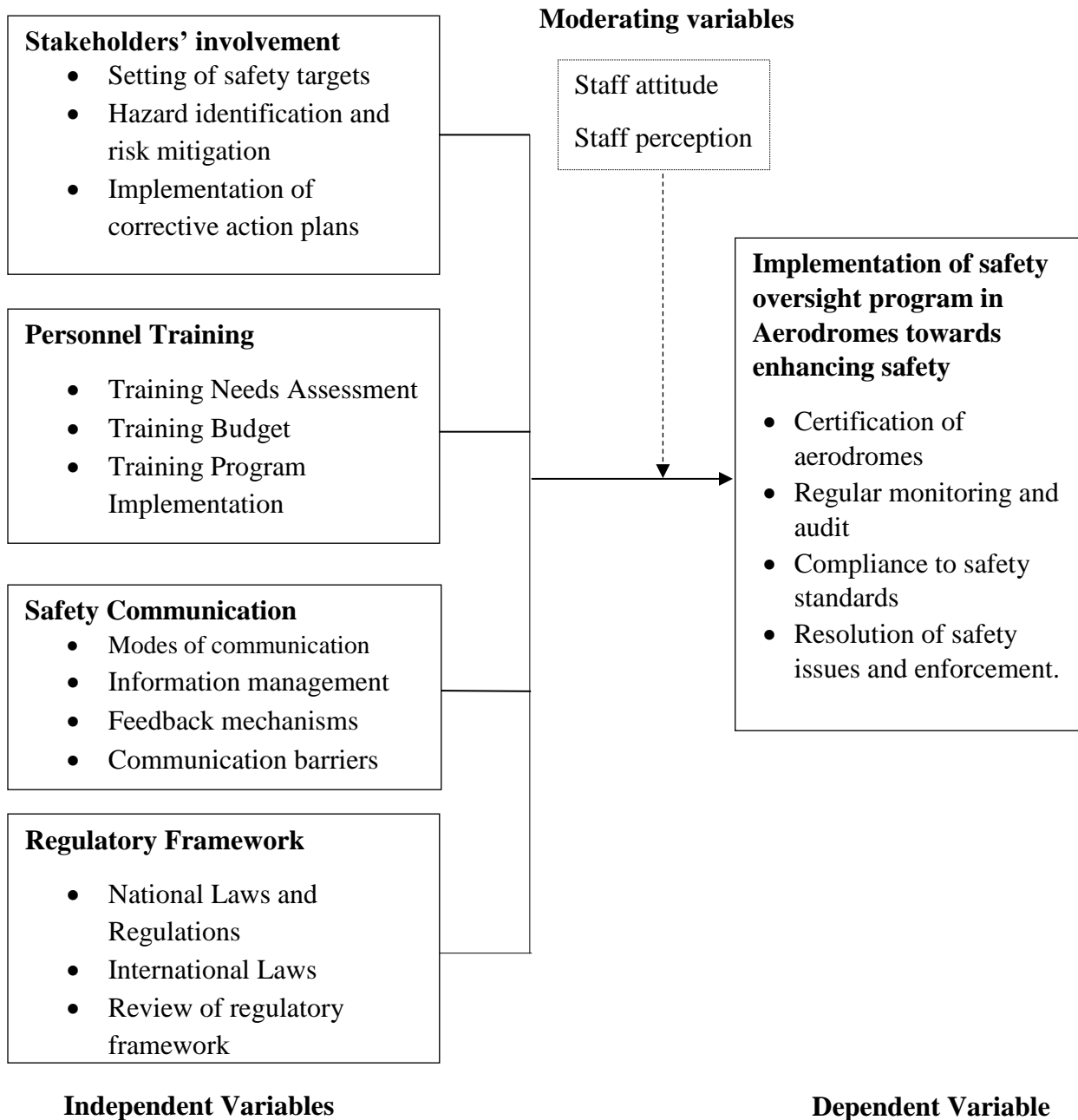


Figure 2.1: Conceptual Framework

2.5 Knowledge gaps

The knowledge gaps is as highlighted on Table 2.1

Table 2. 1: Knowledge Gap

Variable	Author and year of publication	Previous Research findings	Knowledge gap	Study findings
Stakeholders involvement	Adek (2016)	Stakeholders influences success of infrastructure projects.	Lack of stakeholder involvement in safety related projects	More emphasis on stakeholders involvement moderately determine the implementation of safety oversight programs in aerodromes
Personnel Training	Gumbe (2016)	Various stakeholders among the employees have a positive influence on project implementation. Training of staff needed further study	Inadequate data on staff training and expertise influences aviation project implementation.	Implementation of Safety Oversight program is highly determined by Personnel training.
Safety Communication	Ngolo (2016)	Communication skills influenced implementation of safety programs in Air traffic control.	Inadequate modes of communication, Information management, and communication barriers.	Safety communication is an important aspect in determining the implementation of safety oversight programs in aerodromes
Regulatory framework	Mehdi Aliasgari, (2014)	There was a sound legislative framework with a reasonable safety oversight	Inadequate regulatory framework.	More emphasis on regulatory framework would moderately determine the implementation

but there was no
autonomous
accident and
incident
investigation
system to
ensure effective
implementation
of ICAO
Standards

of safety
oversight
programs

2.6 Summary of the Chapter

This segment discussed summary of the literature reviewed on determinants of implementation of safety oversight program in aerodromes towards enhancing safety. The determinants under consideration point to a relationship influencing the subject of the study. The review contributed background information based on previous studies upon which comparisons were made with regard to the results of the study in question. It is distinct from reviewed literature that each of the determinants contributes to effectiveness in the implementation of safety oversight program. In general, it was evident that stakeholder's involvement, Personnel training, safety communication and Regulatory framework determined program implementation. The literature reviewed formed a basis for the inference and commendations of the study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter present the research methodology used in carrying out research. Discussion on research design, target population of the study, sampling design, methods of data collection and operationalization as well as measurements of variables. Finally, it highlights the ethical considerations that guided the conduct of the study and the operational definition of variables.

3.2 Research Design

Research design is structural concept in which the research is carried out giving a plan for collecting, measuring and analysing data (Kothari, 2004). Schindler (2014) observed that inclusive approach of choice to combine the diverse elements of the study in a comprehensible and reasonable way. Research designs classifies as exploratory, descriptive or explanatory according to the purpose. Exploratory research design, on the other hand, is appropriate for questioning a theme for with scarce knowledge while explanatory research design is seemly in inferring why an phenomena stay in its form. Descriptive research design is proper in giving a correct and usable illustration of the study issues or phenomena (Mark Saunders, 2009). Descriptive research design was adopted as it observed and described the subject's behaviour without in any way influencing it (Shuttleworth, 2008) and collected information through administration of semi structured questionnaires to a sample of respondents (Orodho, 2003). The design clearly portrayed the relationship between the determinants and the implementation of safety oversight programs

3.3 Target Population

Population denotes to the complete assembly of persons, happenings, or things of concern to the researcher (Schindler, 2014). Pandey (2015) delineate target population as all members of an actual or suppositious set of individuals, occasions and/ or articles to facilitate making a generality of the outcomes of a research study. Fowler (2015) observes that a sample frame should have characteristics of comprehensiveness, likelihood of choice and efficiency. The target population of this study comprised of all the safety officers in

the Air Navigation Services, Aerodromes and Meteorology legislation and enforcement (AAMLE) section, National Continuous Monitoring and State Safety Program Coordination office, Jomo Kenyatta International Airport operational staff in safety related departments as given in table 3.1.

3.4 Sample Size and Sampling Procedure

A sample is a derivative of a set of people who do something (Fowler, 2015). A subset of a larger population under study (Garg, 2014). A sample size characterizes the sum of items designated from the sample frame and should fulfil the requirements of being representative, consistent and flexible (Kothari, 2004). The sample of this study was determined by Yamane's formula (1967). The formula is stated as

$$n = \frac{N}{1+Ne^2}$$

Where, n is the sample size, N, the target population, and e is the level of precision. Garg (2014) opined that levels of precision of 5%, 7% or 10% may be used in social researches.

For this study, adopted a level of precision of 7% to ensure representativeness and cost effectiveness. Consequently,

$$\text{Sample size, } n = \frac{163}{1+163(0.07)^2} = 90.62$$

The Researcher used 91 as the sample size.

The distribution of sample in the eight sections was done proportionately as indicated Table 3.1

Table 3. 1: Target population and Sample Size

Designation	Location	Population	Sample size
Ground Operations/ Aerodrome & ANS Inspectors	KCAA Headquarters	12	7
National Continuous Monitoring and State Safety Program Office	KCAA Headquarters	5	3
Aerodrome Engineering office	JKIA	10	6
JKIA Ground flight Safety Officers	JKIA	48	26
JKIA Rescue & Firefighting Officers	JKIA	68	37
Wildlife control & Management	JKIA	13	7
JKIA Safety Officers	JKIA	5	3
Safety Office	KAA Headquarters	2	2
Totals		163	91

The Researcher used stratified sampling technique with each section forming a stratum. This gave rise to eight strata. Within each stratum, random sampling was used with questionnaires being distributed in a random manner. This was to facilitate a representative sample from all the relevant departments and generate a higher number of responses as observed by Creswell (2012).

3.5 Data Collection Instrument

The research study was based on primary data from research respondents collected through questionnaires with both structured and unstructured questions. Creswell (2012) argued that questionnaire, as a data collection instrument, is a method applied in survey design where participants in the study fill-in the questions given by a researcher. It was adopted to facilitate the collection in-depth data, as it is user friendly and modest in terms of cost. The questionnaire was divided into five parts. Part one contained questions on respondents' demographic data and the last four parts focused on the respective research objectives.

3.5.1 Piloting of Research Instruments

A pilot study is an initial test carried out beforehand to make sure that research instruments are working correctly in preparation for final study (Polit, 2001). Garg (2014) defined a pilot study as a marginal scale prior study conducted to evaluate viability, time, budget,

adversative events and statistical inconsistency) in an attempt to address the weaknesses of and improve research instrument. A pilot test was done with a view of addressing deficiencies and enhancing validity and reliability of the research instruments. According to Mugenda (2003), a pre-test sample of 1% and 10% of the target population is sufficient depending on the sample size. For this study, a sample of 9 officers in the target population filled in the questionnaires and their responses, comments and suggestions used to augment the validity of the research instrument. However, the final study did not incorporate the sample of the target population used in the pilot study.

