CIVIL AVIATION MANAGEMENT AND FLIGHT SAFETY IN UGANDA

BY

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A DISSERTATION SUBMITTED TO THE HIGHER DEGREE DEPARTMENT IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF A MASTERS DEGREE IN MANAGEMENT STUDIES (PROJECT PLANNING AND MANAGEMENT) OF UGANDA MANAGEMENT INSTITUTE KAMPALA-UGANDA

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DECLARATION

I, Henry Luwemba Kitaka, declare that this is my original work; and has not been presented to any university or institution for award of a degree; and throughout the work I have acknowledged all previous work referred to.

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Henry Luwemba Kitaka

Date: June, 2010

APPROVAL TO SUBMIT

We certify that Henry L Kitaka has done this work under our guidance and supervision:

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DEDICATION

I dedicate this work to my family: Wife Hilda, children; Edwin Kakule, Melvin-Boaz, Damalie-Ssanyu Dorcus-Mirembe and Viola Kigongo. And also to all those persons out there who are tirelessly trying to make civil aviation safe and safer.

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LIST OF ABBREVIATIONS AND ACRONYMS

ACIP	Aviation Comprehensive Regional Implementation Plan for Africa
ALoS	Acceptable Level of Safety
ASAP	Aviation Safety Action Program
ATM	Air Traffic Management
CAA	Civil Aviation Authority
CASSOA	Civil Aviation Safety and Security Oversight Agency
CNS	Communication Navigation Surveillance
DSSER	Director Safety Security and Economic Regulation
EAC	East African Community
ERS	Error Reporting System
GAIN	Global Aviation Information Network
GASR	Global Aviation Safety Roadmap
ICAO	International Civil Aviation Organisation
NTBS	National Transport Safety Board (of the United States of America)
RSOO	Regional Safety Oversight Organisation
SARPs	Standards and Recommended Practices
SMS	Safety Management System
USOAP	Universal Safety Oversight Audit Program

ABSTRACT

This study examined how civil aviation management influences flight safety in Uganda. Civil aviation management was conceptualised and limited to planning, organising and controlling functions of the Scientific Management Theory. The contextual scope was limited to Flight Safety, excluding Communication Navigation Surveillance (CNS); Air Traffic Management (ATM); and Airport Safety which are also major dimensions of civil aviation management. It was a cross- sectional survey in design; and it adopted triangulation of qualitative and quantitative research methodologies, techniques and strategies. The study used primary and secondary data collection methods; and it had a response rate of 86%. Descriptive, correlation and multiple regression statistical analysis methods were employed to analyse the data. A multiple regression analysis model summary result of .996 R Square indicated that flight safety is explained by civil aviation management to a magnitude of 99.6%; the coefficient results indicated that civil aviation management accounts for 98.6% of variance in flight safety. Civil aviation planning function account for 32.7% variance; organising functions account for 45.7%; while controlling functions account for 20.2%. It was observed from the study findings and analysis results, that flight safety is almost 100% dependent on the effectiveness of the civil aviation management system in place. It was therefore recommended that; Uganda's civil management system and regulations should be kept compliant and updated with international standards all the time. The State Safety Program (SSP) requirements should be issued and the Safety Management System (SMS) mandatory implementation enforced, in order to promote pro-active and predictive safety management to minimise civil aircraft major incidents and accidents.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This study examined how civil aviation management influences flight safety in Uganda. It was based on Fredrick Taylor scientific management theory; and it adopted the operational management functional dimensions for which the classical management theorist's advocate would significantly improve organisational service delivery and production efficiency if they are well addressed (Koontz; O'Donnell; Weihrich, 1986).

The study was cross sectional and survey in design; it adopted a triangulation of quantitative and qualitative research approaches; and methodology. This chapter presents the study background, the statement of the problem, the purpose, the objectives, the research questions, the hypothesis, the conceptual framework, the scope, the significance, and the justification.

1.1 Background of the Study

In an industry where risk cannot be reduced to zero, civil aviation management is faced with a constant challenge of meeting the public's expectation of perfection and zero accident rate as the minimum acceptable safety standard for commercial air transport (Burin, 2009). Unfortunately, in real practice, zero accident rate is not possible, because risk in any operation will never be zero. However, accident rate can be reduced to such a low figure that mathematically may be indistinguishable from zero (Wood, 1997).

International civil aviation management started way back in 1944 at an international meeting that took place in Chicago United States of America at the end of the second world war, there

after referred to as the December 7, 1944 Chicago Convention on International Civil Aviation signed by 52 States. On May 13, 1947 the Convention established the International Civil Aviation Organisation (ICAO) and entrusted it with the responsibility of developing standards for regulating international civil aviation. To date, one hundred and ninety one States including Uganda are party to the convention (ICAO, 2000). ICAO regulates civil air transport operations throughout the world with an objective to ensure that it is safe and free from accidents. Article 12 of the Chicago convention requires each contracting state to develop and implement civil aviation regulations that are uniform to the greatest possible extent with the Annexes and the minimum international Standard and Recommended Practices (SARPs) established from time to time under the convention.

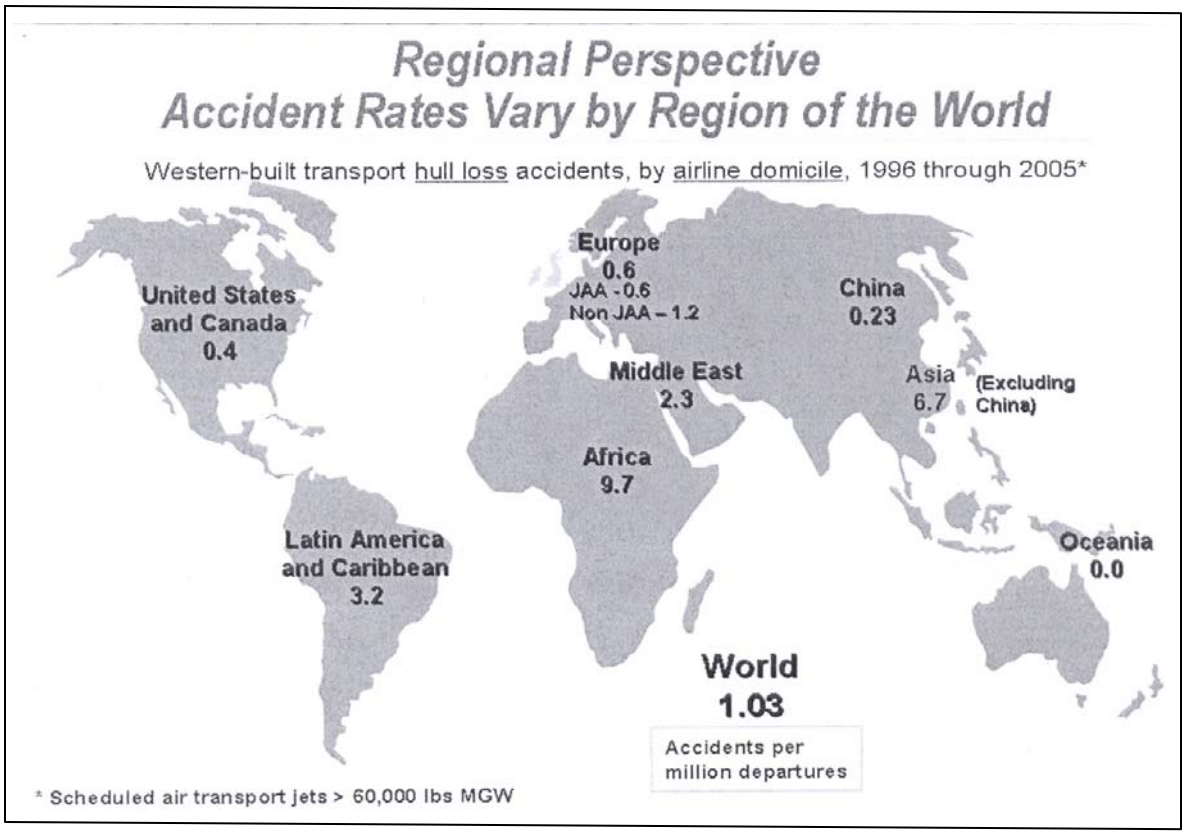
It is an obligation of a contracting state to establish a civil aviation management system upon which it can declare that its aviation industry can deliver services at, or better than the minimum expected international flight safety standards. The states responsibility for safety oversight is the foundation upon which safe global aircraft operations are built. Absence of an appropriate aviation management system in any one contracting state threatens the safety of international civil aircraft operations (ICAO-A, 2006).

With air travel already being the safest form of transportation, the challenge of the service industry and the regulatory agencies is to make an already safe system safer. In the view of the Global Aviation Safety Roadmap the aviation industry is expected to deliver a reduction in risks to commercial civil aviation air transport (FSF-1, 2006).

To give a clear picture of the global civil aviation safety status, Boeing Aircraft Industry publishes ten yearly Hull–Loss based on the industry world wide accident statistics that

reflect differences in regional accident rates. Figure 1.1 below, illustrates the number of accidents per one million departures of Western built scheduled air transport jet aircraft of maximum gross weight greater than 60,000 lbs. per global region for the period 1996 – 2005.

Figure: 1.1 Global Accident Rate by Region



Source: FSF-1, 2006.

As indicated in Figure:1.1 above, over the decade 1996 - 2005 the accident rate in Africa was almost ten accidents for every one million departures. This is almost eight accidents higher than the global average of about one accident for the same number of departures. This reflects an alarming civil aviation accident prevention deficiency in Africa.

The East African Community Treaty requires partner states to harmonise their policies on civil aviation to promote the development of safe, reliable, and internationally compliant standards. Article 92 of the Treaty, established the East African Community Civil Aviation Safety and Security Oversight Agency (CASSOA). CASSOA assists the partner states in meeting their safety and security oversight obligatory responsibilities. It also provides the partner states with an appropriate forum and structure to discuss plan and implement common measures required for achieving safe and orderly development of international civil aviation through the implementation of international standards and recommended practices relating to civil aviation safety (EAC, 2007).

Uganda is a signatory to the Chicago convention on international civil aviation and it is one of the five EAC partner state. It is therefore under obligation to develop and implement international standards and recommended practices. It is required to ensure that there is an institution entrusted with the responsibility to ensure effective control and continued compliance with the established civil aviation standards within the scope of the country's civil aviation activities scope. To ensure that the safety system is appropriate and compliant with the established international standards, ICAO subjects each state to a repetitive five yearly compulsory Universal Safety Oversight Audit Program (USOAP). A poor safety performance audit result is an indication of an ineffective states civil aviation management system.

Information from records at Uganda Civil Aviation Authority (CAA) flight safety document center summarized in Table: 1.1 below indicate that fourteen civil aircraft accidents occurred

in Uganda over the period 2000 – 2009. Of fourteen accidents, four aircraft were registered in Uganda and resulted in seven people loosing their lives.

Table : 1.1 Civil Aircraft Accidents in Uganda Over the Period 2000 – 2009.

Item	Registration	Aircraft Type	Location of Accident	Lives Lost	Damage to Aircraft	Year of Accident	Flight Sector
1	Foreign	Piper 132	Abayita Ababiri	Six	Destroyed	2000	Out bound Entebbe
2	Foreign	DC 10	Entebbe Int. Airport	Nil	Destroyed	2000	Out bound Entebbe
3	Foreign	BN Islander	Rwenzori Mountains	Four	Destroyed	2000	Out bound Entebbe
4	Uganda	Cessna 210	Lake Victoria Off Shore Entebbe Airport	Six	Destroyed	2003	In bound Entebbe
5	Uganda	Helicopter	Entebbe Int. Airport	One	Destroyed	2003	Test Flight at Entebbe
6	Foreign	Piper	Lira	Nil	Destroyed	2003	In bound Entebbe
7	Foreign	B707	Entebbe Int. Airport	Nil	Destroyed	2005	In bound Entebbe
8	Foreign	Cessna 208	Rwenzori Mountains	Four	Destroyed	2005	In bound Entebbe
9	Foreign	Antonov 12	Buwaya off Entebbe Int. Airport	Nine	Destroyed	2006	Out bound Entebbe
10	Foreign	Cessna 406	Entebbe Int. Airport	Two	Destroyed	2007	Out bound Entebbe
11	Foreign	Antonov 12	Entebbe Int. Airport	Nil	Destroyed	2007	In bound Entebbe
12	Uganda	Cessna 206	Masaka Road	Nil	No damage	2009	In bound Entebbe
13	Foreign	Illussin 76	Lake Victoria Off Shore Entebbe Airport	Nine	Destroyed	2009	Out bound Entebbe
14	Uganda	Cessna 206	Adjumani Airstrip West Nile	Nil	Destroyed	2009	In bound Entebbe

Source: CAA-Uganda Flight Safety Document Center.

It is also indicated that of the fourteen, eight aircraft crashed on out bound flight soon after take off from Entebbe international airport. In all the fourteen accidents the aircraft were totally destroyed. The accident investigation reports indicated that the probable causes of these accidents ranged from operating crew failure to comply with the established emergency procedures; non compliance with mandatory airworthiness and maintenance requirements; inadequate safety oversight audits; and ineffective control measures to enforce regulation requirements by the safety oversight system. These probable causes fall within the civil aviation management preventive responsibilities to realize the flight safety standards; to prevent and control civil aircraft incidents and accidents.