3.5.2 Validity of Data Collection Instrument

Creswell (2012) cites that validity is the degree to which all proof points to anticipated interpretation of test scores for suggested purposes. That is, advancement of sound confirmations to exhibit the test interpretation ties to its projected use. Content validity is a judgmental deed where experts assess whether items in the instrument represent the construct under consideration. Subject experts also check the phrasing, structuring and scoring of the instrument. The researcher tested the data collection instrument by content validity method to ascertain that all critical areas for the study were included in the research instrument. The pilot test of the questionnaire was by selected Aerodrome inspectors and safety officers in the population and outcomes used to assess the concept under measure by the instrument and to ensure the items in the questionnaire accurately represented the concept under study (Mugenda, 2003).

3.5.3 Reliability of Data Collection Instrument

Creswell (2012) indicated that reliability reveals the degree to which the researcher will acquire similar results with subsequent measures or surveys. Kothari (2004) cites that accuracy and precision of a measurement technique is the determinant of reliability. Split-half technique method to assess reliability by randomly splitting the questionnaire items of the pilot study into two groups and determining the correlation coefficients. The Cronbach's alpha, a broad form of Kuder – Richardson (K-R) 20, formulation was used to determine the scale reliability of each variable.

Cronbach's alpha coefficient is function of number of items under test and the average inter-correlation between items.

$$\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N - 1) \cdot \bar{c}}$$

Where:

N is the number of items.

\bar{c} is the average covariance between item-pairs.

\bar{v} = average variance

The data gathered for pilot study was analysed and Cronbach's Alpha coefficient calculated for each variable. The results were highlighted in Table 3.2.

Table 3.2: Reliability of the Questionnaire

Study Variable	Cronbach's Alpha (α)	Number of Items
Stakeholders Involvement	0.856	10
Personnel Training	0.876	10
Safety Communication	0.825	10
Regulatory Framework	0.721	5
Implementation of Safety Oversight Program	0.788	4

Table 3.2 shows that all the five variables had Cronbach's Alpha coefficients greater than 0.7 and thus considered reliable. Mallery (2003) argues that the items in the scale have a greater internal consistency as Cronbach's alpha is gets closer to 1. They consider coefficients higher than 0.7 as acceptable, 0.8 as good and 0.9 as excellent. Questions about personnel training were the most reliable with a coefficient of 0.876 while regulatory framework had the least with 0.721.

3.6 Data Collection Procedures

The permission to carry out research was sought from the management of both Kenya Airports Authority and Kenya Civil Aviation Authority. The researcher provided an

introductory letter from University of Nairobi to training sections of the two organizations. Upon issuance of authorization, the researcher issued questionnaires to the respondents during the working hours at their places of work. Administer and collect after method was employed. In other cases, the questionnaires were e-mailed to the participants. The responses were collected after two weeks.

3.7 Data Analysis Techniques

Data analysis is the process of organised use of statistical and rational methods to exemplify, describe, summarise, recapitulate and appraise data, to permit depiction of inductive references from data (Shamoo, 2003). It is very crucial in research as it condenses collected data, which involves interpretation via analytical and rational thinking to define relationship arrays and tendencies. Flick (2013) cited that data analysis is central in research and irrespective of the data in question; the analysis forms the outcome of research. Data collected through questionnaires was arranged in a way to aid analysis. The questionnaires were coded and the raw data organized and tabulated in accordance with the research objectives. The data was analysed to derive descriptive and inferential statistics using version 24 of Statistical Package for the Social Sciences (SPSS).

To determine the relationships among variables in the study, various methods were used. Firstly, descriptive analysis to illustrate the response distribution, mean and standard deviation of each variable. Frequency distributions showed the record of times an option was chosen by the respondents. While the mean response gave a view of the data clustering, the standard deviation gave an indication of how closely or widely the responses were spread from the mean. Correlation and Regression analyses were performed respectively. Correlation determined the degree of relationship amongst two different variables (Kombo, 2006). Correlation coefficient (r) values range from -1 to +1 with extreme values showing strong relationship (Garg, 2014). Both simple and multivariate regression analyses were executed at 95% confidence level with the analysis of Variance used to test hypothesis.

A summary of data analysis models were as in Table 3.3

Table 3. 3: Summary of Data Analysis Models

Specific Objective	Hypotheses	Analysis Models
To establish the extent to which stakeholders' involvement determines the implementation of safety oversight program in Aerodromes	H₁ : Stakeholder involvement significantly determines the implementation of safety oversight program in aerodromes.	Pearson Product-Moment Correlation (r). Range= +1 to -1; SRM : $Y = \beta_0 + \beta_1 X_1 + \varepsilon$ MRM : $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$ Where, Y is implementation of safety oversight programs X_1 = Stakeholder involvement X_2 = Personnel training X_3 = Safety communication X_4 = Regulatory Framework β_1 β_2 β_3 & β_4 are Regression coefficients ε is error term
To examine the extent to which personnel training determines the implementation safety oversight program in aerodromes	H₁ : Personnel training significantly determines on the implementation of safety oversight program in aerodromes.	Pearson Product-Moment Correlation (r). Range= +1 to -1; SRM : $Y = \beta_0 + \beta_1 X_1 + \varepsilon$ MRM : $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$ Where, Y is the implementation of safety oversight programs X_1 = Stakeholder involvement X_2 = Personnel training X_3 = Safety communication X_4 = Regulatory Framework β_1 β_2 β_3 & β_4 are Regression coefficients ε is error term
To assess the extent to which Safety communication determines the implementation of safety oversight program in Aerodromes.	H₁ : Safety communication significantly determines the implementation of safety oversight program in aerodromes.	Pearson Product-Moment Correlation (r). Range= +1 to -1; SRM : $Y = \beta_0 + \beta_1 X_1 + \varepsilon$ MRM : $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$ Where, Y is the implementation of safety oversight programs X_1 = Stakeholder involvement X_2 = Personnel training X_3 = Safety communication X_4 = Regulatory Framework β_1 β_2 β_3 & β_4 are Regression coefficients ε = error term
To determine the extent to which regulatory framework determines the implementation of safety oversight program in aerodromes.	H₁ : Regulatory framework has no significantly determines the implementation of safety oversight program in aerodromes.	Pearson Product-Moment Correlation (r). Range= +1 to -1; SRM : $Y = \beta_0 + \beta_1 X_1 + \varepsilon$ MRM : $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$ Where, Y is the implementation of safety oversight programs X_1 = Stakeholder involvement X_2 = Personnel training X_3 = Safety communication X_4 = Regulatory Framework β_1 β_2 β_3 & β_4 is Regression coefficients ε = error term

3.8 Ethical Considerations

Mugenda (2003) cites ethics as a viewpoint that addresses person’s demeanour and works as a guide to researcher’s conduct. They continue to argue that ethics should thus govern every research as a sign of professionalism. Integrity, plagiarism, fraud and misuse of privileges are cited as issues to be put into consideration in the conduct of research. In addition, the research subjects’ ethical issues includes; confidentiality and privacy, freedom from animosity, physical and psychological harm, the right to voluntary and informed consent and finally use of vulnerable and/or special populations. The ethical issues considered above guided the Researcher in the conduct of this research.

3.9 Operational Definition of Variables

Table 3.4 summarises the objectives, variables, indicators and proposed analysis tools for the study.

Table 3. 4: Operational Definition of Variables

Objective	Variables	Indicators	Analysis Tools
To establish the extent to which stakeholders’ involvement determines implementation of safety oversight program in Aerodromes	<u>Independent:</u> Stakeholders’ Involvement <u>Dependent:</u> Implementation of safety oversight program in Aerodromes	Setting of safety targets Hazard identification and risk mitigation Implementation of corrective action plans	Descriptive and Inferential statistics
To examine the extent to which personnel training determine the implementation safety oversight program in aerodromes	<u>Independent:</u> Personnel training	Training Needs Assessment Training Budget Training Programs Implementation	Descriptive and Inferential statistics
To assess the extent to which Safety communication determine	<u>Independent:</u>	Modes of communication	Descriptive and

the implementation of safety oversight program in Aerodromes	Safety Communication	Information management Feedback mechanism Communication barriers	Inferential statistics
To determine the extent to which regulatory framework determines the implementation of safety oversight program in aerodromes.	<u>Independent:</u> Regulatory framework	National Legislation and Regulations International laws Review of regulatory framework	Descriptive and Inferential statistics

CHAPTER FOUR
DATA ANALYSIS, INTERPRETATION AND PRESENTATION

4.1 Introduction

The chapter presents research findings and results of study variables. In particular, it contains return rate, demographic information of respondents, descriptive and inferential statistics and discussion of the findings.

4.2 Questionnaires Return Rate

The researcher distributed ninety-one (91) questionnaires to respondents with 83 filled and returned, representing a return rate of 91%. The return rate was adjudged very good to make conclusions for the study according to Mugenda (2003) who alluded that 50% return rate is considered adequate, 60% good, while above 70% is rated very good. The return rate for each section was calculated and the results presented in Table 4.1

Table 4. 1: Questionnaire Return Rate

Department	Number Administered	Returned Questionnaires	Return Rate (%)
Ground Operations/ Aerodrome & ANS Inspection State Safety Office	7	5	71
Aerodrome Engineering Office	6	5	83
Ground Flight Safety Rescue & Fire Fighting Services	26	25	96
Wildlife Control & Management	33	31	94
	16	14	88
Total	91	83	91

4.3 Demographic Characteristics of respondents

Demographic data of respondents were sought to provide insight in to the distribution of social characteristics. The demographic elements analysed included gender, age, years in service and education level.

4.3.1 Gender of Respondents

The respondents were requested to specify gender from the two choices of male or female provided. The assessment pursued to find the representation of staff by gender in safety departments and by extension aviation sector in Kenya. The results were summarised in Table 4.2

Table 4. 2: Gender of Respondents

Gender	Number of respondents	Percentage (%)
Female	25	27
Male	66	73
Total	91	100

Findings in Table 4.2 point out that majority of staff in safety departments in KCAA and KAA are male (73%), while the female gender accounted for only 27%. This shows male dominance in the aviation sector especially in the technical sections. This could be attributable to the nature of work and distribution of working hours that are very demanding.

4.3.2 Years of Experience

The respondents were asked to mark the choices corresponding to their years of work experience in the organization and indicate their work experience in their current departments. The responses summarized in Table 4.3

Table 4. 3: Years of Service of Respondents

Duration (years)	Service to the Organization (%)	Experience in the Department (%)
Under 1	2.7	4.0
1 – 3	1.3	16.0
4 - 6	12.0	14.7
7 – 9	25.3	18.6
10 and above	58.7	46.7

The findings indicated that 58.7% of staff in the departments sampled had worked for the organizations for ten years and above. There were fewer staff with less years of work

experience in the organization. The trend indicated a slow rate of recruitment over the past six years as this group only accounted for one quarter of the employees. However, there was inter-departmental movements within the organizations occasioned by differing percentages between years of experience at the organization and safety departments. Similar trend was observed with duration of work experience in respondents' current department. The majority of staff (65.4%) had worked in their current departments for at least seven years. This trend was very important in the validity of the study as the responses were observation of staff over a long period.

4.3.3 Age of Respondents

The respondents were requested to specify age bracket by ticking appropriate box against listed options. The number and percentage age bracket was as presented in Table 4.4

Table 4. 4: Age Bracket of Respondents

Age Bracket (years)	Number	Percentage
20 – 30	12	13.3
31 – 40	34	37.3
41 – 50	23	25.3
Over 50	22	24.1
Total	91	100

The results showed majority of the employees (50.6%) were aged below 40 years, a bracket considered youthful. A significant percentage (24.1) were above 50 years and considered to have gained a lot of experience in the work. This was a clear signal that the two organizations had a good mix of talent and innovation associated with the youthfulness and skills and experience gained through more years of experience. The mix is suitable for high performance and succession planning.

4.3.4 Level of Education of Respondents

The respondents were requested to point out their highest level of education from the choices provided and the results summarized and presented as shown in Table 4.5.

Table 4. 5: Responses on Highest Level of Education

Highest Level of Education	Frequency	Percentage
KCSE	10	12
College certificate	2	2
Diploma	24	29
Bachelor’s degree	34	41
Postgraduate degree	13	16
Total	83	100

The findings of the study revealed the majority of staff sampled in the organization had acquired at least post-secondary school training. Staff with diplomas, Bachelor’s degree and post-graduate qualifications were twenty-nine (29%), forty-one (41%) and sixteen (16%) percent respectively. Employees’ educational achievement is generally associated with a positive career outcome. In this regard, the majority of staff (86%) in safety departments had at least a diploma qualification. This is necessary to enable staff to have training required to perform the job and be capable of implementing safety related programs.

4.4 Implementation of Safety Oversight Programs

To evaluate the level of implementation of safety oversight programs in aerodromes, the participants were issued with a list of statements connected to the dependent variable and asked to specify the extent of they agree with each of the statements by marking as applicable along a Likert five – point scale. *Where:* 1 = No extent; 2 = Small extent; 3 = Neutral; 4 = Some extent; and 5 = Great extent. The responses were summarized in Table 4.5

Table 4. 6: Responses on Implementation of Safety Oversight Programs

Statement	Response (%)					Mean	SD
	1	2	3	4	5		
JKIA has put place a program to regularly monitor and audit all areas with a view of enhancing safety	5.3	22.7	20.0	20.0	32.0	3.51	1.298
Implementation of safety program at JKIA ensures issuance and maintenance of Aerodrome Certification	1.4	17.6	21.6	31.1	28.4	3.68	1.112
JKIA complies with all the safety standards and notifies any non-compliances to the CAA promptly	9.3	12.0	12.0	46.7	20.0	3.56	1.211
Non-compliances are identified and safety issues resolved in a timely manner	12.0	12.0	8.0	40.0	28.0	3.60	1.336
Mean						3.59	1.239

n = 43 SD = Standard Deviation

The results in Table 4.6 show moderate of implementation of safety oversight programs in Jomo Kenyatta International Airport with a mean approval of 3.59 in the Likert Scale provided. According to the respondents, the programs are implemented to ensure issuance and maintenance of aerodrome certification with an approval of 3.68. The responses were somewhat spread from the mean.

4.5 Stakeholder Involvement and Program Implementation

The study sought to examine the extent of Stakeholder Involvement to determine the implementation of safety oversight program in aerodromes. Both descriptive and inferential statistics were worked out using SPSS to assess the opinions of the staff sampled in the study.

4.5.1 Descriptive Statistics for Stakeholders' Involvement and Program Implementation

To establish the extent the stakeholders' involvement determine the implementation of safety oversight programs in aerodromes, the respondents were given a list of statements interrelated to the independent variable and requested to point out the extent they agree with each of the statements by indicating as applicable along a five – point scale. *Where:* 1 = No extent; 2 = Small extent; 3 = Neutral; 4 = Some extent; 5 = Great extent. The responses were summarized and presented as Table 4.7

Table 4.7: Stakeholder Engagement and Program Implementation Responses

Statement	Response (%)					Mean	SD
	1	2	3	4	5		
Stakeholders involvement determines the implementation of safety oversight program in aerodrome towards enhancing safety	0.0	2.7	9.3	46.7	41.3	4.27	0.741
I am aware that the Aerodrome Operator should set safety targets to be met to enhance safety	0.0	0.0	5.3	18.7	76.0	4.71	0.564
I am involved in setting of Aerodrome safety targets	5.3	12.0	17.3	48.0	17.3	3.60	1.078
Having clear safety targets determines the implementation of safety oversight programs	0.0	1.3	14.7	36.0	48.0	4.31	0.771
I am aware that the Aerodrome Operator should come up with a procedure for Hazard Identification and Risk mitigation	0.0	0.0	8.0	18.7	73.3	4.65	0.626
I am involved in Hazard Identification and risk mitigation in my area of Operation	1.3	4.0	10.7	26.7	57.3	4.35	0.923
I am involved during internal and external safety audits in my section	4.1	8.1	10.8	33.8	43.2	4.04	1.116
I am made aware of the corrective action requests of the findings noted during internal and external safety audits in my section	4.1	4.1	12.2	31.1	48.6	4.16	1.060
I am involved in the preparation of Corrective Action Plans of the findings during the internal and external safety audits	8.0	13.3	16.0	33.3	29.3	3.63	1.260
I am involved in implementation of Corrective Action Plans submitted to Safety office and the Civil Aviation Authority	12.0	13.3	13.3	32.0	29.3	3.53	1.359
Average						4.13	0.95

N = 75 SD = Standard Deviation

Results in Table 4.7 indicated that stakeholder involvement determined implementation of safety oversight program in aerodrome with an averaged approval of 4.27 and a standard deviation of 0.741. The respondents agreed to being involved in Hazard Identification in their areas of operation. They were, however, neutral as to whether they were involved in the setting of aerodrome safety targets, preparation and implementation of corrective action plans of the findings during the internal and external safety audits.

4.5.2 Correlation Analysis for Stakeholder Involvement and Program Implementation

Spearman’s Rank correlation coefficient was determined to evaluate the connection between stakeholder involvement and implementation of safety oversight programs. Two tailed correlation analysis was performed at a confidence level of 95% and findings were summarized in Table 4.8

Table 4. 8: Correlation for Stakeholder Involvement and Program Implementation

Independent Variable	Spearman’s rho	Interpretation	Significance (2 - tailed)	Comment
Stakeholder Involvement	0.544	moderate correlation	0.011	Significant

The results in Table 4.8 indicate a moderate correlation between stakeholder involvement and implementation of safety oversight programs. The value was significant at 95% confidence level.

4.5.3 Test of Hypothesis for Stakeholder Involvement and Program Implementation Factor

The alternative hypothesis for this variable was stated as;

H₁: Stakeholders’ involvement significantly determine the implementation of safety oversight program in aerodromes.

To test the hypothesis, Analysis of Variance was performed to compute the F value for the samples. The results were summarised and presented as Table 4.9.

Table 4. 9: ANOVA for Stakeholder Involvement and Program Implementation

Model.		Sum of squares	Df.	Mean square	F.	Sig
1	Regression	17.137	10	1.714	3.589	.001
	Residual	29.603	62	.477		
	Total	46.740	72			

The analysis in Table 4.9 gave F test value of 3.589 and significance value of 0.001 in an analysis performed at 95% confidence level. The critical value of variance for (10,62) degrees of freedom obtained from F distribution tables was 1.99. The study determined existence an indicative goodness of fit between the two variables with F-test value $3.589 > 1.99$. The analysis was significant since P value $0.001 < 0.05$. Hence alternative hypothesis was accepted.

4.5.4 Regression Results for Stakeholder Involvement and Program Implementation

Linear Regression Model (LRM) of the form of $Y = \beta_0 + \beta_1 X_1 + \varepsilon$ was used to check existence of a link between stakeholder involvement (X_1) and the implementation of safety oversight programs (Y). The analysis was performed at 95% confidence level and the results summarized and presented in subsequent tables.

Table 4.10: Simple Linear Regression Results for Stakeholder Involvement and Program Implementation

Model.	R.	R. Square	Adjusted R. Square.	Std Error	Sig
1	.611 ^a	.373	.371	.060	0.013

a) Indicators: (Constant), Target setting, Hazard identification, Implementation planning

b) Dependent Variable: Implementation of safety oversight program

Table 4. 11: Multiple Regression Results for Stakeholder Involvement and Program Implementation

Model		Unstandardised coefficients		T.	Sig
		B.	Std Error		
5	(Constant)	2.54	0.97	2.120	0.002
	Stakeholder Involvement	5.21	0.07	1.332	0.001

The coefficient of correlation was found to be 0.611 indicating a moderate relationship between stakeholder involvement and implementation of safety oversight programs. More emphasis put on involvement of stakeholders would result in moderate increase in performance of safety oversight. The coefficient of correlation was statistically significant since p- value of $0.013 < 0.025$ threshold. The computed coefficient of determination was 0.373 with unstandardized coefficient of 5.21. This implied that 37% variability in implementation of safety oversight programs could be explained by variation in stakeholder involvement. The resultant Linear Model was $Y = 2.54 + 5.21 X_1 + 0.07$

4.6 Personnel Training and Implementation of Oversight Programs

The study examined the extent personnel training determines the implementation of safety oversight program in aerodromes. Statistics both inferential and descriptive were determined using SPSS to assess the opinions of the staff sampled in the study.