1.2 Problem Statement

Civil aviation safety is the primary objective of Uganda's civil aviation authority, and there have always been safety regulations in place to realize this objective. Unfortunately, during the five years period 2000 – 2004, there were six aircraft accidents in Uganda, in which sixteen people lost their lives. To further improve civil aviation industry management; and to minimise aircraft accidents, in July 2006, Uganda issued new civil aviation regulations and technical guidance Information to facilitate compliant and standardised flight safety. This was done in accordance with international civil aviation requirements. However, over the five years period, 2005 – 2009 there were eight accidents (reflecting a 33% accident increase) in which twenty four people lost their lives (reflecting a 50% fatality increase). A safety audit carried in November 2008 by the International Civil Aviation Organisation (ICAO) under the Universal Safety Oversight Audit Program (USOAP) rated Uganda at only

45.64% compliant with the established regulatory requirements. This rating is far below the required minimum performance level of 70% effective implementation (ICAO, 2008).

Effective implementation of the civil aviation regulatory requirements requires safety management system planning, organising and control measures right from the onset. The increasing accident rate in Uganda and the poor safety results from the November 2008 USOAP therefore, are possible indicators of inadequacies in the civil aviation management systems which are manifesting themselves as increasing civil aircraft accident rate. It was against this background that it was found necessary to examine the influence of civil aviation management on flight safety in Uganda.

1.3 The General Objective

To examine how civil aviation management influences flight safety in Uganda

1.4 Specific Objectives

1. To establish how civil aviation planning influences flight safety in Uganda.
2. To assess how civil aviation organising influences flight safety in Uganda.
3. To assess how civil aviation control affects flight safety in Uganda.

1.5 Research Question.

1. How does civil aviation planning influence flight safety in Uganda?
2. How does civil aviation organising influence flight safety in Uganda?
3. How does civil aviation control affect flight safety in Uganda?

1.6 Research Hypothesis

1. Civil aviation planning influences flight safety in Uganda.

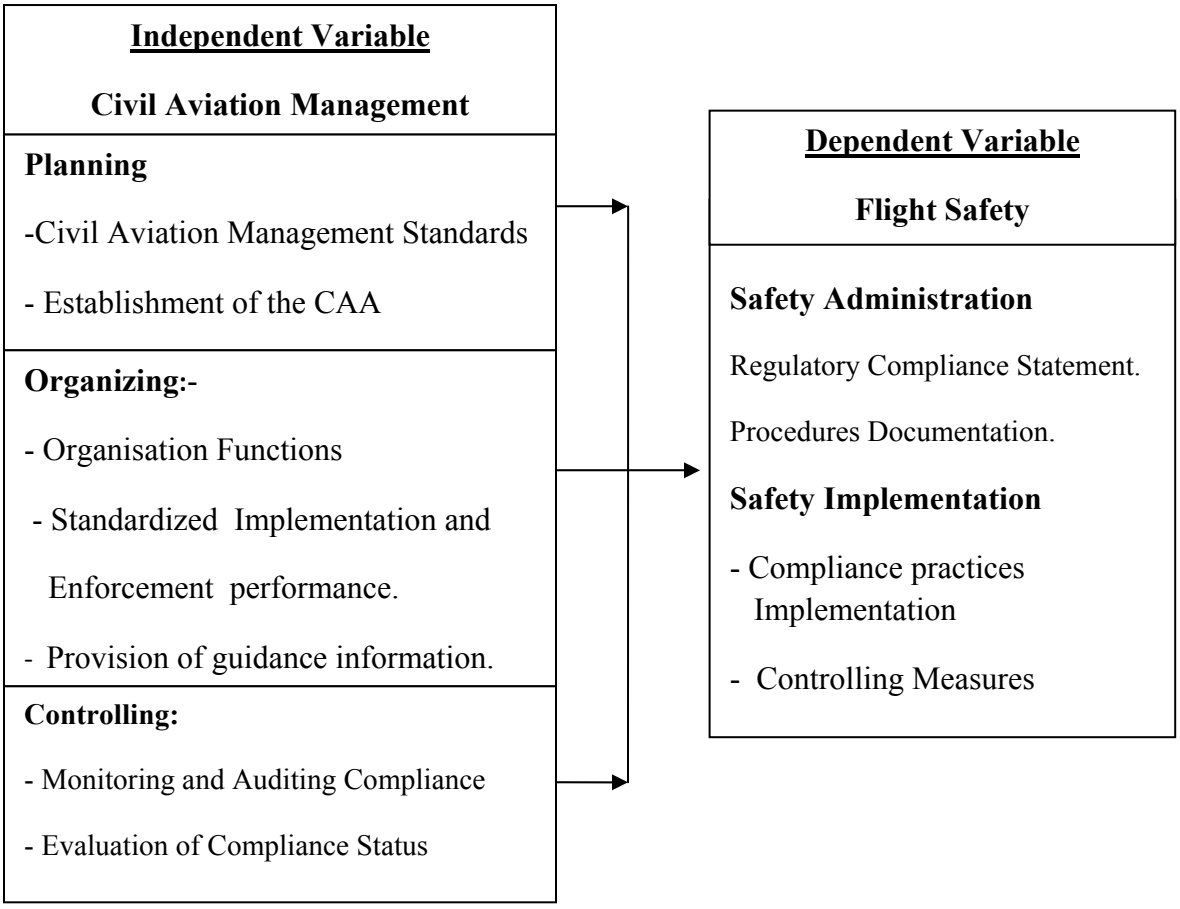
2. Civil aviation organising influences flight safety in Uganda.

3. Civil aviation control does not affect flight safety in Uganda.

1.7 Conceptual Framework

The conceptual framework illustrates the relationship between civil aviation management and flight safety. The independent variable was conceptualised in accordance with the classical scientific management theory operational management functional areas; planning, organising, and staffing, leading and controlling. This study however, limited its scope to planning, organising and controlling functions only because they cover the eight critical elements required to establish an effective safety management system (Ref. Appendix 5). The dependent variable "Flight Safety" was operationalised as Safety Administration and Safety Requirements Implementation, the obligatory requirements of a flight safety service provider.

Figure:1.2 Conceptual Relationship between Civil Aviation Management and Flight Safety



Source: Koontz; O'Donnell; Weihrich (1986) and ICAO-A (2005). Adapted and modified by the author.

1.8 Scope of the Study

The study was undertaken at Entebbe international airport and Civil Aviation Authority headquarters at Entebbe Wakiso district in Uganda. Uganda is one of the East African Community (EAC) Partner States, the other EAC States are: Burundi, Kenya, Rwanda and

Tanzania. Under the guidance of CASSOA these states agreed and harmonised their flight safety civil aviation regulations and technical guidance information to establish common standards in the region.

The study focused on the period from December 2006 to December 2009. This was the period immediately after the gazetting of the civil aviation regulations on October 27, 2006, and issuing of the implementation technical guidance information in 2007. This period included the twelve months compliance period that was granted to all operators and persons who had been approved, certified, authorised or licensed under the repealed Uganda Air Navigation Regulations of 2001.

The independent variable constructs were adopted from scientific management theory which defines management as a function of: planning, organising, coordinating, controlling, staffing and leading dimensions. The conceptual scope of the study was however, limited to planning, organising and controlling dimensions because they incorporate all the applicable eight critical elements of a safety oversight system. Ref. Appendix 5. The dependent variable was defined in terms of safety administration and safety requirements implementation as defined in Implementation of Global Aviation Safety Roadmap (FSF-I, 2006).

Civil aviation safety is comprised of Flight Safety Oversight, Communication Navigation Surveillance (CNS), Air Traffic Management (ATM), and Airport Safety. The contextual scope of this study was limited to civil aviation management of flight safety and how it is influenced by Civil Aviation Management System. Flight safety oversight is the core

dimension of civil aviation safety; however, while other dimensions: CNS, ATM and Airport Safety are important, they only play a support role to flight safety.

1.9 Significance of the Study

The study findings would be beneficial to the Civil Aviation Authority, the flight safety policy makers and administrators in the understanding of how and to what extent civil aviation management function influence flight safety performance. This knowledge shall focus the industry development efforts towards the management functions that would deliver effective flight safety performance. This knowledge will also enhance effective corrective action to shortcomings in the management system.

1.10 Justification of the Study

It was justifiable, to carry out the study in order to find out whether Uganda's civil aviation management system influences flight safety performance, and if it does, to what magnitude. The study is expected to be a contribution to civil aviation management body of knowledge in Uganda. Its findings are expected to benefit the civil aviation management system developers and implementers when establish flight safety management system and performance strategies that would minimise aircraft accidents in Uganda.

1.11 Operational Definition of Terms

Annexes: These are issued by ICAO, to notify the industry of the international minimum Standards and Recommended Practices (SARPs), that a contracting state civil aviation management institution is obliged to adopt. ICAO, (2009).

Active failures: Are actions or inactions, including errors and violations which have an immediate adverse effect. ICAO, (2009).

Airworthiness Code: Is a set of standards relating to aircraft design, materials, construction, equipment, performance and maintenance planning issued by the state of design. SI 2006 No.51.

Authority: Civil Aviation Authority – Uganda. CAR's, (2006).

Civil Aviation Management: Is a process that includes performing and enforcing the implementation of planning, organising and controlling activities of the civil aviation management system. ICAO-A, (2006).

Contracting State: Is a State that is a signatory to the Chicago Convention on International Civil Aviation of December 1944. ICAO, (2006).

Controlling: Is a systematic effort by business management to compare performance to the predetermined standards, plans and objectives in order to determine whether performance is in line with established standards and where necessary, to take remedial action. Hallsall, (1998).

Flight Safety: Is actions and activities of a civil aviation flight service provider to comply, implement, apply and maintain regulatory safety requirements and practices, including identification of hazards to safety; the management; and control safety risks. GAIN, (2001).

Industry – Mean the civil aviation service providers, it excludes the Civil Aviation Authority which is the state civil aviation management institution. ICAO, 2009).

Just Culture: Is an organizational policy of trust in which people are encouraged to provide safety-related information, even if it is self-incriminating without fear of reprimand. ICAO, (2009).

Latent conditions: Are inadequacies and safety concerns present in a system well before a damaging outcome is experienced. ICAO, (2009).

Management: Is the organizational responsibility to design, implement and maintain an environment in which individuals, sections, departments and organisations can make their contribution to accomplish selected missions and objectives. Koontz; O'Donnell; Weihrich, (1986).

Organising: Organizing is determining performance activities; establishing logical functional sections that constitute the management system. It the management of organizational recourses to effectively and efficiently execute organizational activities. Gibbins, (1996).

Planning: Is a function of the state civil aviation authority to design systems that function in compliance the State Civil Aviation Act and the minimum standards established from time to time by the International Civil Aviation Organisation. ICAO-A, (2006).

Recommended / Recommendations: Are proposed industry best practice to comply with the requirements. ICAO Annexes, (2008).

Requirement / Required: Are conditions that are mandatory under the regulations, ICAO Annexes, (2008).

Safety: Is absence of risks. It is a state in which the possibility of harm to persons or of property damage is reduced to, and maintained at an acceptable level. ICAO, (2009).

Safety culture: Is a set of enduring values and attitudes regarding safety issues shared by all members of an organisation; it incorporates the Just Culture. ICAO, (2009).

Safety Oversight: Is a function of a state civil aviation management institution by which it ensures industry effective implementation and continued compliance with the flight safety related obligations. ICAO-A, (2006).

Safety Oversight System: Are structured functions of a state civil aviation management institution with procedures, actions and activities compliant to the convention by which a contracting states defines its capability and competence to perform its safety oversight obligations. ICAO-A, (2006).

Safety Performance: Is functional and operational performance procedures developed based on operational area safety hazards identification and safety risk consequences assessment. ICAO, (2009).

Safety Performance Level: Is a measure of the degree of satisfactory demonstration of civil aviation flight safety operational environment, risk management and risk control. ICAO, (2009).

Safety Management System (SMS): Is as a systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedure. ICAO, (2009).

Safety Measurement: Is the quantification high-level state functions, such as the status of development/implementation of primary aviation safety legislation the status of development/implementation of specific operating regulations and the level of regulatory compliance within the state or the absence of such thereof. ICAO, (2009).

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents the literature related to civil aviation management concept and their relationship with flight safety. It is divided into four parts: The theoretical review; civil aviation planning, civil aviation organising and civil aviation controlling. The literature was obtained from technical journals, text information on management, International Civil Aviation Organisation (ICAO) technical literature and CAA records and documents.

2.1 Theoretical Review

Management concept is a process of using organisational resources to deliver goods and services to the customers. In the provision of services, all organisations strive for higher performance (Balunywa, 1994). The administrative management theory or the bureaucratic management concept by Max Weber (1864 - 1920) advocated for creating an organisation that is both effective and efficient, it held people accountable for their actions and required strict adherence to established standard operating procedures and conformity with regulatory requirements.

Henry Fayol (1841 - 1925) management principles on the other hand emphasise the importance of centralisation of authority at the top and the belief in one plan of action to guide the organisation.

The management science theory placed emphasis on total quality management; organisation theory considered the relationship of the organisation with its internal and external

environment a prime management factor, it recommended establishment of an open ended management system that interacts freely with its environment in a manner that recognises that there is more than one best way to manage.

The contingency theory of management on the other hand observed that the environment impacts on the organisation, therefore, an effective management system should be flexible and reactive to the environmental changes and demands (Koontz; O'Donnel; Weihrich, 1986).