4.6.1 Descriptive Statistics for Personnel Training and Program Implementation

To establish extent of personnel training in determining implementation of safety oversight programs in aerodromes, the participants were given a number of statements related to the second independent variable and requested to point out the extent they agree with each statement by ticking as applicable along a five – point scale. *Assigning:* 1 to No extent; 2 to Small extent; 3 to Neutral; 4 to Some extent; 5 to Great extent. The responses were summarized as Table 4.12

Table 4.12: Personnel Training and Program Implementation Responses

Statement	Response (%)					Mean	SD.
	1	2	3	4	5		
Personnel training determines implementation of Safety Oversight Program in Aerodromes	0.0	0.0	0.0	38.7	61.3	4.61	0.490
The Organization carries out a Training Needs Assessment to identify gaps and relevance of training towards implementation of safety programs	0.0	5.3	17.3	50.7	26.7	3.99	0.814
All operation personnel are trained on relevant safety courses	0.0	9.3	12.0	58.7	20.0	3.89	0.814
Gaps identified in Training Needs Assessment forms the basis of Personnel training.	1.4	15.1	24.7	32.9	26.0	3.67	1.068
KAA develops training programs for staff involved in the implementation of safety programs	0.0	8.0	13.3	53.3	25.3	3.96	0.845
Training programs are followed and any changes communicated to the officer to enhance acquisition of relevant skills	2.7	16.0	20.0	42.7	18.7	3.59	1.054
The aerodrome Operator allocates adequate training budget to safety related courses	5.3	16.0	26.7	41.3	10.7	3.36	1.048
Training budget is in accordance with the training needs assessment carried out	4.0	17.3	33.3	33.3	12.0	3.32	1.029
Training budget caters for basic and recurrent training	4.1	8.1	32.4	37.8	17.6	3.57	1.008
Am satisfied with the training process in safety related departments	5.4	25.7	25.7	35.1	8.1	3.15	1.069
Average						3.77	0.92

N = 75 SD = Standard Deviation

According to the respondents, personnel training determined implementation of Safety Oversight Program in Jomo Kenyatta International Airport. The mean response was found to be 4.61 in a scale of 1 – 5 and a standard deviation of 0.49. The majority of those samples were not satisfied with the aspects of training such as budget allocation, identification of training needs, consideration of training gaps identified in development and implementation of training programs. The average response on performance of training was as indicated in table 4.13.

Table 4. 13: Respondents' Rating of Performance of Training

Rating of Training	Number	Percentage
Low	10	12
Average	27	32
Good	37	45
Excellent	9	11
Total	83	100

The majority of respondents rated performance of training in their organization as good (45%) while thirty-two percent were of the opinion that it was average.

4.6.2 Correlation Analysis Personnel Training and Program Implementation

To examine the relationship the Spearman's Rank correlation coefficient was determining on personnel training and implementation of safety oversight programs. Two-tailed correlation analysis was performed at a confidence level of 95% and results given in Table 4.14.

Table 4.14: Correlation Coefficient on Personnel Training and Project Implementation

Independent Variable	Spearman's rho	Interpretation	Significance (2 - tailed)	Comment
Personnel Training	0.801	high correlation	0.012	Significant

A Spearman's Correlation Coefficient between personnel training and implementation of safety oversight programs was 0.801. The value falls within the bracket of high correlation and indicated a strong link between the two variables.

4.6.3 Test of Hypothesis for Personnel Training and Program implementation Factor

The alternative hypothesis for this variable was stated as;-

H₁: Personnel training significantly determines the implementation of safety oversight program in aerodromes.

To test the hypothesis, Analysis of Variance was performed to compute the F value for the samples and results given in table 4.15.

Table 4. 15: ANOVA for Personnel Training and Program Implementation

Model		Sum of squares	Df.	Mean square	F.	Sig.
1	Regression	18.302	10	1.830	2.89	.03
	Residual	38.573	61	.632		
	Total	56.875	71			

The results in Table 4.15 revealed F test value of 2.89 and value of p as 0.03 in an analysis performed at 95% confidence level. The critical value of variance for (10,61) degrees of freedom obtained from F distribution tables was 1.99. The study established existence of a significant goodness of fit for personnel training and implementation of safety oversight programs since F-test 2.89 > exceeded the F-critical of 1.99. The analysis was significant since p-value is 0.03 < 0.05. Hence, alternative hypothesis was consequently accepted.

4.6.4 Regression Analysis for Personnel Training and Program Implementation

Linear Regression Model (LRM) of the form of $Y = \beta_0 + \beta_2 X_2 + \varepsilon$ was applied to check extent of relationship in personnel training (X_2) and the implementation of safety oversight programs (Y). The analysis was performed at 95% confidence level and the results summarized and presented in subsequent tables.

Table 4.16: Linear Regression Results on Personnel Training and Program Implementation

Model	R.	R. square	Adjusted R. square	Std Error	Sig
1	.791 ^a	.627	.621	.010	0.009

a. Predictors: (Constant), Training Needs Analysis, Training budget, Training program

b. Dependent Variable: Implementation of safety oversight program

Table 4.17: Multiple Regression Results for Personnel Training and Program Implementation

Model		Unstandardized Coefficients		T	Sig.
		B	Std. Error		
5	(Constant)	2.54	0.97	2.120	0.002
	Personnel Training	7.67	0.11	0.986	0.006

A high coefficient of correlation, 0.791 as given in table 4.16 indicates a strong connection amongst personnel training and implementation of safety oversight programs. Coefficient of correlation was statistically significant since p-value was 0.009, and was less than the threshold of 0.05 for 95% confidence level. The computed coefficient of determination was 0.627 and an unstandardized coefficient of 7.67. This implied that 62.7% variability in implementation of safety oversight programs is attributable to variation in elements of personnel training. The resultant Linear Model was $Y = 2.54 + 7.67 X_2 + 0.11$ indicating a major contribution of the variable.

4.7 Safety Communication and Program Implementation

The study examined the extent Safety Communication determine implementation of safety oversight program in aerodromes. Descriptive and inferential statistics were determined using SPSS to assess opinions of the staff sampled in the study, test hypothesis and derive a linear model.

4.7.1 Descriptive Statistics for Safety Communication and Program Implementation

To establish the extent safety communication determines implementation of safety oversight programs in aerodromes, the respondents were given a list of statements related to the third independent variable and requested to point out the extent of agreement with each of the statements by indicating as applicable along a five – Likert scale. *Given:* 1 is No extent; 2 is a small extent; 3 is Neutral; 4 is some extent; and 5 great extent. The responses given in table 4.18.

Table 4.18: Safety Communication and Program Implementation Responses

Statement	Response (%)					Mean	SD.
	1	2	3	4	5		
Safety Communication determines implementation of Safety Oversight Program in Aerodromes	0.0	0.0	5.3	33.3	61.3	4.56	0.592
There is a clear safety communication channel accessible by all safety related personnel	0.0	10.7	14.7	53.3	21.3	3.85	0.881
Safety communication determines implementation of safety oversight program	0.0	2.7	9.3	34.7	53.3	4.39	0.769
The modes of communication determine how fast information regarding safety is exchanged and actions taken	0.0	1.3	8.0	36.0	54.7	4.44	0.702
There is a clear policy on management of safety related information.	0.0	2.7	12.2	39.2	45.9	4.28	0.785
The Aerodrome Operator has established a data base for all safety related information	1.3	10.7	18.7	32.0	37.3	3.93	1.057
Safety related issues raised by staff are addressed and feedback given by management in the implementation of safety programs	2.7	14.6	14.7	48.0	20.0	3.68	1.042
Any requests to the Civil Aviation Authority with regard to promulgation of safety related information is done in a timely-manner and communicated to the Aerodrome Operator	0.0	13.3	28.0	38.7	20.0	3.65	0.951
Communication barriers are identified and addressed promptly	4.0	24.0	24.0	38.7	9.3	3.25	1.054
I am satisfied with Safety communication process	4.1	13.7	24.7	46.6	11.0	3.47	1.001
Average						3.94	0.883

N = 75 SD = Standard Deviation

The results indicated that safety communication strongly determined the implementation of safety oversight program in Jomo Kenyatta International Airport. The mean response was 4.56 in the Likert Scale used and standard deviation found to be 0.592. However, the respondents were unsatisfied with communication processes as used by the relevant organizations. They had reservations with regard to feedback from management on

handling of safety issues raised by staff, establishment safety database and identification and prompt address of existing communication barriers.

4.7.2 Correlation Analysis Safety Communication and Program Implementation

Spearman’s Rank correlation coefficient was determined to explore the link between safety communication and implementation of safety oversight programs. Two tailed correlation analysis was performed at 95% confidence level and the findings summarized as presented on table 4.19.

Table 4.19: Spearman’s Correlation Coefficients on Safety Communication and Program Implementation

Independent Variable	Spearman’s rho	Interpretation	Significance (2 - tailed)	Comment
Safety Communication	0.725	high correlation	0.013	Significant

A Spearman’s Correlation Coefficient between safety communication and implementation of safety oversight programs was found to be 0.725. The value falls within the bracket of high correlation and indicated a strong association amongst the two variables. The finding was significant for a two-tailed analysis at 95% confidence level.

4.7.3 Test of Hypothesis for Safety Communication and Program Implementation Factor

The null hypothesis for this variable was stated as;-

H₁: Safety Communication significantly determines the implementation of safety oversight program in Kenyan aerodromes.

To test the hypothesis, Analysis of Variance was performed to compute the F value for the samples. The results were given on table 4.20.

Table 4.20: ANOVA for Safety Communication and Program Implementation

Model	Sum of squares	Df.	Mean square	F.	Sig
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1	Regression	11.774	10	1.177	2.170	.032
	Residual	33.101	61	.543		
	Total	48.475	71			

The results in Table 4.20 revealed F test value of 2.170 and 0.032 as p-value in an analysis performed at 95% confidence level. The critical value of variance for (10,61) degrees of freedom obtained from F distribution table was 1.99. The study established existence of a significant goodness of fit with regard to safety communication and implementation of safety oversight programs as F-test value 2.17 exceeded the critical value and p value of $0.032 < 0.05$. Thus, the acceptance of alternative hypothesis.

4.7.4 Regression Results for Safety Communication and Program Implementation

Linear Regression Model (LRM) of the form of $Y = \beta_0 + \beta_3 X_3 + \varepsilon$ determined existence of a link on safety communication (X_3) and the implementation of safety oversight programs (Y). The analysis was performed at 95% confidence level and the results summarized and presented in subsequent tables.

Table 4.21: Simple Regression on Safety Communication and Program Implementation

Model	R.	R. square	Adjusted R. square	Std Error	Sig
1	.715 ^a	.511	.508	.019	0.011

a. Predictors: (Constant), Modes of communication, Information management, feedback mechanism

b. Dependent Variable: Implementation of safety oversight program

Table 4. 22: Multiple Regression Coefficient for Safety Communication and Program Implementation

Model		Unstandardized Coefficients		T	Sig.
		B	Std. Error		
5	(Constant)	2.54	0.97	2.120	0.002
	Safety Communication	6.32	0.29	1.88	0.002

The results in table 4.21 and 4.22 indicated high correlation between safety communication and implementation of safety oversight programs with coefficients of 0.715. The two values were found to be statistically significant since the p- values were 0.001 and 0.002 for analyses at 95% confidence level. The computed coefficient of determination was 0.511 and an unstandardized coefficient of 6.32. This implied that about 51% variability in implementation of safety oversight programs was attributable to variability in safety communication. The resultant Linear Model was $Y = 2.54 + 6.32 X_3 + 0.29$ indicating a major contribution of the variable.