Frederick Taylor (1856 - 1915) acknowledged as the farther of scientific management, advocated for the application of organised knowledge in management. He emphasised the importance cooperation and harmony in group action and the development, directing and guiding workers both for their own and the organisation's prosperity. Taylor observed that production efficiency greatly improves when work is broken down into its constituent parts and that management planning, organising and controlling issues that relate to decision making have been appropriately done (Koontz; O'Donnel; Weihrich, 1986).

Taylor attempted to put together pertinent knowledge of operational management that includes concepts, principles and techniques that underlie the task of managing. Classical management theorist classified operational management by the functions of managers or what would be the functions of a management system as; planning and organising which are establishment functions, plus staffing, leading and controlling which are implementation functions (Priestly, 2006).

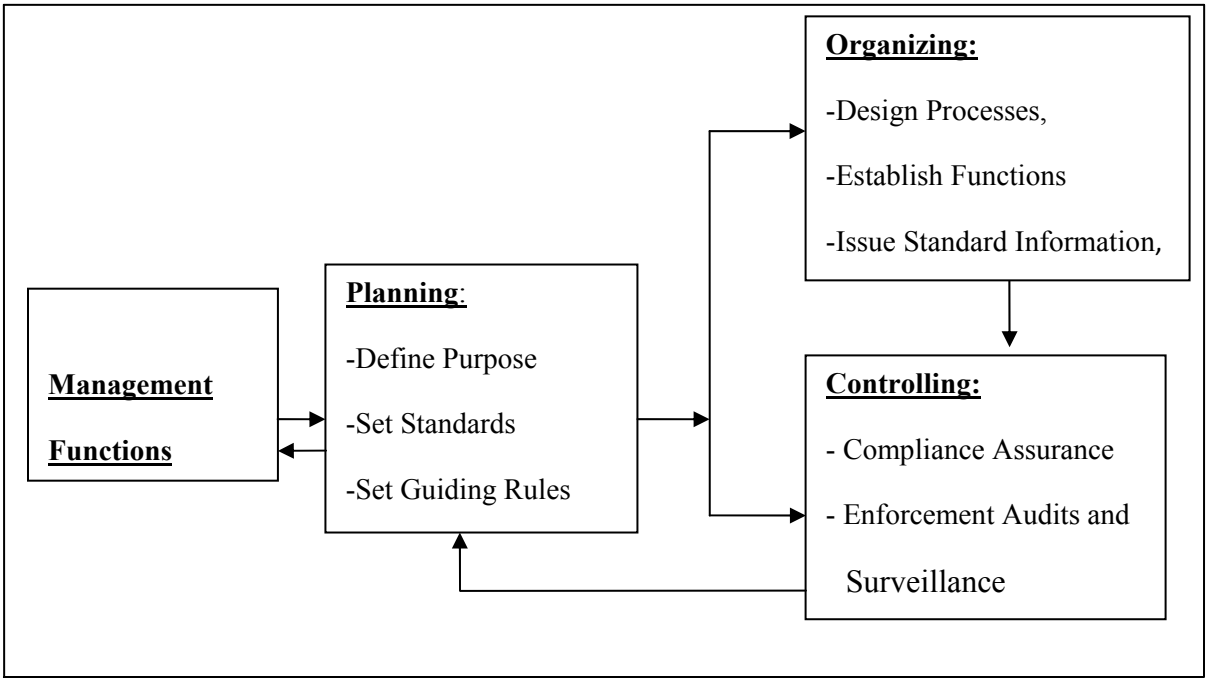
Taylor's scientific management has been criticised by management and political economy scholars that it is authoritarian, humans become a little more than machines and their cognitive input is not required. It literally transforms the workers into objects that are only required to work fast, riding them of their subjectivity. Decision making is a top management personnel function, because workers are not believed to have the incompetence for it. However, in today's society, the average intelligence of people has sharply risen and any process by which this status is challenged is considered self depreciating. Modern management systems have recognised that productivity and success is not just about controlling all factors in the workplace, but it includes getting feed-back information from workers to system designers and policy makers (Oncu & Kose, 2002).

In spite of its limitations in the 21st Century organisation management, scientific management operational management functional areas are still a relevant concept to a better understanding of contemporary work organisations, because they allows the organisation to control its management system through a series of measures that guarantees it the desired levels of efficiency and effectiveness (Priestly, 2006).

Figure: 2.1 below, illustrates the inter-relationship between the planning; organising; and controlling functions in a management system.

Figure 2.1: Study

Operational Management Functional Areas System



Source: Adapted and modified from Koontz; O'Donnel; Weihrich; (1986)

2.2 Civil Aviation Planning and Flight Safety

Understanding and implementing the functions of management, enables the organization to realize its obligatory requirements and strategic objectives (Bateman & Snell, (2004). Planning is the designing of an environment for effective performance of an organisation, it involves determining in advance what to do, how to do it, when to do it and who is to do it. It makes it possible for things to occur that would otherwise not happen as required. Without planning actions tend to be uncoordinated, aimless and are left to happen by chance.

Planning is designing means of effective performance of individuals working together in groups, with the knowledge of what is expected to be accomplished; it bridges the gap from where we are and where we want to be. It establishes organisational scope of activities, their objectives, departmental goals and the strategic means to achieve them. Planning permits advanced decision making on the appropriate actions needed to achieve the goals. It is the first function of scientific management concepts, it involves assessing industry environmental forces and their effect on the overall goals of the organization. It facilitates appropriate organization establishment and strategic planning (Balunywa, 1994).

In civil aviation management context the planning function requires designing systems that will function and perform in compliance with the minimum standards established from time to time by the International Civil Aviation Organisation with the primary purpose of realising the international Acceptable Level of Safety (ALoS) to reduce civil aircraft accident rates.

These activities involve the designing of the safety oversight system (the CAA) adopting and issuing of the civil aviation regulations, setting the scope of the state civil aviation activities depending on the industry size and commitment.

Non compliant state safety systems are characterised by absence of a well structured and legally empowered civil aviation management institution ; there is no deliberate selection of safety standards; there are no trained and competent inspectors; compliance audits and surveys are not performed; there is no established effort to identify hazards and worse of all, management cannot positively tell whether the operations are safe or unsafe (Wood, 1997).

On adhering to the convention, states agree to comply with certain principles and arrangements in order that international civil aviation may be developed in a safe and orderly manner. It is a contracting state responsibility to plan and establish an effective safety oversight system because the absence of such threatens the safety of international civil aircraft operation (ICAO-A, 2006). Civil aviation management planning must document its purpose, defined safety performance targets, set evaluation criteria and monitoring schedules. The planed strategy should aim at establishing means and ways to reduce serious incidents and fatal airline accidents. There must be effective means and ways to measure the expected safety performance together with the positive changes that are realised as a result of effective safety management systems. These key indicators and targets are representative of effective management of hazards in the service provider's operational and work area. (ICAO, 2009).

Right from the design stage civil aviation management planning must put safety in perspective and decide exactly where it fits in the organisation and what level of safety is needed. Safety concerns must be well above lip service level where it is only meant to influence operations but placed within the objective level where it is let to drive the operations (Wood, 1997). The modern safety management perspective views accident analysis as an inherently reactive approach to civil aviation safety management, pro-active means that include preventive and predictive measures must be developed and implemented (FSF, 2006). Management planning provides for standardisation of application and implementation of the requirements, there must be work place hazards identification, definition, prevention and control; safety training and performance goals measurements. Safety system are required to focus on these values, ensuring that they are documented, compliant with the minimum established international standards on civil aviation safety; and

there should be established means to ensure continued compliance and development of safety strategies by both the regulator and the regulated (Ganson, 2009).

It is important to know that flight safety objectives cannot be realized unless the industry is prepared to accept the implications of the safety policies, including the need to commit the necessary resources. Safety management strategic planning therefore should analysis, include provisions to sensitise the industry on the importance aviation safety. The confidence the CAA places in civil aviation service providers and the associated freedom and flexibility to administer flight safety is dependent on the service provider's satisfactory demonstration of acceptable documented operational procedures; regulations compliance declaration; effective enforcement means; and the commitment to adopt the recommended industry best practices. The planning function of a civil aviation management is based on the legal provisions of given by national Civil Aviation Act, the associated Civil Aviation Regulations, the Chicago Convention and ICAO minimum Standards and Recommended Practices (SARPs) (ICAO-A, 2006). Civil aviation planning relates to the requirements of the first and second critical elements of a safety oversight system, that requires civil aviation legislation and regulations (Ref. Appendix 5)

2.3 Civil Aviation Organising and Flight Safety

An organization that meets the needs of its existing performance requirements and offers services above the expected minimum, is a reflection of a management system that understands how its internal and external environmental factors influences its performance. Understanding management functions enhances accurate assessment of the expected

performance level which motivates the compliance commitment of the management system (Bateman & Snell, 2004).

Organizing is determining performance activities and grouping them into logical functional sections that constitute the management system in which, people are assigned tasks to perform and achieve personal, team, and organizational success. It is the assembling and coordination of human, financial, material and information, resources to effectively and efficiently execute organizational activities. Controls are set in place to ensure that proper level and quality of resources are available to the organization at all times (Gubbins, 1996). A good plan goal cannot be realize unless there is in place appropriate organization system which ensures that activities are performed. Organising is establishing roles, activities and to create an environment conducive for human performance. The structured roles ensures that the organisation as a whole, the departments, sections and individuals execute their activities in an acceptable standard procedural manner that has been established to deliver results that contribute to the corporate objective. The roles are organised to ensure that what people do, has a definite purpose and their output fit into the holistic organisation objective (Bateman & Snell, 2004).

The International Civil Aviation Organisation (ICAO) observed that safety oversight systems that set themselves ambitious civil aviation management and flight safety objectives without deploying the necessary means and resources to deliver such objectives, can not realize the desired acceptable level of safety performance (ICAO, 2009). To establish and implement an effective safety oversight system, contracting states need to consider the issues which will provide safety defence tools; a framework and a base line for safety-related policy

and associated procedures. States are expected to organise safety requirements in a way that assumes the shared responsibility of the whole spectrum of civil aviation activities and functions between the State and the aviation community. A regulatory management system must provide implementation and compliance guidance information and standard compliance evaluation and enforcement reference material (ICAO-A, 2006).

Systems determine behaviors and events, often, we focus more on the events and behaviors with a danger of failing to see the larger picture, yet for organizations to perform there must be effective structures, and all relevant resources in place supplemented by effective leadership (McNamara, 2002). ICAO's guidance information on the establishment an effective safety oversight system recommends that a flight safety management structure should include an operations, airworthiness and personnel licensing sections appropriately staffed with qualified inspectors and officers. Effective compliance is achieved through provision of appropriate industry guidance information, while performance of the management system is realised through provision of standard inspector's implementation evaluation and enforcement tools (ICAO-A, 2006).

Civil Aviation management organising relates to the requirements of the, third, fourth, fifth and sixth critical element of a safety oversight system which requires establishment of an appropriate civil aviation management institution, employment of qualified personnel to perform the safety oversight functions, development and provision of technical information to guide the industry to implement and comply in a manner that is standard and trusted to realize the expected safety performance and standard tools for the inspectors to perform the licensing, certification, authorisation and/or approval obligations. Ref. Appendix 5.

2.4 Civil Aviation Control and Flight Safety

Civil aviation control is legally empowered by Civil Aviation Act, the associated Regulations, the Convention and ICAO minimum Standards and Recommended Practices (SARPs). To achieve international civil aviation safety standards, Article 12 of the Chicago requires each contracting state to develop and keep its own regulations uniform to the greatest possible extent with those established from time to time under the convention to enable its safety management system and the service providers to develop capacity and capability to execute its safety functions to attain the acceptable level of safety (ICAO-A, 2006).

Henry Fayol (1841-1925) a classical scientific management scholar defined control of an undertaking as a means ensuring that everything is being carried out in accordance with the plan which has been adopted, the orders which have been given, and the principles which have been laid down. Its objective is to point out mistakes in order that they may be rectified and prevented from recurring. It is the measurement and correction of performance in order to make sure that enterprise purpose and objectives are accomplished. Control is a systematic effort by business management to compare performance to the predetermined standards, plans and objectives in order to determine whether performance is in line with these standards and where necessary, to take remedial action. It monitors to ensure that human and other corporate resources are being used in the most effective and efficient way possible to achieving corporate objectives (Hallsall, 1998).

There is a close link between planning and controlling, while planning is a process by which an organization's objectives and the methods to achieve the objectives are designed,

controlling is a process which measures and directs the actual performance in compliance with the planned objectives. Organisation planning control instruments and tools like the state Acts and regulations dictate the operational environment and scope within which the management system must function. Civil aviation management control relates to the seventh critical element that calls for audit and surveillance of the service providers to verify operational compliance and procedures in place to enforce continued compliance, and the eighth critical element, (Ref Appendix: 5) that requires submission of corrective action plans and establishment of procedures to resolve safety concerns identified during audit and surveillance (ICAO-A 2006).

Controlling includes monitoring and evaluating the implementation of a plan or project, it ensures management that activities are in compliance with requirements. Inspections, audits and surveillance functions identify the undesirable occurrences, ineffective guidance, procedures and regulations (Bateman & Snell, 2004). Civil aviation control is entrenched in flight safety management and administration through the structured process of pre certification, approval and licensing evaluations, safety surveys, audits and enforcement measures.

Effective civil aviation flight safety control is dependent on the provisions in the state civil aviation Act which mandates the establishment of a state civil aviation management institution, the development and promulgation of the civil aviation regulations. The convention requires that the Act and the regulations confer the necessary authority to the management institution to oversight and to enforce compliance with the regulations and the standard and recommended practices.

The key issue in modern aviation safety control resides in the provisions put in place to control risks and operational errors. Commercial civil aviation is considered safe when it is undertaken in compliance with an inherently safe management system. In this regard, safety is increasingly being viewed as the outcome of the management of organizational processes, which have the objective of keeping the safety risks and consequences of hazards in operational contexts minimal and under organizational control. Safety is defined as the state in which the possibility of harm to persons or damage to property is reduced to and maintained at or below, an acceptable level through a continuing process of hazard identification and safety risk management. It is has been observed that less than optimum workplace conditions foster active failures by operational personnel, therefore, in addition to regulation and SARP's compliance and enforcement, civil aviation safety planning and organising should focus on improving workplace conditions to contain failures, because it is the concatenation of all these factors that controls risks and produces safety breakthrough (ICAO, 2009).

More pro-active control approaches and a safety culture should be adopted. Organizations that simply comply with the minimum standards set by the regulations are not well situated to identify emerging safety problems. Safety culture about enduring values and attitudes regarding safety issues shared by every member at every level of an organisation. It is the extent to which every individual and every group of the organisation is aware of the risks and hazards induced by its activities and how the group is continuously behaving so as to preserve and enhance safety; the willingness to adapt itself when facing safety issues; the willingness to communicate safety issues; and the commitment to consistently evaluate safety related behaviour, (Piers, Montijin & Balk, 2009).

To enhance safety control, ICAO issued requirements for the states to develop a State Safety Program (SSP) to facilitate the implementation of Safety Management System (SMS) by the service providers with a purpose of promoting safety assurance. SSP is defined as an integrated set of regulations and activities aimed at improving safety. It includes promulgation of regulations and directives by the State to support fulfillment of its responsibilities concerning safe and efficient delivery of aviation activities in the State. It requires a definition for acceptable level of safety (ALoS) for civil aviation, carrying out performance-based compliance oversight audits and surveillance on Organization's safety management system (SMS). SMS in particular includes establishment of the "No Blame Just Culture" which requires establishment of an effective error reporting system; definition and a clear separation between the "un safe acts" to which disciplinary action is neither appropriate nor useful and "truly bad behavior" that deserves punitive action.

Besides the safety management system, it has been observed that to a large degree, modern management is an exercise of controlling costs. It eliminates the cost of doing something wrong and the cost of doing something twice when it could have been done correctly in the first place. Aviation like any other industry is driven by economic forces, regulatory authorities are encouraged to define the economic benefits of safety performance, otherwise the desired response to safety culture implementation will not be realised. Safety by its self generates a lot of sympathy but very little action; it's only the economics of safety that may generate action, (Wood, 1997).

2.5 Summary of the Literature

Civil aviation industry is strictly controlled by an international convention which dictates the minimum acceptable management system regulatory requirements that must be complied with by the state civil aviation management system. This enables the service industry to develop to an acceptable level of flight safety performance. An effective safety management system is designed in compliance with the eight critical elements of an effective safety oversight system, (Appendix 5).

The literature has emphasised the importance of the planning, organising and controlling operational management functions in the designing and operationalising of an organisation management system for effective performance. It has also identified gaps listed below in a civil management system which if not addressed will negatively impact on flight safety performance and aircraft incidents and accidents control.

1. Failure to develop and issue regulations that are compliant with international minimum requirements and recommended practices established to standardise safety performance in Uganda civil aviation flight safety would greatly be impaired.

2. Effective implementation of the requirements is dependent on the guidance information issued. Failure to develop relationship of shared responsibility between the regulator and the regulated to address safety issues as partners significantly compromises collective safety management.

3. Controls monitor and evaluate compliance; keep hazards and their risk consequences in focus. Without effective control measures, the operation performance drift will not be

observed. Control provides the base-line for pro-active or predictive safety practices; and a means to keep safety risks and consequences of hazards in the operational area under organisation control. If the State Safety Program (SSP) requirements are not mandated, Safety Management Systems (SMS) implementation will considered optional.

CHAPTER THREE

METHODOLOGY

3.0 Introduction:

This chapter gives a description of the research design, the population and the sampling techniques. It also provides explanation of the data collection methods, data collection instruments, instruments validity and reliability pre-testing, procedures and techniques were adopted to collect and analyse data.

3.1 Research Design

The study was cross sectional survey. This design, is recommended for studies that are seek information from the field on a study topic over a short period of time from a sample of the population at a particular time in a non contravened setting, to examine and analyse the existing situation, (Amin, 2005). A triangulation of quantitative and qualitative research approach techniques were employed to obtain the study sample size; to collect and analyse data. To examine how civil aviation management influences flight safety, the field data was subjected to Pearsons correlation analysis to verify if civil aviation management has any significant relationship with flight safety. There after it was subjected to multiple linear regression to establish the significance and magnitude of the influence. Quantitative techniques were adopted because they give objective results, while qualitative was adopted to obtain in depth information on specific issues to supplement the quantitative results. The research was guided by the study objectives; and it was prepared and presented in a form of a dissertation.

3.2 Study Population

The study population included CAA(U) seven (7) flight safety inspectors; fourteen (14) certified air operators; fifteen (15) approved maintenance organisations; fifty (50) licensed pilots; and sixty (60) licensed engineers.

Table: 3.1 below shows the elements of the study population, the targeted population, the sampled population, the sample size and the sampling strategy employed to obtain the sample size figures.

Table 3.1. Study Population

	Element of the Population	**Target Population**	**Sampled Population**	**Sample Size**	**Sampling Strategy**
1	CAA Flight Safety Inspector	7	7	7	Census
2	Certified Air Operator	14	8	8	Census
3	Approved Maintenance Organisation	15	10	10	Simple Random Sampling
4	Commercial Licensed Pilot	50	15	14	Simple Random Sampling
5	Licensed Maintenance Engineer	60	20	19	Simple Random Sampling
	Totals	**146**	**60**	**58**	

Source: CAA - Flight Safety Standards Document Centre.

Of the 146 target population only sixty qualified to the sampled population. These included: seven CAA flight safety inspectors; eight certified air operators with current licenses at the time; and ten (10) approved maintenance organisations with the main operating base in Uganda and current licenses at the time, these were Air Uganda, Air Serv, Eagle Air, Uganda Air Cargo, 540 Uganda Limited, Uganda Police Air Wing, Turbo Prop Service Center, Soroti Civil Aviation Academy; (15) pilots and twenty (20) engineers who were employed by organisations based in Uganda; holding pilots or engineers license issued by Uganda CAA that were current at that time.

3.3 Sample Size; Sampling Technique and Procedure

The study sample size of fifty eight (58) respondents were selected from the sixty sampled population by application of the Census and Krejcie and Morgan's (1970) table of population sampling, ref. Appendix 8. The census sampling strategy was applied where it was the only applicable strategy to the relevant sampled population. Simple Random Sampling where applied, was adopted because it gives equal opportunity of selection to all candidates, (in this case all sampled population candidates were equally qualifying) and purposive sampling was not relevant, Krejcie and Morgan's table (Appendix 8) was therefore an appropriate objective strategy to apply, Ref. Table 3.1 above.

3.4 Data Collection Methods

Primary and secondary data collection methods were adopted in this study. Primary data collection methods recommended for triangulation research design were employed to collect

data from the respondents, while secondary data collection methods were used for literature desk research and documentary review.

3.4.1 Primary Data Collection Methods

Primary data was collected using a self managing Likert Scale questionnaire, and an interview schedule.

The questionner was issued out to the fifty eight respondents to fill and return to the researcher. It was used because the study social climate and / or the research environment was open enough to allow full and honest answering, the respondents were able to read and understand the questions and the information required was straight forward, brief and not controversial (Denscombe, 1998).

The interview guide (Appendix 2), was used to collect qualitative data from key persons responsible for flight safety in their respective organisations. They were conducted to get in-depth information on key areas on each objective (Amin, 2005).

3.4.2 Secondary Data Collection Methods

Review of existing literature and documents in search of pertinent information relevant to the study was the Secondary data collection method adopted.

The review of the relevant literature was the main secondary data collection method; it was curried out under the study objectives sub-headings. Books, periodicals, journals, organisation & government publications were reviewed to collect information that is presented in chapter two of this study.

Documentary Review data collection method was used to collect specific pertinent information that was required for the study. It focused on CAA records documents. This information was used to in the study background and the study population in chapter three.

3.5 Data Collection Instruments

3.5.1 Questionnaire

The self managing Ordinal Likert Scale questionnaire was sub-divided in three sections: Section 1- has background information of respondents; Section 2 has statements relating to the independent variable dimensions civil aviation planning, organising and controlling, while Section 3 has statements on the dependent variable. Ordinal Likert Scale questionnaire were used because it is recommended for studies that are seeking respondents feelings towards the situation under study. The instrument was designed on values assigned and ranked 5 to 1 in order of; 5-Strongly Agree; 4-Agree; 3-Un Certain; 2-Disagree and 1-Strongly Disagree. Ref. Appendix 1. The ordinal scale measurement of variables was adapted because it is recommended for measurement of variables of a study that are seeking to draw conclusions based on percentages of respondents response as opposed to the nominal scale which is recommended for mutually exclusive and interval variables (Sekaran, 2003).

3.5.2 Interview Guide

An Interview Guide (Ref. Appendix 2) was used to collect qualitative data, in a form of detailed information in the respondent's experience (Denscombe, 1998) it supplemented information that was obtained from the field questionnaire responses.

3.5.3 Documentary Review

The documentary review was a study of records kept by CAA (U) Flight Safety document centre. The review was guided by a documentary review checklist (ref. Appendix 9) was to obtain information on aircraft accidents in Uganda; organisations that have been approved by CAA(U); organisations based in Uganda with current approval certificates; pilots and engineers who have been issued with Uganda licences, those with current licences and those working for organisations based in Uganda.

3.6 Pre-testing of data collection instruments

3.6.1 Validity

The questionnaire instrument was subjected to expert face validity and theoretical content validity tests to ensure that they satisfactorily correspond to the content of the theoretical concept of the study variables and sampling validity of the study variables dimensions indicators. The face validity results were also used to compute the Content Validity Index (CVI) result of 0.88, (ref. Appendix 3). The CVI is as indication of the degree to which the instrument corresponds to the concept it is designed to measure. Amin, (2005) recommends that a CVI of 0.7 is the recommended minimum.

3.6.2 Reliability

The questionnaire instrument was subjected to a three respondent's test – retest reliability pilot test with a twenty one (21) days period interval to verify its reliability and dependability to deliver consistent results. A Coefficient of Stability value of 0.803 (80.3%) received, (ref. Table: 1 of Appendix 4) meant that the instrument was stable, reliable and could be depended

on to give consistent repeated results to a magnitude of 80.3 %. The higher the Coefficient of Stability, the better is the instruments reliability (Amin, 2005).

The primary data was also subjected to the Scale Cronbach Coefficient Alpha analysis reliability test to further confirm the instrument internal consistence and reliability. The test result for the instrument items was 0.886 (88.6%). According to Mugenda and Mugenda, (1999), the instrument Cronbach Coefficient Alpha value should be at least 0.8, (the Coefficient Alpha reliability scores are given in Appendix: 4).

3.7 Procedure for Data Collection

An introduction letter from the UMI program manager for MMS (Appendix: 7) was used to introduce the researcher to the different organization to obtain permission to distribute the questionnaires, conduct the interviews with the employees, and to gain access to information records for documentary review.

Permission to obtain information from the Civil Aviation Authority Flight Safety Standards records and document centre was sought. Organisations, pilots and aircraft maintenance engineers who satisfy the sampled population criterion were identified. The questionnaires were distributed to the study sample size.

A total of ten key informants' three CAA safety inspectors and seven persons who were directly responsible for safety management in flight safety services provider organisations were interviewed using the interview schedule. Ref. Appendix 2.

3.8 Data Analysis

3.8.1 Quantitative Data Analysis

After the data was collected, it was organised to permit a review of each response received to identify and sort out invalid responses. Questionnaire items were coded in respect to the study variable they relate to. The items were then entered into the Statistical Package for Social Sciences (SPSS) and subjected to descriptive frequencies statistics analysis compute and present the primary data in a summarised form of frequencies and percentage response per item. The results interpretation is presented in chapter four.

The study general objective is to examine how civil aviation management influences flight safety in Uganda. The data was subjected to Pearson's correlation analysis to find out if the variables have a linear relationship, its magnitude and direction. The Pearson's Product-Moment Correlation coefficient (r) statistics ranges from -1 to +1, the bigger the coefficient absolute value the stronger is the relationship between the two variables. The coefficient values of (+ or -) 0.3 and below represent a reasonably weak relationship, while values of (+ or -) 0.7 represent a strong relationship (Mugenda and Mugenda, 1999).

Linear regression analysis was carried out to find out how the independent variable dimension influences or affect flight safety and to test the study hypothesis. Regression coefficient significance (Sig.) result of $p < 0.05$ assumes that the coefficient result is true with a 95% level of confidence. Significance result of $0.05 < p < 0.1$ assumes 90% level of confidence, while significance result of $0.1 < p$ indicate that the coefficient result obtained are un-reliable and are statistically not significant (Gupta, 1999).