4.8 Regulatory Framework and Program Implementation

In examining the extent regulatory framework determines the implementation of safety oversight program in aerodromes. Both descriptive and inferential statistics were worked out using SPSS to assess the opinions of the staff sampled in the study.

4.8.1 Descriptive Statistics for Regulatory Framework and Program Implementation

To establish extent regulatory framework determined implementation of safety oversight programs in aerodromes, the respondents were issued with listed statements connected to the fourth independent variable and asked to point out the extent they agree with each listed statements through ticking the applicable Likert five – point scale. *Where:* 1 is no extent; 2 is small extent; 3 is neutral; 4 is some extent; and 5 is great extent. Responses were summarized in table 4.23.

Table 4.23: Regulatory Framework and Program Implementation Responses

Statement	Response (%)					Mean	SD.
	1	2	3	4	5		
Regulatory framework is integral part of implementation of safety programs in aerodromes	0.0	1.3	2.7	37.3	58.7	4.53	0.622
Safety staff at JKIA are aware of laws and regulations governing aerodrome safety and relevant requirements on programs to enhance safety	0.0	8.0	9.3	37.3	45.3	4.20	0.915
The Civil Aviation Authority notifies JKIA in a timely manner on changes in Regulatory framework affecting aerodrome safety.	0.0	1.3	17.3	40.0	41.3	4.21	0.776
You have knowledge of International Civil Aviation Organization Annex 14 Volume 1 and associated documents	0.0	4.0	8.0	34.7	53.3	4.37	0.802
KCAA conducts workshops and seminars to ensure the staff are aware of the regulatory framework governing implementation of aerodrome safety programs	0.0	1.3	1.3	26.7	70.7	4.67	0.577
Average						4.40	0.738

N= 75 SD = Standard Deviation

The results indicated that regulatory framework in the aviation industry is an integral part in implementation of safety programs in Jomo Kenyatta International Airport having an averaged response of 4.53. Respondents agreed that national regulator notifies the service providers in a timely manner on the changes in regulations that affect safety and organizes seminars and workshops to sensitize staff on emerging regulatory issues.

4.8.2 Existing Laws and Regulations and Program Implementation

The respondents highlighted the laws and regulations that were in operation at the time of the research that in their opinion were adequate in the management of safety in Jomo Kenyatta International Airport. The Laws and regulations identified included the Civil Aviation Act of 2013, Civil Aviation (Aerodromes) Regulations 2013, Civil aviation

(Certification, licensing and registration of Aerodromes) Regulations 2018, Civil aviation (Safety Management Systems) Regulations 2018 and International Civil Aviation Organizations Annex 14 -Aerodromes Design and Operations and associated documents. Others included Occupational safety and health act of 2007.

4.8.3 Correlation Analysis for Regulatory Framework and Program Implementation

Spearman’s Rank correlation coefficient was determined to measure the relationship between regulatory framework and implementation of safety oversight programs. Two tailed correlation analysis at a confidence level of 95% was performed and the findings summarized and presented in table 4.24.

Table 4.24: Correlation Coefficients for Regulatory Framework and Program Implementation

Independent Variable	Spearman’s rho	Interpretation	Significance (2 - tailed)	Comment
Regulatory Framework	0.591	Moderate correlation	0.021	Significant

A Spearman’s Correlation Coefficient between safety communication and implementation of safety oversight programs was moderate, 0.591. The finding indicated a moderate relationship on the two variables and significant for a two-tailed analysis at 95% confidence level.

4.8.4 Test of Hypothesis for Regulatory Framework and Program Implementation Factor

The null hypothesis for this variable was stated as;-

H₁: Regulatory framework significantly determines the implementation of safety oversight program in aerodromes.

To test the hypothesis, Analysis of Variance was performed to compute the F value for the samples. The results were indicated in table.4.25.

Table 4.25: ANOVA for Regulatory Framework and Program Implementation

Model		Sum of squares	Df.	Mean square	F.	Sig.
1	Regression	24.844	8	3.105	8.965	.004
	Residual	22.170	64	.346		
	Total	47.014	72			

The results in Table 4.25 revealed F test 8.965 and a significance value 0.004 in an analysis performed at 95% confidence level. The critical value of variance for (8,64) degrees of freedom obtained from F distribution table was 2.09. The analysis showed existence of significant goodness of fit amongst variables with F value $8.965 > 2.09$. The analysis was significant since p-value $0.004 < 0.05$ hence accepting the alternative hypothesis.

4.8.5 Regression Results on Regulatory Framework and Program Implementation

Linear Regression Model (LRM) of the form of $Y = \beta_0 + \beta_4 X_4 + \varepsilon$ was applied to check existence of a connection between regulatory framework (X_4) and the implementation of safety oversight programs (Y). The analysis carried out at a confidence level of 95% and the findings summarized and presented in tables 4.26 and 4.27.

Table 4.26: Simple Regression Results on Regulatory Framework and Program Implementation

Model	R.	R. square	Adjusted R. square	Std. error	Sig
1	.572 ^a	.327	.307	.060	0.022

a. Predictors: (Constant), National Regulations, International laws, Regulation reviews

b. Dependent Variable: Implementation of safety oversight program

Table 4.27: Multiple Regression Results for Regulatory Framework and Program Implementation

Model		Unstandardized Coefficients		T	Sig.
		B	Std. Error		
5	(Constant)	2.54	0.97	2.120	0.002
	Regulatory Framework	4.94	0.15	1.91	0.000

Table 4.26 results showed a moderate correlation, 0.572, indicating a moderate relationship between regulatory and implementation of safety oversight programs. The findings of coefficient of correlation was statistically significant since p-value 0.022, <0.05 for an analysis at 95% confidence level. The computed coefficient of determination was 0.327 and unstandardized coefficient of 4.94. This implied that about 33% variability in implementation of safety oversight programs could be attributed to variation in regulatory framework. The resultant Linear Model was $Y = 2.54 + 4.94 X_2 + 0.15$.

4.9 Model Summary

A calculation of multivariate regression analysis established the comparative contribution of each independent variable and their determination on the implementation of safety oversight programs in aerodromes. The resulting coefficients to developed the model.

$$Y = 2.54 + 5.21X_1 + 7.67X_2 + 6.32X_3 + 4.94 X_4 + \text{Error Term}$$

CHAPTER FIVE

SUMMARY OF FINDINGS, DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The section presents summary of findings, discussion, conclusion and recommendation of the study. It also contains further research suggestions.

5.2 Summary of Findings

The aim of the study was to examine the determinants of implementation of safety oversight program in aerodromes towards enhancing safety. The study examined the extent of determination of four variables; stakeholder involvement, personnel training, safety communication and regulatory framework on the implementation of safety oversight programs in aerodromes.

5.2.1 Stakeholders Involvement and Program Implementation

Stakeholders' involvement was found to determine implementation of safety oversight program at Jomo Kenyatta International Airport with a moderate correlation coefficient of 0.544. More involvement of stakeholders in the aviation industry leads to timely resolution of safety issues and hence compliance with set standards though moderately. Employees in an organization make up one key group of stakeholders whose participation in setting, monitoring compliance may not be wished away. This group of stakeholders were not fully involved in setting of safety targets (mean of 3.6) as much as the majority agreed that having clear targets positively determined the implementation of safety oversight programs. Most of those sampled were uninvolved in preparing Corrective Action Plans on non-compliances raised during safety audits (63%). However, they were involved in the implementation phase. This implied little involvement of lower cadre staff in planning which is conventionally a reserve of seniors. In order to realize high level of involvement of stakeholders, the respondents suggested a top down approach where key staff are involved and committed to safety programs. That would then be cascaded down to the rest of the employees in all groups to ensure ownership. It would be more successful if resources are committed and staff sensitized regularly.

5.2.2 Personnel Training and Program Implementation

The results indicated that personnel training strongly determined the implementation of Safety Oversight Programs in Jomo Kenyatta International Airport. There was a response average of 4.61 in a scale of 1 – 5 and a correlation coefficient of 0.801. The success of safety oversight programs was highly dependent on personnel training. In the opinion of the majority of the respondents, the organization did little to address the main enablers of personnel training such as training needs analysis, training budget and training program implementation. Although 78% of the respondents agreed that the Airports and Civil Aviation Authorities carries out training needs assessments to ascertain gaps and relevant training requirements towards implementation of safety programs, the gaps identified did not necessarily form the basis of the trainings of the staff in the two organizations. Seventy-nine percent (79 %) agreed that the organizations, through their training divisions, develop training programs for staff involved in the implementation of safety programs. In spite of this, only 61% of the respondents were of the opinion that the developed programs are followed when training of employees. In addition, only 56% rated training performance as good and above.

The respondents were of the opinion that training of more safety personnel would translate to enhanced implementation of safety oversight. Organization of mandatory training programs for all safety related staff in the aerodromes with more frequent training schedules to match the very dynamic nature of the industry are required. Towards achieving required number of trained safety personnel, the training ought to domicile at station level instead of Organization headquarters. This will enhance address of the unique requirements of various stations.

5.2.3 Safety Communication and Program Implementation

The study revealed safety communication determined implementation of safety oversight program in Jomo Kenyatta International Airport with a mean response of 4.56 on a scale of 1 – 5. The coefficient of correlation was 0.725 denoting high dependence of implementation of safety programs on the elements of safety communication. The choice

of an appropriate mode of communicating safety concerns and correct management of information flow directly determine the compliance and resolution of safety concerns.

The majority (68%) of the respondents alluded to the fact that Kenya Airports Authority had established a database for all safety related information in Jomo Kenyatta International Airport while about one third were of the opinion that feedback was lacking in the communication loop. This was correlated further by greater than 50% of respondents who observed that safety communication barriers were neither identified, nor addressed by the management within the required timelines. More than 90% were of the view that employment of correct modes of communication would result in to faster flow of safety information and consequently prompt a corrective action.

5.2.4 Regulatory Framework and Program Implementation

The regulatory framework moderately determined the implementation of safety oversight programs at Jomo Kenyatta International Airport. The Spearman's Correlation Coefficients and regression coefficient were 0.591 and 0.572 respectively. The two values both at 95% confidence level revealed moderate positive relationship between regulatory framework and implementation of safety oversight programs. Similarly, the Analysis Of Variance (ANOVA) revealed an F test value of 8.965 against a critical value of 2.09 leading to acceptance of the alternative hypothesis.