3.8.2 Qualitative Data Analysis

Notes taken from the interviews were analysed using the thematic and deduction strategy. The analysis aimed at collecting information on the theme in the question from the respondent response. The respondent's responses were analysed with a purpose to identifying common trends of agreement or disagreement on the item under discussion (Amin, 2005). A summary of the deduced information on the interview items was integrated in the discussions and interpretation of the descriptive statistics results of the related and relevant items in chapter four.

CHAPTER FOUR

PRESENTATION, ANAYLSIS AND INTERPRETATION OF RESULTS

4.0 Introduction

In this chapter the results are presented, analysed and interpreted. The main objective of the study was to examine how civil aviation management influences flight safety in Uganda. The chapter presents the response rate, results of the demographic characteristics of respondents; and empirical findings. The analysis of the data is both quantitative and qualitative. The results presented in this chapter reflect the objectives that guided the research.

4.1 Response Rate

Of the fifty eight questionnaires that were issued out, only fifty (50) passed the data response cleanup process for acceptance to be used for data analysis. This represented a response rate of 86%. Rejection of the responses was due to questionnaires returned when not fully completed, and failure to make contact with the respondent.

4.2 Demographic Characteristic of the Respondents

This section presented the background information on the study respondents in regard to work-place organizations, their current occupation and how long they have served in the civil aviation industry. This information was considered useful in that it would reveal the professional relevance and the knowledge base of the respondents to give informed responses to the civil aviation management questionnaire items.

4.2.1 Respondents Work-place Organisation

The data also revealed the various work places at which the different respondents were employed. This is indicated in Table: 4.1. From the Table it can be observed that out of the fifty respondents, 58% work with Air Operators, 20% work for aircraft Maintenance Organisations, 14% work for Civil Aviation Authority Uganda and 8% are employed by an Aviation Training Organisation (ATO).

Table: 4.1 Respondent Work-places Organisation

		Frequency	Percent(%)
	Air operator	29	58.0
	Maintenance Organisation	10	20.0
	CAA	7	14.0
	Aviation training Organisation	4	8.0
	Total	50	100.0

Source: Field Data

This result shows that all types of approved organisation in Uganda were sampled. This was required to improve the representation of the sample to the Organisations in Uganda. The Air operators respondents were many 58%, because they employ both the pilots and engineers, while maintenance organisations employ engineers only.

4.2.2 Respondents Occupation

The occupation of the respondents was also considered in the study. Results of the findings are illustrated in Table 4.2 which highlights the respondent's profession. From the table it is

observed that 28% of the respondents were pilots, 38% were licensed aircraft maintenance engineers, 14% were CAA safety inspectors and 20% were civil aviation organisation management personnel.

Table: 4.2 Respondents Occupation

		Frequency	Percent(%)
	Pilot	14	28.0
	Licensed engineer	19	38.0
	CAA Safety Inspector	7	14.0
	Management	10	20.0
	Total	50	100.0

Source: Field Data

This is an indication that the study respondents were sampled from a wide professional range, enabling to sample a wide application experience, different knowledge, interpretation and understanding of flight safety management in Uganda. Different professional experience was also considered as a factor to improve results representation of the population.

4.2.3 Years of civil aviation service in Uganda

T which the respondents had spent with the civil aviation service in Uganda was analysed and the results are presented in Table 4.3. From the table it is observed that 44% of the respondents had 16 years and above of civil aviation service in Uganda, 40% had 11-15 years, 14% had 6-10 years and 2% had 5 years and below.

Table: 4.3 Years of civil aviation service in Uganda			
		Frequency	Percent (%)
	5 years and below	1	2.0
	6-10 years	7	14.0
	11-15 years	20	40.0
	16 and above	22	44.0
	Total	50	100.0

Source: Primary Data

This result indicates that over 80% of the respondents had experience with the civil aviation industry in Uganda for over ten years. This information was considered significant because the study wished to sample the category of people with the information being sought and experience to respond to the study questionnaires. This would further validate the study results.

4.3 Field Questionnaire Results

This section presents the results that were obtained from the field to examine how civil aviation management influences flight safety in Uganda. The findings are arranged in accordance with the study objectives: civil aviation planning and flight safety in Uganda; civil aviation organising and flight safety in Uganda; and civil aviation control and flight safety in Uganda. The results are summarised and presented in descriptive tables and are interpreted item by item.

4.3.1 Civil Aviation Planning and Flight Safety Field Results

The purpose of this theme was to find out how civil aviation planning influences flight safety. Civil aviation planning element was civil aviation management standards and establishment of a national civil aviation management institution (the CAA). This includes instituting a well structured CAA, developing and issuing regulations that are compliant with the international standards established by ICAO. This section presents the results of responses to the 10 statements in the questionnaire that focused on civil aviation planning dimension; it also presents results and interpretation of the linear regression of civil aviation planning and flight safety.

Table: 4.4 below, presents the respondent's response in percentage results obtained from the primary data descriptive analysis to civil aviation planning questionnaire items.

Table: 4.4 Response Results on Civil Aviation Planning and Flight Safety (P) Items.

Scale Key: **SA**-Strongly, Agree; **A** – Agree; **UC**–Uncertain; **D** –Disagree; **SD**-Strongly Disagree

	Number of Respondents (N) = 50	**Scale**				
	Statement	**SA %**	**A %**	**UC %**	**D %**	**SD %**
P1	The Civil Aviation Regulatory institution in Uganda should be compliant with the ICAO standards	46	54	0	0	0
P2	The compliance status of a Civil Aviation Authority is reflected in industry performance	36	64	0	0	0
P3	Services providers are Approved after demonstration of compliance with the requirements.	14	44	0	42	0
P4	Acceptable Level of Safety performance has been defined by CAA	0	6	0	84	10
P5	The CAA has the capacity to handle the civil aviation activity scope in Uganda	8	16	0	74	2
P6	To realize safety performance safety concerns should be placed where they influence operations	16	54	12	18	0
P7	The Regulations promote the adoption of pro-active safety measures as a means to prevent accidents and incidents	10	16	2	68	4
P8	Work analysis, risks and hazards identification in work areas is an incident and accident preventive measure	16	82	0	2	0
P9	It is a Contracting State obligation to adopt ICAO recommended industry practices	16	68	0	16	0
P10	Implementation / Compliance audits are regulatory requirements.	4	70	0	22	4

Source: Primary Data

The results of item P(1) in Table: 4.4 indicate that all the respondents (100%) agreed that Civil Aviation Authority must be compliant with the international standards established by the International Civil Aviation Organisation (ICAO). It meant that the respondents are knowledgeable of the contracting state obligations to the Convention. Article 12 of the Chicago Convention requires that each contracting state develops and implement Civil Aviation Regulations that are uniform to the greatest possible extent with the Annexes and the minimum international Standard and Recommended Practices (SARPs) established from time to time under the convention.

The results of P(2) in Table: 4.4 show that 100% of the respondents agreed that the compliance status of the Civil Aviation Authority is reflected in the industry performance and level of compliance. The regulatory institution is obliged to comply with ICAO Standards and Recommended Practices, that's why ICAO subjects each contracting state to an implementation and compliance audit after every five years. Civil Aviation Authority is responsible for establishing civil aviation management baseline upon which the industry flight safety administration is based. The level of the industry performance as the field results indicated will reflect the level of civil aviation management standard. A compliant management system will indeed have a safe flight safety industry.

The results on P3 in Table: 4.4 indicate that 58% of the respondents agreed while 42% disagreed that service providers are approved after demonstration of compliance with the requirements. The 42% disagreement response is a very high percentage meaning that many approvals are issued before the service provider has satisfied the requirements.

The interview response on this issue indicated that there are operators who use "external pressure" to be permitted to start operations while working on the observed unsatisfactory requirements. The CAA safety inspectors however clarified that any exemptions granted are normally provided for in the regulations and do not in any way subject the operations to obvious safety risks, and that such cases are very few because demonstration of regulation compliance is a pre-requisite to organisation approval.

The Acceptable Level of Safety (ALoS) is defined as the minimum degree of safety that must be demonstrated and assured to be in practice by an organization safety system. The results of P4 in Table: 4.4 indicate that 94 % of the respondents disagreed that there was any information on what the Acceptable Level of Safety means. The interviewed respondent's results further re-affirmed that there were neither regulations nor guidance information on the acceptable level of safety, even the CAA safety inspectors were not versed on what it is! The literature indicated that the process that leads to defining the acceptable level of safety requires the inspectors to undergo a basic State Safety Program (SSP) training, the CAA to develop and issue requirements for the service providers to development and implementation of SMS program.

The interviewed respondents revealed that some operators had trained their safety officers in SMS, however without a clear definition of the targets that would express its attainment, it was not possible for one to know the indicators of its realization. The safety inspectors clarified that SMS is a new pro-active, preventive and ultimately a predictive safety innovation that had been mandated by ICAO in the recent past to supplement the traditional regulatory compliance which is viewed as reactive to accidents and incident.

ICAO safety management manual defines safety measurement concept as the quantification of selected high-level State functions, such as the status of development/implementation of primary aviation safety legislation (The Civil Aviation Act), the status of development/implementation of specific operating regulations (The Civil Aviation Regulations), and the level of regulatory compliance within the State or the absence of such thereof. From the service industry perspective, it includes the quantification of the outcomes of selected high-level, high-consequence events, such as accident and serious incident rates. Safety measurement is not a continuous process but rather spot checks and audits conducted after pre-specified time frames to verify status and level of these functions, for example, the five yearly ICAO Universal Safety Oversight Audit Program. Safety measurement audit results reflect the extent to which the established safety standards have been developed and implemented by the State. (ICAO, 2009).

The results of statement P5 in Table: 4.4 indicate that 24% agreed and 76 % disagreed that CAA has the capacity to handle the civil aviation activity scope in Uganda.

The interviewed service providers' respondents on the issue expressed concern over delays to evaluate technical manuals when submitted for approval. They commented that CAA inspectors do not carry out surveillance audits and that the certification processes takes too long which is believed to be due to the insufficient numbers of inspectors.

The Authority safety inspectors interviewed commented that there is no basis to assess and establish the satisfactory number of inspectors for a specific industry size. A concern was also raised on lack of inspector's specialized training notably, State Safety Program (SSP), Safety Management Systems (SMS), accident investigation and modern safety oversight

audit techniques. The inspectors interviewed were of the view that CAA has the capacity and capability, however when the new regulation were issued and all organisations and operators had to be re-certified, this resulted in a surge of recertification applications on top of the normal day safety management activities for the CAA. This could have resulted in what the respondents observed as lack of capacity expressed by the 76% questionnaire respondents.

The results of statement P6 in Table 4.4 indicate that 70% agreed that safety performance is realized by placing safety concerns where they influence operations, 18% disagreed and 12% were not sure. The traditional business minded aviators argue that all flying organisations are formed to achieve specific business goals not safety, in other words whatever the business is, the primary objective is not to just be safe. The aviation business industry today cannot sustain this approach any more. Safety issue must be above lip service of common slogans like "Safety First" which only sound impressive. The mere mention of the safety does not make everyone drop what they are doing and focus on safety, therefore it is required to put safety in clear perspective and decide exactly where it fit depending on the level of safety needed. Safety should be placed at the primary objective level where it is let to drive the operations (Wood, 1997). Most aviation operations and maintenance standards are really safety standards. They were developed as a result of a safety concern, these standards have to be incorporated in the practical processes otherwise they get ignored in favor of getting the job done. Most of the interviewed respondents agreed that it is important to integrate safety in the functional procedures. However, a few were of the view that the regulation compliance approach to safety was just as good. This result means that while a big percentage of the

respondents appreciated the importance of integrating safety in the work processes. There is still a big percentage that should be sensitized about the modern SMS pro-active or predictive approach where accidents must be prevented but not to learn from their experience.

The results of statement P7 in Table 4.4 indicate that 26% of the respondents agreed, 72% disagreed while 2% were not sure that adoption of proactive measures to prevent accidents is emphasized by the regulations. This result indicates that there is no regulation that requires civil aviation service providers to adopt and implement the SMS proactive approach to safety management.

Pro-active approach to safety requires the adoption of the "Safety Culture" or the "Just Culture". Its about the extent to which every individual and every group of the organisation is aware of the risks and hazards induced by its activities, how does it respond so as to preserve and enhance safety, the willingness to adapt itself when facing safety issues; does it have the willingness to communicate safety issues; and the commitment to consistently evaluate safety related behaviour. Without the regulation, the pro-active approach to safety becomes optional, in the entire history, safety alone does not initiate action unless it has been mandated or it is economically beneficial. This means that the SMS pro-active, predictive approaches would not be adopted if there is no regulation mandating it (Wood, 1997).

The results P8 in Table: 4.4 show that 98% of the respondents agreed and only 2% disagreed that work analysis, risk and hazards identification in work areas is a required preventive measure. A review of the regulations revealed that all air operators, maintenance organisations and aviation training organisations are required to appoint an appropriately qualified quality manager who should be privileged to carry out independent internal quality

and compliance audits and to enforce corrective actions. This result means that the service providers are aware of the regulation's quality management requirement. On the other hand, work analysis, risk and hazards identification, risk consequence analysis probability of risk occurrence and risk severity are the key factors is risk index analysis and risk tolerability evaluation.