The majority (95%) of those sampled agreed that regulatory framework was an integral element in the implementation of safety programs in aerodromes. They, however, indicated that the regulator could do more to raise awareness among stakeholders through workshops and seminars. Most of the respondents were aware of International Civil Aviation Organization documents relating to aerodrome design and operations. Key among them was Annex 14 Volume 1 and Annex 19 on safety management systems that principally covers most operations in Kenyan airports and airstrips. Other documents highlighted included the primary civil aviation act of 2013 and subsequent amendment act of 2016. In addition, the subsidiary legislations cited were Kenya Civil Aviation Aerodromes

Regulations 2013, Certification, Licencing and registration of aerodromes regulations 2018 and Safety Management Systems Regulations 2018 among others.

5.3 Discussions

The study revealed existence of direct determination of the four variables on the implementation of safety oversight programs in aerodromes. The variables were found to be of different extents as revealed by values of correlation and regression coefficients. Personnel training had the greatest determination on the implementation of the programs in aerodromes although JKIA had short falls in various indicators of training performance. The findings on training determinacy on implementation of programs were in concurrence with those of other related researches. Altarawneh, (2016) noted that training leads to improvement of an employee's knowledge, skills, attitude conduct a task effectively and improve on-the-job performance. Gibbs (2017) indicated that training brings about necessary knowledge, skills and attitudes, which help flight attendants to handle myriads of challenges faced in in-flight service.

Safety communication had equally a high determination on implementation of safety oversight programs in JKIA and indeed aerodromes. Choice of modes of communicating safety elements from the management to the staff as well as information management were two most highlighted elements which if addressed would enhance performance. The study findings bore resemblance outcomes of other researchers. William and Sawyer (2003) who noted that communication relating to safety is the utmost effective approach to advance a culture of safety in any given entity. This was evident from the high correlation between safety communication and implementation of safety oversight programs. Vecchio–Sadus (2007) further supports this by alluding that constructive safety communication is key to prevent at-risk behaviour and improve safety culture and Krivonos (2007) describing communication as an integral element in aviation safety.

Stakeholder involvement and regulatory framework had moderate determination on the implementation of safety oversight programs. The staff in safety related departments at JKIA were involved in the implementation stages of safety management while planning

stages was majorly a reserve of management team. The staff were equally sensitized on the applicable laws and regulations in the operation of aerodrome activities. The outcome of the research are in line with various researches (Turkulainen, et al, (2015), Leung (2010); Freeman, (2015) who opined that commitment of stakeholders is paramount in the view of overlapping interests, hence, need to address and coordinate. Employees are just like project team members who contribute to the success of a project. Consequently, necessary synergy can only achieved when they are involved work towards a common goal. Turkulainen (2015) emphasized necessity of proper communication among interested parties, which is essential for the exchange of information that furthers achievement of set objectives.

5.4 Conclusion

The study revealed all the variables achieved a positive determination on implementation of safety oversight programs. The findings showed strong determination of personnel training and safety communication while stakeholder involvement and regulatory framework had moderately determined implementation of safety oversight programs at Jomo Kenyatta International Airport. The Airports Authority, in realizing the essential role of personnel training and safety communication, has put some focus on elements of personnel training and safety communication. However, there is need for a system approach towards all variable to enhance performance. The need to identify training gaps through training needs assessment that consequently informs training programs and budgets cannot be overemphasized. Elaborate communication system that includes feedback mechanisms would highly improve the implementation of safety oversight programs. Although stakeholders' involvement and regulatory framework have moderate determination, the need for clear safety targets and sensitization of Kenya Airports Authority staff by the aviation regulator is required to improve implementation of safety oversight program. Implementation had a mean average between neutral and some extent. The two organizations need to create synergy in addressing the gaps identified to enhance safety in aerodromes.

5.5 Recommendations

The study recommends that Management in Kenya Airports Authority and Kenya Civil aviation Authority should put more emphasis on personnel training and safety communication in order to achieve high level of implementation to the provisions and requirements that primarily form basis of civilian air travel operations. The aviation sector being very dynamic and characterized by changes in the aviation systems, equipment and technology, which impact skill levels, qualification requirements and training needs of personnel. Making sure that each employee and department are clear as to what is required of them is one of the first steps to increasing productivity. KCAA and KAA should also enhance efficiency of safety communication to ensure that defined goals and objectives as well safety targets are clear by all. There is need to ensure that training programs address the identified skill gaps and are accompanied by adequate budgetary allocations cannot be overemphasized. Similarly, the service providers and aviation regulators should engage major stakeholders in regulatory practices to guarantee ownership and eventual implementation.

5.6 Suggestions for Further Research

The findings of the study will hopefully add to the current body of knowledge and facilitate future researches in area of aviation safety oversight. The current study focused on social elements that included stakeholder involvement, personnel training, safety communication and regulatory framework and the extent to which they determine implementation of safety oversight programs. The researcher noted concerns about the leadership that could have a role in the compliance with international standards and regulations. Some respondents suggested that organizational leadership determined performance in regulatory system. Consequently, this study vouch for advance research on role of leadership in implementing programs in safety oversight. Researcher further recommends an in-depth study on involvement of stakeholders in setting safety targets and its determination on implementation of safety oversight programs in aerodromes.

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APPENDICES

Appendix I: Letter of Transmittal

Mr. Jonah Kirogo Kinyua,
P.O Box 30163-00100,
Nairobi, Kenya
Date.....

Dear Respondent,

RE: REQUEST FOR PARTICIPATION IN A RESEARCH STUDY

I am Mr. Jonah Kirogo Kinyua, a student at University of Nairobi (UON), School of Continuing and Distance Education (SCDE) currently undertaking a research study to fulfill the requirements of the Award of Degree of Master of Arts in Project Planning and Management.

I am currently carrying out a research on '**Determinants of implementation of safety oversight program in aerodromes towards enhancing safety. A case of Jomo Kenyatta International Airport**' as a requirement for the award of the degree.

You have been selected to participate in this study. Your participation in the exercise is voluntary and I kindly request you to spare a few minutes and respond to all questions in the attached questionnaire as completely, accurately and honestly as possible.

All the data collected relates to the research topic and will purely be used for academic purposes. Information gathered will be treated with utmost confidentiality.

Thank you in advance for your co-operation.

Yours Faithfully,

Jonah Kirogo Kinyua
L50/70444/2013

Appendix II: Questionnaire for KAA Staff

This questionnaire is designed to collect data on the ‘Determinants of implementation of safety oversight program in aerodromes towards enhancing safety. A case of Jomo Kenyatta International Airport’ and how these determinants are moderated by Staff attitude and perception. Kindly complete the following questionnaire using the instructions provided for each set of questions. Tick appropriately. Instructions: Please tick (✓) as appropriate. Do not write your name on this questionnaire.

PART A: Demographic Data

1. Your gender?
(a) Male [] (b) Female []

2. In which of the following age brackets does your age fall?
(a) 20-30 years [] (b) 31-40 years [] (c) 41-50 years [] (d) 50 and above []

3. Your highest education level
(a) Secondary school [] (b) Certificate [] (c) Diploma []
(d) Undergraduate [] (e) Post Graduate [] (f) Other _____

4. Number of years you have worked with KAA
(a) Less than 1year [] (b) 1-3 years [] (c) 4-6 years []
(d) 7-10 years [] (e) More than 10 years []

5. How many years have you worked at Jomo Kenyatta International Airport?
(a) Less than 1year [] (b) 1-3 years [] (c) 4-6 years []
(d) 7-10 years [] (e) More than 10 years []

6. Please, indicate your department:
(a) Safety [] (b) Engineering [] (c) Rescue & Firefighting []
(d) Ground Flight Safety [] (e) Wildlife [] (f) Other _____

PART B: Stakeholders Involvement

7. In your opinion, how would you rate your involvement in enhancing aerodrome safety at the Airport?
(a) Excellent [] (b) Good [] (c) Average [] (d) Low [] (e) Poor []

8. Please, indicate the extent to which you agree with the following statements about Stakeholders involvement.
Indicate your response by using a tick (✓) to mark the applicable box.

	Statements on Stakeholders Involvement	To No Extent (1)	To a small extent (2)	Neutral (3)	To some extent (4)	To a Great Extent (5)
	Stakeholders involvement determines implementation of safety oversight program in aerodrome towards enhancing safety					
b	I am aware that the Aerodrome Operator should set safety targets to be met to enhance safety					
c	I am involved in setting of Aerodrome safety targets					
d	Having clear safety targets determines implementation of safety oversight programs					
e	I am aware that the Aerodrome Operator should come up with a procedure for Hazard Identification and Risk mitigation					
f	I am involved in Hazard Identification and risk mitigation in my area of Operation					
g	I am involved during internal and external safety audits in my section					
h	I am made aware of the corrective action requests of the findings noted during internal and external safety audits in my section					
i	I am involved in the preparation of Corrective Action Plans of the findings during the internal and external safety audits					
j	I am involved in implementation of the Corrective Action Plans submitted to Safety office and the Civil Aviation Authority					

9. Comment on the level of satisfaction on the way KAA involves you in Safety enhancement programs

10. Give at least two challenges that you experience in your involvement in the implementation of safety oversight programs at JKIA

11. Suggest at least two actions that would be undertaken proactively enhance involvement in the implementation of safety oversight programs

PART C: Personnel Training

This section of the questionnaire intends to examine how personnel training determines implementation of Safety Oversight Program towards enhancing safety

12. In your opinion, how would you rate Personnel training in Safety related department at the Airport?

(a) Excellent [] (b) Good [] (c) Average [] (d) Low [] (e) Poor []

13. Please, indicate your level of agreement with the following statements on the extent to which personnel training determines safety program implementation. Indicate your response based on a 5-point scale by using a tick (✓) to mark the applicable box.

	Personnel training	To No Extent (1)	To a small extent (2)	Neutral (3)	To some extent (4)	To a Great Extent (5)
	Personnel training determines implementation of Safety Oversight Program in Aerodromes					
b	The Organization carries out a Training Needs Assessment to identify gaps and relevance of training towards implementation of safety programs					
c	All operation personnel are trained on relevant safety courses					
d	Gaps identified in Training Needs Assessment forms the basis of Personnel training.					
e	KAA develops training programs for staff involved in					

	the implementation of safety programs					
f.	Training programs are followed and any changes communicated to the officer to enhance acquisition of relevant skills					
g.	The aerodrome Operator allocates adequate training budget to safety related courses					
h.	Training budget is in accordance with the training needs assessment carried out					
i.	Training budget caters for basic and recurrent training					
j.	Am satisfied with the training process in safety related departments					

14. Please, comment on the level of compliance with training requirements of safety related courses to facilitate implementation of safety programs

15. In your opinion, give at least one action that can improve training of safety related courses

PART D: Safety Communication

This part of the questionnaire intends to assess the extent to which safety communication determines implementation of safety oversight program towards enhancing safety.