The results of P9 in Table: 4.4 indicate that 84% of the respondents agreed while 16% disagreed that the State (Uganda) is obliged to adopt and implement International Civil Aviation Organisation (ICAO) Standard and Recommended Practices (SARPs). This implies that the majority of the respondents were knowledgeable of contracting states obligation to the December 7, 1944 Chicago Convention on International Civil Aviation. Under Article 12 of the Convention, contracting state are obliged to develop and implement Civil Aviation Regulations that are uniform to the greatest possible extent with the Annexes and the minimum international Standard and Recommended Practices (SARPs) established from time to time (ICAO, 2006).

However, during the interview some respondents were of the view that the State should not just adopt all ICAO recommended industry practices, they observed that many were more relevant to international and intercontinental operation. It was argued that they do not have any provisions for local nor regional acceptable standards. A review of the provisions of Article 12 of the convention indicates contracting states civil aviation regulations must be uniform to the greatest possible extent with those issued under the convention which leaves very little room for local standards considerations. Some international requirements were observed to be of minimum local and regional relevance at the time.

However, when establishing the Global Aviation Safety Plan ICAO observed that air transport travelling public is entitled to standard internationally acceptable flight safety wherever they are and that, to reduce aviation accidents and incidents a high degree of global corporation is required because aviation safety is not a national; regional; or continental issue, it is a global issue.

The results of item P10 in Table: 4.4 indicate that 74% of the respondents agreed that Implementation and Compliance audits are regulatory requirements, while 26% disagreed. This result means that the civil aviation industry is aware of the independent quality system regulation requirements. Compliance audits are important to ensure there are no deviations from the established standards, they provide feedback information to planning and organising functions to amend or improve procedures and they measure the organisation level of compliance with the requirements. Safety audits and surveys are important implementation and compliance control regulatory requirements, if they are documenting them in the regulations will promote preventive Flight Safety administration.

4.3.2 Civil Aviation Organising and Flight Safety Field Results

The purpose of this theme was to find out the significance of the influence of **c**ivil aviation organising is to flight safety. Civil aviation organising elements include: provision of guidance information; establishing compliance procedures and standard means of implementing and enforcement. This section presents the results of responses to and the interpretation of the ten items on civil aviation organising dimension, it also presents results and interpretation of the linear regression of civil aviation organising and flight safety.

Table: 4.5 below presents the respondents response in percentage results obtained from the primary data descriptive analysis to civil aviation organising questionnaire items

Table: 4.5 Response Results on Civil Aviation Organising and Flight Safety (O) Items

Scale Key: **SA**-Strongly, Agree; **A**–Agree; **UC**–Uncertain; **D**–Disagree; **SD**-Strongly Disagree

	Number of Respondents (N) = 50	**Scale**				
	Statement	**SA%**	**A %**	**UC%**	**D%**	**SD%**
O1	Resources allocation influences organization safety performance	26	64	8	2	0
O2	Guidance on how to develop organization purpose and performance has been Issued	4	28	0	58	10
O3	The CAA and operators have shared responsibility for aviation safety management	22	28	4	46	0
O4	Sufficient safety standards implementation guidance information has been issued.	4	32	0	64	0
O5	Service Providers approvals are based on safety management competency	0	54	0	46	0
O6	Requirements compliance evaluation and implementation are performed uniformly.	2	70	26	0	2
O7	Safety performance procedures are documented and practiced	6	42	0	52	0
O8	Errors and violations have been defined and differentiated.	0	0	0	88	12
O9	The Regulations are favorable for the Civil Aviation industry in Uganda	0	24	0	74	2
O10	The types of aircraft accepted on the Uganda Register are defined	0	80	0	18	2

Source: Primary Data

The results of item O1 in Table: 4.5 show that 90% of the respondents agreed while only 2% disagreed and 8% were not sure that resources allocation influences safety performance. This result means that the respondents are aware of the importance of effective resource provision to organisation performance and management. The organisation in particular, should have sufficient numbers of appropriately qualified personnel and they should be well facilitated with knowledge, equipment and technical literature to enable them to carry out their duties.

The ICAO safety management manual states that safety oversight systems cannot realize the set safety management objectives without provisioning the necessary means, material, financial, and human resources (ICAO, 2006).

The results of statement O2 in Table: 4.5 show that 32% of the respondents agreed while 68% disagreed that guidance information on how to develop organisation purpose and expected performance has been issued. This result indicate that guidance information has not been issued on how to organisation safety purpose and performance. These should be formulated and strategically planed for. Wood (1997) asserts that "all civil flying organisations are formed to achieve certain business goals, not safety". Their mission is normally to satisfy the objectives of their stake holders, not just to be safe. This means that without mandatory safety requirements and implementation guidance information the services providers may not put sufficient emphasis on safety concerns.

The interviewed respondents disagreed, that there guidelines to formulate organisation safety objectives and expected performance levels. Therefore there is no established means to measure and assess the safety performance. This meant that without guidance information, safety objective realisation is normally just assumed. The interviewed respondents further

indicated that the 32% respondents, who agreed, could have represented organisations that strive for safety standards higher than the minimum established.

The results of Statement O3 in Table: 4.5 show that 50% of the respondents agreed that CAA and the flight safety services providers have shared responsibility for civil aviation safety management while 46% disagreed and 4% were not sure. Some of the interviewed respondents on the statement believed that traditional view of Regulator / Regulated still prevails, where the regulator is viewed as the enforcer and the service provider the implementer and not a partner in safety management. This belief conflicts with the safety management system approach which requires open error reporting and sharing of safety concern experiences in the industry minimise errors, incidents and accidents re-occurrence. ICAO safety oversight manual "The Establishment of a State Oversight System" recommends that contracting states should organize safety requirement in a way that assumes shared responsibility between the state regulatory institution and the service providers for the whole spectrum of civil aviation activities and functions.

The results of statement O4 in Table: 4.5 show that 36% of the respondents agreed that the civil aviation management system had issued sufficient safety standards guidance information to help the service providers implement the requirements, while the majority 64% disagreed. The majority disagreement is a significant negative indicator on the compliance status of the requirements of the ICAO Fifth Critical Element (ref. Appendix 5) that requires issuance of guidance and technical information. This implementation provides an important and significant operational relationship between the management system requirements and the flight safety service provider's safety performance. Effective guidance

information eliminates requirements misinterpretation, standardises implementation, compliance and compliance evaluation (ICAO-A, 2006). This result implies that the guidance information that had been issued was not sufficient, and this could have had a significant contributed to Uganda's safety oversight implementation poor performance in the ICAO USOAP of November 2008.

The results of statement O5 in Table: 4.5 show that 54% of the respondents agreed and 46% disagreed that organisations approvals are based on safety management competency. This result indicates almost a 50% / 50%, agree / disagree response. The 46% respondents who disagreed raises a concern of what the basis of approval is? The interviewed respondents clarified that declaration of compliance with all the relevant regulation and demonstration of availability of the necessary recourses to operationalise the requirements was the basis of approval. The State Safety Program (SSP) regulations to mandate the establishment and implementation of Safety Management System (SMS) had not been issued, in which case safety management competency could not be the criteria for organisation approval. However, the 54% of the respondents who agreed represent a significant percentage. The interviewed respondents were of the view that SMS is a new concept in civil aviation safety management which had not been mandated, but the service providers who had already implemented it felt it should have been included in the approval criteria.

The results of statement O6 in Table: 4.5 show that 72% of the respondents agreed that evaluations for implementation and compliance are carried out in a standard manner, 2% disagreed while 26% were not sure.

The 26% of the respondents who were not sure that there is a standard format of evaluating requirements compliance prior to approval or during surveys and audits raises serious concern. This could have meant that there are no safety inspectors' guidelines on compliance evaluation or, if the guidelines are there, then the inspectors do not follow them, in which case the evaluation results are not based on a uniform base line. This would further mean that approval recommendations on similar events would differ. The interviewed inspectors were in support of the 72% agreement result, even though the 28% tended to reflect a weakness in the enforcement of applying standardised evaluation format.

The results of statement O7 in Table: 4.5 show that 48% of the respondents agreed that safety performance procedures are documented and practiced while 52% disagreed. This result is almost 50% / 50% agreement / disagreement with the statement. Procedure documentation and approval are pre-requisites for organisation certification, while approved procedures application is a requirement for approval continued validity. The 52% response that the procedures are not documented and not practiced reflected a significant contravention with the Sixth Critical Element of a safety oversight system (ref. Appendix 5) which calls for satisfactory evaluation of the procedures and demonstration of effective means of implementation as a pre-certification requirements. Failure to document the performance procedures and to provide evidence of practicing them, could have also contributed to the poor score result in the ICAO USOAP in November 2008.

Item O8 results in Table: 4.5 show that all respondents disagreed that the CAA has defined and differentiated errors and violations. The interview respondents results also indicated a

disagreement that errors have been defined or differentiated from violations, however, Uganda civil aviation regulations classifies violations as "A" or "B". Any person who contravenes the provision of the regulations is liable on conviction to a fine for each offence and or imprisonment, the value and period of which depends on the classification of the violation. The response therefore should not have been 100% disagreement because at least the violations are indicated. This result however shows that it is important to define what constitutes errors and un safe acts.

The results of statement O9 in Table: 4.5 show that 24% of the respondents agreed that the civil aviation regulations of Uganda are appropriate for the industry, while the majority 76% disagreed. Uganda is a signatory to the December 7, 1944 Chicago Convention on International Civil Aviation, (i.e. it is a Contracting State). Under the convention, contracting states are obliged to establish a civil aviation management system upon which it can declare that its aviation industry delivers services at a level or better than the minimum established by the International Civil Aviation Organisation (ICAO). In this regard a contacting state is required to develop and implement civil aviation regulations that are uniform to the greatest possible extent with the Annexes and the minimum Standards and Recommended Practices (SARPs) (ICAO –A 2006).

The interviewed respondents raised a concern that the convention does not offer local flexibility, common problems sighted include lack of communication, difficulties in understanding the international regulatory regime of civil aviation and the consequences of not meeting the State safety obligations under the convention. They were also of the view that the disagreement that the regulations are appropriate for the civil aviation industry in

Uganda was a reflection of national sentiments, even with the knowledge of the obligations of a contracting state to the convention on. Failure to recognise ICAO minimum acceptable standards regulations would have a negative influence to Uganda civil aviation management compliance status and flight safety performance.

The results of item O10 in Table: 4.5 show that 80% of the respondents agreed that the CAA has defined the types of aircraft acceptable on the Uganda civil aircraft register, while 20% disagreed. The aircraft is the primary component of civil aviation management and flight safety. It is the aircraft that should be operated, flown and maintained safely. It is therefore required to know what aircraft can be accepted on the Uganda register. The 80% respondents agreement indicates that the respondents are aware of the provisions of Regulation 4 of The Civil Aviation (Airworthiness) Regulations "Acceptance of Type Certificate" which emphasizes that an aircraft to be issued with a Certificate of Registration and there after a Certificate of Airworthiness, must be such aircraft type of which there is a Type Certificate issued based on an airworthiness code recognized by CAA (The Republic of Uganda, 2006). A recognized airworthiness code means civil aviation regulations and standards of the state of design relating to the design, material. construction, equipment, performance and maintenance of the aircraft and its components that are acceptable to CAA. Accepting non compliant aircraft on the national aircraft register is a violation of flight safety established standards.

4.3.3 Civil Aviation Controlling and flight safety Field Results

The purpose of this theme was to assess the how civil aviation controlling variable influences flight safety. Civil aviation controlling elements include: the established of means to monitoring, auditing and evaluation of implementation and compliance with the established standards applying the approved procedures and guidelines in the work performance processes. This section presents the results of responses to and the interpretation of the ten items on civil aviation controlling dimension, it also presents results and interpretation of the linear regression of civil aviation controlling and flight safety.

Table: 4.6 below presents the respondent's response in percentage results obtained from the primary data descriptive analysis to civil aviation controlling questionnaire items.

Table: 4.6 Response Results on Civil Aviation Controlling and Flight Safety (C) Items

Scale Key: **SA**-Strongly Agree; **A** – Agree; **UC**–Uncertain – Disagree; **SD**- Strongly Disagree

	Number of Respondents (N) = 50	**Scale**				
	Statement	**SA %**	**A%**	**UC %**	**D%**	**SD %**
C1	Uganda's Regulations are adequate to acquire the international Acceptable Level of Safety.	**0**	**44**	**0**	**56**	**0**
C2	Civil Aviation Management Institution performs regular performance audits and surveys	**0**	**2**	**0**	**90**	**8**
C3	Industry safety audits are performed to identify non conformity for correction and not for penalizing.	**14**	**86**	**0**	**0**	**0**
C4	The certification process entrenches regulatory controls in the service providers procedures	**30**	**52**	**0**	**18**	**0**
C5	Managing operational risks and errors contributes to safety management control	**14**	**70**	**0**	**16**	**0**
C6	Good work-place conditions promotes (fosters) safety performance	**8**	**92**	**0**	**0**	**0**
C7	Uganda has documented a State Safety Program (SSP) to guide Safety Management Systems (SMS)	**0**	**0**	**0**	**90**	**10**
C8	Guiding information to implement the "no blame safety culture" has been issued	**0**	**0**	**0**	**90**	**10**
C9	Civil Aviation Management Institution has defined Safety "un safe acts and bad behaviors .	**0**	**2**	**0**	**88**	**10**
C10	Attaining the Acceptable Level of Safety has operational cost control benefits	**2**	**60**	**16**	**22**	**0**

Source: Primary Data

The results of statement C1 in Table: 4.6 indicate that 44% of the respondents agreed that Uganda civil aviation regulations are adequate to attain the international acceptable level of safety while 56% disagreed. This is almost a 50% / 50% agree / disagree result. The 44% agreement result indicates that the respondents are aware that contracting states regulations are consistent with ICAO standards. This means that if they are compliant with ICAO minimum Standards and Recommended Practices (SARPs) then an acceptable level of civil aviation safety standard can be realized. The 56% of the respondents who disagreed is a very significant percentage; their views could have a relationship with the observation that the acceptable level of safety has not been defined; in which case without its definition it is not possible to confidently state that the regulations can realize it.

The interviewed respondent's results indicated that Uganda civil aviation regulations were ICAO compliant, however the management system lacked an effective arrangement to ensure they are kept revised to the latest amendment of ICAO Annexes that are issued from time to time. This shortcoming could have could have contributed to the poor score result in the ICAO USOAP in November 2008.

The results of statement C2 in Table: 4.6 indicate that 2% of the respondents agreed while the majority 98% disagreed that the civil aviation management institution performs regular audits and surveys to evaluate industry safety performance. This result indicates that the Institution does not carry out any compliance surveys or audits and regular safety performance surveys and audits regulatory requirements to ensure and to enforce continued compliance with the established standards. Interviewed CAA inspectors response on the

statement indicated that at least one annual audit is carried out for the approval certification renewal.

The interviewed service provider's opinion was that the civil aviation management institution does not have the sufficient numbers of inspectors to perform the required regular audits. These results reflect significant shortcoming on the civil aviation management control function capability; and it must have significantly contributed to the poor implementation results score rating in the ICAO USOAP of November 2008.

The results of statement C3 in Table: 4.6 indicate that all the respondents agreed that industry safety audits are performed to identify non conformities for correction and not for executing penalties. This meant that audits findings are not used to penalize but mainly to initiate timely corrective action and measures to prevent re-occurrence. This is in direct support to the "No Blame Just Culture" safety strategy that recommends non punitive voluntary reporting of errors incidents. It is also in support of the open culture where information on error, incidents and accidents is shared with all stakeholders in flight safety industry. The "No Blame Just Culture" however demands clear definitions and clear separation between the "un safe acts" to which disciplinary action is neither appropriate nor useful and "truly bad behaviour or violations" that deserves punitive action. This 100% positive result supports the development the Just Culture.

The results of statement C4 in Table: 4.6 indicate that 82% of the respondents agreed that the certification process entrenches regulatory controls in the service provider's procedures while 18% disagreed. Technical guidance material Advisory Circular number CAA-AC-GEN002A

"Development and Preparation of Technical Manuals" requires the operators as part of the certification process to develop a "Statement of Compliance" for each technical and operations procedures manual. The statement of compliance lists out all the relevant and applicable regulations to the subject procedures and where (chapter, section and page) in the manual the regulation requirements have been addressed. It is required to submit the procedures manuals and all subsequent amendments to CAA for compliance evaluation to ensure that all the regulations have been satisfactorily addressed before they are approved for application. The approved procedures there after provide the base line upon which the organisation functional performance and compliance audits are based. From the 82% respondent's agreement with the statement, it can be reliably concluded that the certification process entrenches regulations controls in the procedures. This significantly promotes regulation compliance and would greatly improve flight safety performance.

The results of statement C5 in Table: 4.6 indicate that 84% of the respondents agreed that managing operational risks and errors contributes to safety management control and that only 16% disagreed. This result implies that the majority of the respondents are aware of the importance of risk management as a tool for promotion of flight safety management. It indicates that there is committed effort to analyse work processes to identify risks and hazards to safety in operational areas and creating an environment conducive enough for employees to report observed or experienced safety related errors. It also indicate that impediments to Error Reporting System in particular, human nature's tendency to deny that we make mistakes, fear of retribution or punishment for disclosing such mistakes, the feeling that you are darned if you report and darned if you don't and it has punitive implications that

by far outweigh the advantages to the individual are being overcome (Baron, 2008). This greatly enhances flight safety.

The results of statement C6 in Table: 4.6 indicate that 100% of the respondents agreed that good work-place conditions foster safety performance. Work-place conditions may positively influence employee's performance. Frederick Hertzberg's (1923-2000) two factor theories on motivation is constituted by Class one factors (the Hygiene needs) that relate to the work-place environment which include the company policy, administration, supervision, working conditions, interpersonal relations, salary, status and job security. These factors result to employee's work place satisfaction or dissatisfaction. The second class factors (motivators), these include the work its self, employee recognition, achievements, possibility of growth and carrier development (Balunywa, 1994). Dissatisfaction and de-motivating work conditions can greatly influence employee safety performance. Safety will flourish in an organisation where the relationship between workers and management is good. Such is an environment where the employer promotes a sense of belonging among the employees. It is only under such environment that voluntary error reporting system and the Just Culture would be effectively practiced to promote flight safety

The results of statement C7 in Table: 4.6 indicate that all respondents disagreed, that Uganda has a documented State (civil aviation) Safety Program (SSP) to guide the industry in implementation of the Safety Management Systems (SMS). The interviewed CAA inspectors confirmed that Uganda had not issued the SSP which would have provided the baseline for the SMS. The SSP requires the inspector to undergo specific training in defining, interpreting

the State Safety requirements along side the regulation compliance requirements. The civil aviation management institution would then cause the implementation of the SMS by the services providers. SSP and SMS are about the implementation of proactive and predictive safety management procedures (ICAO, (2009). This result reflects a significant safety concern against Uganda's civil aviation management system and it must have greatly contributed to Uganda's poor score in the November 2008 ICAO USOAP implementation results.

The results of Statement C8 in Table: 4.6 indicate that all respondents disagreed, that guiding information to implement the "no blame safety culture" has been issued by the civil aviation management institution. The "no blame safety culture" is a strongly recommended industry practice and a major component of the safety management system. However it depends to a great extent on where the boarder line separating un acceptable behaviour and the blame-less un safe acts. It promotes the establishment of the non punitive error reporting system whose objective is to collect data on safety concern that could be used to establish the level of safety performance. The 100% disagreement result that guiding information to implement the "no blame safety culture" has not been issued, is a response that supplements the result that there is no State Safety Program and the associated safety management system requirements.

The results of statement C9 in Table: 4.6 indicate that all respondents disagreed, that the civil aviation management institution has defined safety un safe acts and bad behaviour. The definition of these concepts is the basis of effective implementation of the safety culture and the associated non punitive error reporting systems. Unsafe acts include human error which

are acts where there is a general agreement that the individual should have done other than what was done, the cause of which inadvertently caused or could have caused un- desirable outcome. Negligent conduct is where the performance of the individual is below the expected standard, it includes negligent omission of the expected, or commission of the un-desirable under the circumstances, Reckless Conduct or Gross negligence which includes a person taking "conscious unjustified risks" with clear knowledge that there is a risk and harm may result from the conduct of such an act. In this regard it is important to observe that negligence is "letdown to notice the risks" while Recklessness is "Conscious disregard of obvious risks" and lastly Intentional wilful violation, where the person actually fore sees the undesirable outcome and goes ahead to do it (GAIN, 2004). Defining these concepts eventually makes identification of an-safe acts and bad behaviours easier, which will promote non punitive error reporting.

The results of C10 in Table: 4.6 indicate that 62% of the respondents agreed that acceptable level of safety compliance has operational cost benefits, 22% disagreed while 16% were not sure. Acceptable level of safety is defined as "A civil aviation management system concept that expresses its safety goals in verifiable procedures and practices to conduct its core business (ICAO, 2009). Service provider's safety performance is a measure of the degree of satisfactory implementation of the requirements and management of risks and hazards in the operational area. Safety performance is verified by continuous compliance audit inspections and surveys. Safety could also be defined in economic terms; aviation like any other business is driven by economic forces. Safety enhances trust, and a good public image that will attract customers. It prevents employee injuries; it eliminates recovery down time and costs

(Ganson, 2009). Wood (1997) observed that when we talk about aircraft accidents, we are talking about organisation variable costs and further commented that to a large extent modern management is an exercise of controlling costs and aviation is no exception (Wood, 1997).

The interviewed respondents raised the issue of the cost inputs to run a safety management system and the reasoning that flying organisations are formed to achieve business objectives not safety. From this view point, safety is expected to support the objectives is viewed more as a liability and not an asset to the organisation. Yet in the modern perspective where safety management has been accepted as an economic factor, safety values are integrated in the procedures where they drives the operations because quality and safety cannot be inspected into a task – it is built into it during its function activities (Wood, 1997). It can therefore be concluded that safety performance significantly influences organisation operation costs. It is a perspective that should be exploited to promote flight safety performance.

4.4 Correlation and Regression Analysis.

4.4.1 Correlation Analysis

In order to confirm that the field data will give reliable linear regression results, it was subjected to Pearsons multiple correlation analysis to find out whether the predictor variables had any liner relationship with the dependent variable. The other purpose of this theme was also to establish the magnitude, and direction of this relationship (Denscombe, 1998).

Table: 4.7 Presents the of the multiple Pearson correlation analysis results.

Table: 4.7 Multiple Correlation Analysis Results

		CA Planning	CA Organising	CA Controlling	Flight Safety
CA Planning	Pearson Correlation	1	.593**	.294*	.658**
	Sig. (2-tailed)		.000	.038	.000
	N	50	50	50	50
CA Organising	Pearson Correlation	.593**	1	.608**	.774**
	Sig. (2-tailed)	.000		.000	.000
	N	50	50	50	50
CA Controlling	Pearson Correlation	.294*	.608**	1	.576**
	Sig. (2-tailed)	.038	.000		.000
	N	50	50	50	50
Flight Safety	Pearson Correlation	.658**	.774**	.576**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	50	50	50	50

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Source: Primary Data

The correlation results in Table: 4.7 indicate that Civil aviation planning and flight safety have a strong and positive linear relationship with a Pearson product moment correlation (r) value of +0.658. This means that as civil aviation planning is improved so does flight safety performance; and vice versa. In other wards, the effectiveness of the civil aviation Act; civil aviation regulations; civil aviation policies and the degree to which they are compliant with the international minimum Standard and Recommended Practices (SARPs) strongly influences flight safety performance.

The correlation results also indicate that civil aviation organising and flight safety have a Pearson product moment correlation (r) value of +0.774, this result indicates that of the three study predictor variables, civil aviation organising has the strongest relationship with flight safety. The organising functions establish a link between the management system and the flight safety service providers. It is therefore implied that, the provisioning and issuance of effective guidance information, standardising of the implementation and enforcement procedures; and employment of appropriately trained and qualified safety inspectors by the management system has the strongest influence on flight safety effective implementation and performance.

The correlation results further indicate that civil aviation controlling and flight safety have a strong but relatively moderate positive relationship when compared to planning and organising. It has a Pearson product moment correlation (r) value of +0.576. This means that flight safety performance will change in direct relationship as the civil aviation functions of controlling change. In other words, the effectiveness of the management system auditing, monitoring and evaluation function carried out on the regulations clarity, correct interpretation and compliance; on the service provider's practice, procedures and appropriate implementation of the requirements; and how the identified safety concern are addressed and the findings fed back to effect management system improvement, also has a strong influence on flight safety performance.

The overall study variables relationship statistical analysis result indicate that civil aviation management is directly, positively and strongly related to flight safety at Pearson product moment correlation (r) values significant at 0.01 level. This means that, any change in the

civil aviation management system will directly and strongly affect flight safety performance positively or negatively as the change will be.

4.4.2 Regression Analysis

The correlation analysis results above verified the strength and direction of the relationship between civil aviation management and flight safety. The data was then subjected to multiple linear regression analysis to verify the significance of influence of this relationship. The regression analysis gave results on the variables Analysis of Variation (ANOVA); Linear Regression Model Summary; and the Linear Regression Coefficient.

Table: 4.8 Presents the results of the multiple Analysis of Variance (ANOVA).

Table: 4.8 Analysis of Variation (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	560.828	3	186.943	4.310E3	.000[a]
	Residual	2.039	47	.043		
	Total	562.867[b]	50			

a. Predictors: CA Controlling, CA Planning, CA Organising

b. This total sum of squares is not corrected for the constant because the constant is zero for regression through the origin.

c. Dependent Variable: Flight Safety

d. Linear Regression through the Origin

Source: Field Data

The analysis of variance (ANOVA) results in Table: 4.8 indicate an F statistic value of 4.310 significant at a level of 0.000. This mean that the linear regression analysis model used to analyses the data was appropriate and the results produced are statistically reliable to a level of 99%.

Table: 4.9 Presents the results of the linear regression model summary analysis results

Table: 4:9 Linear Regression Model Summary

Model	R	R Square[b]	Adjusted R Square	Std. Error of the Estimate
1	.998[a]	.996	.996	.20827

Predictors: CA Plann1ng, CA Organising, CA Controlling,

b. Dependent Variable: Flight Safety

Source: Field Data

The statistical linear regression model summary results in Table: 4.9 indicate an "R" value of 0.998. This mean that the correlation relationship of the three predictor variables to flight safety, having taken into account their inter-correlation is 99.8%. The results also indicate an "R-Square" value of 0.996, meaning that variations in flight safety performance is caused or can be explained by the predictor variables (by civil aviation management) to a magnitude of 99.6%. The result further indicates that goodness of the fit of regression model used to analyse the data was appropriate to a magnitude of 99.6%.