16. Please, indicate your level of agreement with the following statements on Safety Communication in Safety Program Implementation. Indicate your response based on a 5-point scale by using a tick (√) to mark the applicable box.

	Safety Communication	To No Extent (1)	To a small extent (2)	Neutral (3)	To some extent (4)	To a Great Extent (5)
	Safety Communication determines implementation of Safety Oversight Program in Aerodromes					
b	There is a clear safety communication channel					

	accessible by all safety related personnel					
c	Safety communication determines implementation of safety oversight program					
d	The modes of communication determine how fast information regarding safety is exchanged and actions taken					
e	There is a clear policy on management of safety related information.					
f	The Aerodrome Operator has established a data base for all safety related information					
g	Safety related issues raised by staff are addressed and feedback given by management in the implementation of safety programs					
h	Any requests to the Civil Aviation Authority with regard to promulgation of safety related information is done in a timely manner and communicated to the Aerodrome Operator					
i	Communication barriers are identified and addressed promptly					
j	I am satisfied with Safety communication process					

17. Explain briefly the challenges you have encountered in safety communication at the aerodrome

18. In your opinion, what actions can you take to improve Safety communication in program implementation towards enhancing Safety?

PART E: Regulatory Framework

This part of the questionnaire aims to establish the extent to which Regulatory framework determines implementation of safety oversight program towards enhancing safety

19. Please indicate your level of agreement agree with the following statements on Regulatory framework. Indicate your response based on a 5-point scale by using a tick (√) to mark the applicable box.

	Regulatory framework	To No Extent (1)	To a small extent (2)	Neutral (3)	To some extent (4)	To a Great Extent (5)
	Regulatory framework is integral part of implementation of safety programs in aerodromes					
b	Safety staff at JKIA are aware of laws and regulations governing aerodrome safety and relevant requirements on programs to enhance safety					
c	The Civil Aviation Authority notifies JKIA in a timely manner on the changes in Regulatory framework affecting aerodrome safety					
d	You have knowledge of International Civil Aviation Organization Annex 14 Volume 1 and associated documents					
e	KCAA conducts workshops and seminars to ensure the staff are made aware of the regulatory framework governing implementation of aerodrome safety programs					

20. Highlights the existing laws and regulations that govern your operations as a safety personnel

21. In your opinion, does the Aerodrome Operator consider existing laws and regulations during implementation of programs to ensure safety requirements complied with at the aerodrome?

PART F: Program Implementation in Aerodromes towards enhancing safety

This part of the questionnaire aims to establish the overall determination of the Part B to E on Implementation of Safety Programs

22. Please, indicate your level of agreement with the following statements with regard to program implementation at JKIA to enhance safety. Indicate your response based on a 5-point scale by using a tick (√) to mark the applicable box.

	Implementation of Safety Oversight Program in Aerodromes towards enhancing safety	To No Extent (1)	To a small extent (2)	Neutral (3)	To some extent (4)	To a Great Extent (5)
	JKIA has put place a program to regularly monitor and audit all areas with a view of enhancing safety					
b	Implementation of safety program at JKIA ensures issuance and maintenance of Aerodrome Certification					
c	JKIA complies with all the safety standards and notifies any non-compliances to the CAA promptly					
d	Non-compliances are identified and safety issues resolved in a timely manner					

THANK YOU FOR YOUR TIME AND COOPERATION!!

Appendix III: Questionnaire for KCAA Inspectors

This questionnaire is designed to collect data on the ‘Determinants of implementation of safety oversight program in aerodromes towards enhancing safety. A case of Jomo Kenyatta International Airport’ and how these determinants are moderated by Staff attitude and perception. Kindly complete the following questionnaire using the instructions provided for each set of questions. Tick appropriately. Instructions: Please tick (✓) as appropriate. Do not write your name on this questionnaire.

PART A: Demographic Data

1. Your gender?
 (a) Male [] (b) Female []

2. In which of the following age brackets does your age fall?
 (a) 20-30 years [] (b) 31-40 years [] (c) 41-50 years [] (d) 50 and above []

3. Your highest education level
 (a) Secondary school [] (b) Certificate [] (c) Diploma []
 (d) Undergraduate [] (e) Post Graduate [] (f) Other _____

4. Number of years you have worked as a KCAA Inspector
 (a) Less than 1year [] (b) 1-3 years [] (c) 4-6 years []
 (d) 7-10 years [] (e) More than 10 years []

5. Area of Specialization as an Inspector
 (a) Engineering [] (b) Aerodrome Operations [] (c) Aerodrome Structures []
 (d) State Safety [] (e) Others []

PART B: Stakeholders Involvement

6. In your opinion, how would you rate your involvement in implementation of safety oversight program at JKIA?
 (a) Excellent [] (b) Good [] (c) Average [] (d) Low [] (e) Poor []

7. Please, indicate the extent to which you agree with the following statements about Stakeholders involvement.
 Indicate your response by using a tick (✓) to mark the applicable box.

	Statements on Stakeholders Involvement	To No Extent (1)	To a small extent (2)	Neutral (3)	To some extent (4)	To a Great Extent (5)
a	Stakeholders involvement determines implementation of safety oversight program in					

	aerodrome towards enhancing safety					
b	The Aerodrome Operator sets safety targets to enhance safety at JKIA					
c	I am involved in evaluation of safety targets set by Aerodrome Operator at JKIA					
d	Having clear safety targets determines implementation of safety oversight programs					
e	The Aerodrome Operator has developed a procedure for Hazard Identification and Risk mitigation					
f	I am involved in evaluation of Hazard Identification and risk mitigation process of the Aerodrome Operator at JKIA					
g	I am involved to evaluate internal audits by the Aerodrome Operator and safety audits by the CAA					
h	I am made aware of the corrective action requests of the findings noted during internal and external safety audits at JKIA for follow-up					
i	I am involved in the evaluation of Corrective Action Plans prepared by Aerodrome Operator at JKIA following Safety Audits					
j	I am involved in following up the Corrective Action Plans submitted to the Civil Aviation Authority by the Aerodrome Operator at JKIA					

8. Comment on the level of satisfaction in your involvement in Safety Oversight programs at JKIA

9. Give at least two challenges that you experience in your involvement in the implementation of safety oversight programs at JKIA

10. Suggest at least two actions that would be undertaken proactively enhance involvement in the implementation of safety oversight programs

PART C: Personnel training

This section of the questionnaire intends to examine how personnel training determine implementation of Safety Oversight Program towards enhancing safety

11. In your opinion, how would you rate Personnel training in MAAMLE towards enhancing safety during implementation of safety oversight programs in Aerodromes?

(a) Excellent [] (b) Good [] (c) Average [] (d) Low [] (e) Poor []

12. Please, indicate your level of agreement with the following statements on the extent to which personnel training determines safety program implementation. Indicate your response based on a 5-point scale by using a tick (√) to mark the applicable box.

	Personnel training	To No Extent (1)	To a small extent (2)	Neutral (3)	To some extent (4)	To a Great Extent (5)
a	Personnel training determines implementation of Safety Oversight Program in Aerodromes					
b	Training Needs Assessment conducted by the Aerodrome Operator are geared towards identifying gaps and relevance of training in the implementation of safety programs					
c	All Aerodrome Operator staff are trained on relevant safety courses to adequately implement of safety programs at JKIA					
d	Gaps identified in Training Needs Assessment forms the basis of Personnel training.					
e	The aerodrome Operator develops training programs for Safety staff to ensure adequate implementation safety programs at JKIA					

f	Training programs developed by Aerodrome Operator are implemented and any changes communicated to the officer to enhance acquisition of relevant skills					
g	Training Programs caters for basic and recurrent training					
h	Am satisfied with the personnel training conducted by the Aerodrome Operator					

13. Please, comment on the level of compliance with training requirements of safety related courses to facilitate implementation of safety programs

14. In your opinion, give at least one action that can improve training of safety related courses to facilitate implementation of Safety programs in aerodromes

PART D: Safety Communication

This part of the questionnaire intends to assess the extent to which safety communication determines implementation of safety oversight program towards enhancing safety.

15. Please, indicate your level of agreement with the following statements on Safety Communication in Safety Program Implementation. Indicate your response based on a 5-point scale by using a tick (√) to mark the applicable box.

	Safety communication	To No Extent (1)	To a small extent (2)	Neutral (3)	To some extent (4)	To a Great Extent (5)
a	Safety Communication determines implementation of Safety Oversight Program in Aerodromes					
b	There is adequate safety communication channels accessible by all safety related personnel at JKIA					
c	The available modes of communication determine how fast information regarding safety is exchanged and actions taken					

d	The aerodrome Operator has a clear policy on management of safety related information.					
e	The Aerodrome Operator has established a database for all safety related information					
f	Feedback on safety issues raised by staff is available across all safety related department in KAA detailed actions taken and/or to be taken by Management					
g	The aerodrome Operator disseminates safety information to the CAA in a timely manner for promulgation					
h	Communication barriers are identified and addressed promptly					
i	I am satisfied with Safety communication process between the Aerodrome Operator and CAA					

16. Explain briefly the challenges you have encountered in safety communication at the aerodrome

17. In your opinion, what actions can you take to improve Safety communication in program implementation towards enhancing Safety?

PART E: Regulatory framework

This part of the questionnaire aims to establish the extent to which Regulatory framework determines implementation of safety oversight program towards enhancing safety

18. Please indicate your level of agreement agree with the following statements on Regulatory framework. Indicate your response based on a 5-point scale by using a tick (✓) to mark the applicable box.

		To No Extent (1)	To a small extent (2)	Neutral (3)	To some extent (4)	To a Great Extent (5)
	Regulatory framework					

a	Regulatory framework is integral part of implementation of safety oversight programs in aerodromes					
b	Civil Aviation Authority has enacted relevant National laws and Regulations to govern Aerodrome Safety program implementation					
c	CAA sensitizes Aerodrome Operator on National Laws and regulations requiring implementation of Safety programs towards enhancing safety					
d	The Civil Aviation Authority notifies the aerodrome operator in a timely manner on the changes in Regulatory framework affecting aerodrome safety					
e	The CAA has adopted and incorporated relevant International Standards and Recommended Practices into State Laws and regulations to facilitate implementation of Safety Oversight programs in Aerodromes					
f	The CAA regularly reviews the National Laws and regulations to incorporate changes in the International laws and emerging trends to ensure relevance					
g	The CAA involves the Aerodrome Operator when reviewing regulatory framework to ensure implementation of new safety requirements in Aerodromes					

19. In your opinion, do the Aerodrome Operator comply with existing laws to ensure safety requirements are met regulations during implementation of Safety programs at the aerodrome?

20. Highlight some of the challenges you have experienced in development and review of regulatory framework to enhance aerodrome safety.

2

1. Which actions can you take to address the challenges highlighted in 21 above?

PART F: Program Implementation in Aerodromes towards enhancing safety

This part of the questionnaire aims to establish the overall determination of the Part B to E on Implementation of Safety Oversight Programs

22. Please, indicate your level of agreement with the following statements with regard to program implementation at JKIA to enhance safety. Indicate your response based on a 5-point scale by using a tick (√) to mark the applicable box.

	Implementation of Safety Oversight Program in Aerodromes towards enhancing safety	To No Extent (1)	To a small extent (2)	Neutral (3)	To some extent (4)	To a Great Extent (5)
a	JKIA notifies CAA of the safety issues identified in their continuous monitoring and audit of all areas with a view of enhancing safety					
b	Implementation of safety oversight program at JKIA ensures issuance and maintenance of Aerodrome Certification					
c	JKIA complies with all the safety standards and notifies any non-compliances to the CAA promptly					
d	JKIA identifies non-compliances to standards and resolves all safety issues in a timely manner					

THANK YOU FOR YOUR TIME AND COOPERATION!!

Appendix V: University Introduction Letter



UNIVERSITY OF NAIROBI
OPEN DISTANCE AND E-LEARNING CAMPUS
SCHOOL OF OPEN AND DISTANCE LEARNING
DEPARTMENT OF OPEN AND DISTANCE LEARNING

Your Ref:

Our Ref: UON/SODL/MLC/5/1

Telephone: Mombasa

Off-Moi Avenue
Uni Plaza Building
Mombasa Campus
P.O. Box 83732-80100
MOMBASA, KENYA

29th May, 2019.

TO WHOM IT MAY CONCERN

RE: PERMISSION TO PROCEED TO THE FIELD AND COLLECT DATA

This is to introduce **Jonah Kirogo Kinyua** Student Reg. No: **L50/70444/2013**, who is a bonifide student of the University of Nairobi, Mombasa Campus. He is in his second year of study pursuing a **MASTER OF ARTS DEGREE IN PROJECT PLANNING AND MANAGEMENT** at the **School of Open and Distance Learning**.

All Post-graduate students are required to prepare and present a research project as part of their course. *Jonah is working on his proposal based on **Determinants of Implementation of safety oversight program in Aerodromes towards enhancing safety**. A case of **Jomo Kenyatta International Airport** and has been allowed to proceed to the field and collect data. He therefore requires to collect data in order to complete his research project. The information he requires is meant purely for academic purposes and will be not be used for any other purpose.*

Hence, on behalf of the university, I am kindly requesting you to extend to him any assistance that may enable to collect the information he requires.

Yours faithfully,



JOHNBOSCO M. KISIMBII
REGIONAL CO-ORDINATOR – SODL, MOMBASA CAMPUS
EXAMINATION OFFICER - ODeL

Appendix VI: Request for Data Collection at KAA



Jonah Kirogo Kinyua
P.O.BOX 30163-00100
NAIROBI
Email: jkinvua090@gmail.com

The Managing Director
Kenya Airports Authority
P.O.BOX 19001-00501
NAIROBI

9 September 2019

Dear Sir,

REQUEST FOR PERMISSION TO COLLECT DATA FOR A RESEARCH STUDY

I am a student at the University of Nairobi, currently undertaking a research study entitled '**Determinants of implementation of safety oversight program in Aerodromes towards enhancing safety. A case of Jomo Kenyatta International Airport**' being a requirement for the award of Master of Arts degree in Project Planning and Management.

The purpose of this letter is to request your permission to collect data on the research study in Safety related sections at Jomo Kenyatta International Airport and Kenya Airport Authority Headquarters namely;-

- a. Engineering Services
- b. Rescue and firefighting Services
- c. Ground flight safety
- d. Wildlife control and management
- e. Safety office at JKIA and KAA headquarters

Granted permission, the information provided by your Officers shall be treated with utmost confidentiality and used purely for academic purposes.

I look forward for consideration and a positive response to enable me undertake the study in your respectable Organization.

Attached please find a copy of an introduction letter from the University of Nairobi requesting your assistance.

Yours faithfully,

Jonah Kirogo Kinyua
Reg No: L50/70444/2013

Appendix VII: Request for Data Collection at KAA

Jonah Kirogo Kinyua
P.O.Box 30163-00100
NAIROBI
Email: jkinyua090@gmail.com



The Managing Director
Kenya Airports Authority
P.O.BOX 19001-00501
NAIROBI

19 December 2019

Dear Sir,

REQUEST FOR PERMISSION TO COLLECT DATA FOR A RESEARCH STUDY

I am a student at the University of Nairobi, currently undertaking a research study entitled '**Determinants of implementation of safety oversight program in Aerodromes towards enhancing safety. A case of Jomo Kenyatta International Airport**' being a requirement for the award of Master of Arts degree in Project Planning and Management.

The purpose of this letter is to request your permission to collect data on the research study in Safety related sections at Jomo Kenyatta International Airport and Kenya Airport Authority Headquarters namely;-

- a. Engineering Services
- b. Rescue and firefighting Services
- c. Ground flight safety
- d. Wildlife control and management
- e. Safety office at JKIA and KAA headquarters

Granted permission, the information provided by your Officers shall be treated with utmost confidentiality and used purely for academic purposes.

I look forward for consideration and a positive response to enable me undertake the study in your respectable Organization.

Attached please find a copy of an introduction letter from the University of Nairobi requesting your assistance. In addition, a copy of earlier request letter is attached.

Yours faithfully,

Jonah Kirogo Kinyua
Reg. No: L50/70444/2013

cc: Airport Manager
Jomo Kenyatta International Airport
P.O. Box 19087 -00501
NAIROBI

Appendix VIII: Request for Data Collection at KCAA

Jonah Kirogo Kinyua
P.O. Box 1618-00200
NAIROBI
Email: jkinyua090@gmail.com
17 January 2020

The Director General
Kenya Civil Aviation Authority
P.O. Box 30163-00100
NAIROBI



Attn: Manager HR & Admin

Dear Sir,

REQUEST FOR PERMISSION TO COLLECT DATA FOR A RESEARCH STUDY

I am a student at the University of Nairobi, currently undertaking a research study entitled '**Determinants of implementation of safety oversight program in Aerodromes towards enhancing safety. A case of Jomo Kenyatta International Airport**' being a requirement for the award of Master of Arts degree in Project Planning and Management.

The purpose of this letter is to request your permission to collect data on the research study in AAMLE and State Safety Office of Kenya Civil Aviation Authority.

Granted permission, the information provided by your Officers shall be treated with utmost confidentiality and used purely for academic purposes.

I look forward for consideration and a positive response to enable me undertake the study in your respectable Organization.

Attached please find a copy of an introduction letter from the University of Nairobi requesting your assistance.

Yours faithfully,



Jonah Kirogo Kinyua
Reg. No: L50/70444/2013

Appendix IX: Authorization for Research at KAA



Kenya Airports Authority

Head Office, Airport North Road
P.O. Box 19001 - 00501 Nairobi, Kenya
Tel: +254 - 020 - 822111 / 6611000 / 6612000
Fax: +254 - 020 - 822078, 827304
Email: info@kaa.go.ke
www.kenyaairports.go.ke

CAA/10/16/02 VOL. 5 (185)

14th January, 2020

Jonah Kirogo Kinyua
P.O Box 30163-00100
NAIROBI

Dear Jonah,


**RE: REQUEST TO COLLECT DATA FOR A RESEARCH AT KENYA AIRPORTS
AUTHORITY**

We are pleased to inform you that you have been granted permission to collect data for your research "*Determinants of implementation of safety oversight program in Aerodromes towards enhancing safety*" In our organization effective from 20th January, 2020.

You are therefore requested to report to Airport manager - JKIA and General Manager - Operations & Safety - HQ for facilitation purposes.

You will be expected to abide by all rules and regulations governing the organization during your research period in order to ensure normal work schedule is maintained without inconveniencing any office operations.

Kindly note that the information gathered will be purely for academic purposes and shall not be used for any other purpose.


RISPER OMONDI (Mrs.)
MANAGER LEARNING AND DEVELOPMENT

Appendix X: Authorization for Data Collection at KCAA



KENYA CIVIL AVIATION AUTHORITY

KCAA/PERS/0841220892 (58)

27th January 2020

Jonah Kiogo Kinyua
P.O Box 1618 - 00200
NAIROBI

AUTHORITY TO COLLECT DATA FOR RESEARCH

We acknowledge receipt of your letter dated 17th January, 2020 requesting for permission to collect data for a research study entitled "**Determinants of implementation of safety oversight program in Aerodromes towards enhancing safety. A case of Jomo Kenyatta International Airport**".

This is to inform you that your request has been considered and you have been granted permission to carry out the intended data collection in the AAMLE Department and State Safety Office on the following conditions:

1. Ensure utmost confidentiality.
2. Information gathered to be used purely for research purposes only
3. A copy of the final report to be submitted to KCAA

I take this opportunity to wish every success as you undertake data collection for your research study at KCAA.

David Etyang
FOR: DIRECTOR GENERAL

Appendix XI: Authorization for Data Collection at JKIA



Jomo Kenyatta International Airport
P.O. Box 19087 (00501) Nairobi, Kenya
Tel: +254 - 020 - 6611000 / 822111
Fax: +254 - 020 - 822930
Cell: +254 - 722 205 061 - 8
Email: jkia@kaa.go.ke
www.kaa.go.ke

KAA/JKIA/10/16/8

4th February, 2019

Johah Kirogo Kinyua
P.O. BOX 30163-00100
NAIROBI

Manager Safety - JKIA

Airport Manager -JKIA

RE. REQUEST TO CARRY OUT RESEARCH STUDY IN KENYA AIRPORTS AUTHORITY-JKIA

Reference is made to your letter dated 14th January, 2020 on the above subject matter.

Your request to be allowed to carry out this study on "***Determinants of implementation of safety oversight program in Aerodromes towards enhancing safety***", in this organization is granted. However, JKIA is a restricted area and thus you will be required to carry your Identification documents and letter from your institution indicating that you are undertaking this research.

In this regard, your study should commence once you receive this communication from us. Please note, this study should be for academic purposes only and shall not be used for any other purpose.

We hope you will collect as much information as possible to enable you complete your studies successfully

Yours Sincerely

A handwritten signature in blue ink, appearing to read 'Mary Gachohu', is written over a circular stamp.

MARY GACHOHU
FOR AIRPORT MANAGER-JKIA