Table: 4.10 Presents the results of the multiple linear regression coefficient analysis

Table: 4.10 Multiple Linear Regression Coefficient Analysis

	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	t	Sig.
1 (Constant)	1.079	.305		3.544	.001
CA Planning	.230	.073	.327	3.164	.003
CA Organising	.278	.076	.457	3.672	.001
CA Controlling	.210	.109	.202	1.926	.060

a. Dependent Variable: Flight Safety

Source: Field Data

The purpose of this theme was to establish the strength; significance and magnitude of the influence of the civil aviation management on flight safety.

The multiple linear regression coefficient statistical analysis results in Table: 4.10 on civil aviation planning gave a standardised coefficient "Beta" value of 0.327 and significance of p= 0.003. This result means that civil aviation planning functions would significantly influence Flight Safety by a magnitude of 32.7%. The significance value p= 0.003 means that this result is statistically reliable at a confidence level of 95%.

The coefficient results on civil aviation organising indicate a standardised coefficient "Beta" value of 0.457 and significance of p = 0.001, meaning that, civil aviation organising functions would significantly influence flight safety by a magnitude of 45.7%. The significance value p= 0.001 means that this result is statistically reliable at a confidence level of 95%.

On the other hand, the coefficient results on civil aviation controlling indicate a standardised coefficient "Beta" value of 0.202 and significance of p = 0.060, meaning that, civil aviation controlling functions would have the least but a significant influence on flight safety performance at a magnitude of 20.2%. The significance value p= 0.060 means that this result is statistically reliable at a confidence level of 90%.

The multiple regression coefficient results indicate that civil aviation management has an overall significant influence of 98.6% on flight safety. This means that it is only 1.4% of flight safety that is influenced by other factors other than civil aviation planning, organising and controlling.

4.4.3 Hypothesis Testing

The purpose of this theme was to establish whether the multiple regression analysis results revealed evidence that support or disqualify the study hypothesis.

The first hypothesis is that "Civil aviation planning influences flight safety in Uganda". The correlation test results in Table: 4.7 indicated that civil aviation planning and flight safety had a strong, positive, direct and linear relationship with a Pearson product moment correlation (r) of +0.658. This relationship is significant as indicated in the linear regression coefficient statistical analysis results in Table: 4.10; which also indicate that civil aviation planning will influence flight safety by a magnitude of 32.7%. The results supported the first hypothesis.

The second hypothesis is that "Civil aviation organising influences flight safety in Uganda". The correlation test results in Table: 4.7 indicated that civil aviation organising and flight safety had the strongest, positive and a direct linear relationship with a Pearson product moment correlation (r) of +0.774. This relationship is significant as indicated by the linear regression coefficient statistical analysis results in Table: 4.10; which also indicate that civil aviation planning will influence flight safety by a magnitude of 45.7%. The results supported the second hypothesis.

The third hypothesis is that "Civil aviation controlling does not affect flight safety in Uganda". The correlation test results in Table: 4.7 indicated that civil aviation controlling and flight safety had a positive, direct but relatively moderate linear relationship when compared with planning and organising with a Pearson product moment correlation (r) of

+0.576. This relationship is significant as indicated by the linear regression coefficient statistical analysis results in Table: 4.10; which also indicate that civil aviation controlling will influence flight safety by a magnitude of 20.2%. The results disapproved the third hypothesis.

The analysis of the primary data indicate that the three predictor variables civil aviation planning, organising and controlling all have a strong, positive and direct relationship; and that they have a significant linear influence on flight safety. It also indicate, that of the three, civil aviation organising had the strongest relationship and its functions had the most significant influence on flight safety performance. It can therefore be concluded that , while civil aviation planning and controlling are significant, civil aviation management system policy makers and implementers should focus more on the organising functions, which establishes a foundation for a partnership relationship between the regulator and the regulated in flight safety management and promotion.

CHAPTER FIVE

SUMMARY DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the summary of the study; discussion of the findings; conclusions drawn; and recommendations made. It also presents the limitations experienced, the studies contribution to civil aviation body of knowledge; and proposed areas for further study.

5.1 Summary of the Study

This study examined how civil aviation management influences flight safety in Uganda. Civil aviation management was decomposed into planning, organising and controlling concepts, which are three of the operational management functions of the classical scientific management theory. The contextual scope was limited to flight safety. A review of the relevant literature and documents was carried out guided by the objectives. The study was a cross- sectional survey in design. A triangulation of qualitative and quantitative research approach in methodology, techniques and strategies, to collect and analyse the data were adopted. The Statistical Program for Social Scientists (SPSS) descriptive, correlation and regression analysis techniques were employed to obtain the data descriptive frequencies statistics; establish the magnitude and direction of the predictor variables relationship; and the significance of civil aviation planning, organising and controlling influence on flight safety.

The correlation analysis results indicated that there is a direct, positive and a strong relationship, while the regression analysis results indicated that civil aviation management

has a significant influence that accounts for 98.6% of variance in flight safety performance. The results further indicated that civil aviation organising functions have the strongest relationship with flight safety at a Pearson product moment correlation (r) value of 0.774, p=0.000, accounting for 45.7% variance in flight safety performance.

5.2 Discussion of the Findings

Primary data analysis indicated that civil aviation management was a predictor of flight safety. The civil aviation management was studied under planning, organising and controlling conceptual dimensions with a purpose to find out if the results represented any information and conclusions that can explain whether civil aviation management influences flight safety in Uganda.

Effective implementation of the management functions enables an organization to realize its obligations and strategic objectives (Bateman & Snell, 2004). In essence, without planning, actions tend to be uncoordinated, aimless and are left to happen by chance. Woods (1997) emphasized that safety concerns must be well above lip service; instead, they should be placed at the organisation objective level where they are let to drive the operations. This is similar to Bateman and Snell (2004) observation that an organization that meets the needs of its existing performance requirements and offers services above the expected minimum, reflects a management system that understands how its internal and external environmental factors influences its performance.

The first objective was: To establish how civil aviation planning influences flight safety in Uganda. This objective focused on finding out if the civil aviation management system has a

relationship with flight safety. It also aimed at finding out whether Uganda has developed and put in place flight safety regulations; that are compliant with the minimum international standards; has issued guidance information to enable compliant implementation of safety requirements; and how the compliance status shall be evaluated and/or demonstrated.

The statistical analysis results indicated that civil aviation planning has a strong relationship and a significant influence on flight safety. The field response also indicated that the majority of the respondents agreed that, Uganda being a party to the December 1944 Chicago convention on international civil aviation; it is under obligation to adopt and implement the minimum international Standards and Recommended Practices (SAPs) as required by Article 12 of the Chicago convention. The regulations are the base line of civil aviation management; the respondents agreed that the compliance status of the regulations with the international SARPs eventually gets reflected in the civil aviation services providers international standard safety performance. The results further reflected that 70% of the respondents agreed that regular audits and surveys to ensure compliance; continued compliance; to identify ineffective regulations; integration of safety checks and balances in the work processes mandatory requirements.

The review of the literature on the subject indicated that non compliant state safety systems are characterised by absence of a well structured and empowered Civil Aviation Authorities; there is no established or deliberate selection of safety standards; no trained and competent inspectors; compliance audits and surveys are not performed and there is no established effort to identify hazards; and worse of all, management may not have an objective reference to positively tell whether the operations are safe or unsafe (Wood, 1997).

The results however, indicated that the civil aviation management system has not issued any information explaining what the expected acceptable level of safety performance is and how it can be demonstrated. There were also majority views that the regulations were not exhaustive sighting absence of regulations to mandate the implementation of: work place safety risks and hazards analysis; safety management systems; and the associated preventive and predictive approaches to safety management. There was a mixed view, where some respondents were agreeing while others were disagreeing that civil aviation management system in Uganda has sufficient capacity and capability to appropriately manage the civil aviation industry in Uganda. The same views were expressed on whether the services providers' certification and approval is based on satisfactory demonstration of regulations compliance.

Planning provides a frame work for designing an environment for effective performance of an organisation. Failing to plan is planning to fail; poor planning indeed leads to un coordinated execution of activities. Whereas Uganda's civil aviation management system has a framework planned for the management of flight safety services functions, the findings indicate that still there are still gaps that should be addressed. There should be an established frame work that ensures all applicable ICAO requirements and amendments are included in the regulations in a timely manner. It is also important to establish objective means to evaluate and ensure that the civil aviation management institution has sufficient capacity and capability in terms of enough safety inspector's numbers, training, experience and technology to manage the industry as it develops and grows.

The second objective was: To assess how civil aviation organising influences flight safety in Uganda. This objective guided the study to find out if the civil aviation management system in Uganda has developed and issued information to interpret the regulations requirements; has directed the industry on establishing effective management processes; and has standardised auditing, evaluation and enforcement functions of the safety inspectors. These are the functions that bring together the civil aviation management system and flight safety services providers.

The results indicate a majority respondent's agreement that appropriate resource allocation including having sufficient numbers of qualified; well facilitated and equipped personnel will have a positive influence on flight safety. This result was in agreement with ICAO,s observation that safety oversight systems that set themselves ambitious civil aviation management and flight safety objectives without deploying the necessary means and resources to deliver such objectives, can not realize the desired acceptable level of safety performance (ICAO, 2009). There should be controls in place to ensure that proper level and quality of resources are available to the organization at all times (Gubbins, 1996). Seventy per-cent (70%) of the respondents agreed that requirements compliance evaluation is performed using standard and uniform procedures; and 80%, that a definition of the type of aircraft accepted on Uganda civil aviation aircraft register has been issued. However, there was 74% disagreement that the civil aviation regulations are favorable to the civil aviation industry in Uganda. This result was in conflict with to Article 12 of the Chicago conventional that requires state regulations to be compliant with the minimum international Standards and Recommended Practices (SAPs) established from time to time. And that such regulations are

legally empowered by a State Civil Aviation Act of parliament. Sixty four percent (64%) of the respondents also disagreed that there was sufficient guidance information issued to guide the services provider to comply with the requirements, and 88% disagreed that the civil aviation management system has issued information on what errors and violation mean to enable the services providers to effectively implement safety culture.

Polarized views of respondent's agreement and disagreement in almost the same proportion are observed in response to whether information has been issued to help the services providers develop organisation safety objectives. This result reflected unsatisfactory performance in regards to the requirements of Critical Element No. 5 and No. 6 (ICAO–A, 2006), ref. Appendix 5; that require performance procedures to be developed and their application verified during the certification obligation. Polarized views were also observed on whether safety management is a shared responsibility between the civil aviation management system and the flight safety services providers. Organising influences behaviours, resource development, management and leadership, it focuses on the day to day operational activities, it transforms plans into activities that would facilitate meeting the existing performance requirements, by designing and issuing operational information and procedures (McNamara, 2000).

While civil aviation under the organising function processes have issued guidance information in particular to define what aircraft are acceptable on the civil aircraft register and procedures to follow when evaluating, compliance and implementation requirements, the findings on contrary indicate that there is still a significant gap in the provision of information to sensitize the industry on civil aviation regulations development and the

obligatory requirement of a Contracting States to make the regulations uniform with the minimum international Standard and Recommended Practices. Information is also required to differentiate errors from violations; to enhance and promote a relationship of shared responsibility between the regulator and the regulated.

Issuance of effective guidance information to define the regulation requirements; explaining how to effectively apply and implement them is the most significant function of the civil aviation management system, failure could have serious negative influence on flight safety performance.

The third objective was: To assess how civil aviation control affects flight safety in Uganda. This objective guided the study to find out if the civil aviation management system in Uganda has established controlling measures and whether they are implemented to ensure flight safety standards requirements are complied with, implemented and maintained. And where deviations are found they are corrected and systems are improved to prevent re-occurrence. The evaluation, monitoring, and auditing of flight safety procedures provide for measurement and correction of performance in order to make sure that the desired objectives are realized. Control provides for identification of ineffective or outdated regulations, guidance information and procedures in order to take the necessary corrective action. This result was in agreement with Bateman and Snell (2004) who observed that inspections, audits and surveillance functions identify the undesirable occurrences and ineffective processes.

Most respondents agreed that safety audits are carried out to identify regulations non conformity for correction and that the audit findings are not used for penalizing the non compliant organisation. This result supported the “No Blame Just Culture” safety strategy

which recommends non punitive voluntary reporting of errors and incidents. This strategy however, requires clear definition of unsafe acts and violations. The results further indicated majority agreement that the safety management system requires regulations to mandate its entrenchment into the organisation procedures. This will enhance operational area hazards identification, risks and error management a routine organizational safety control practice.

The majority of respondents disagreed that the civil aviation safety management system carries out regular safety performance audits and that information on Safety Management Systems (SMS) and the "No- Blame Culture" has been issued to guide the flight safety services providers to effectively implement it. There were however polarizes views, where some respondents agreed, while others disagreed in almost the same proportion that the regulations can lead to the acceptable level of safety (ALoS); and whether ALoS realization has operational cost benefits. The literature indicated that it was a lot cheaper not to have an accident than to pay for its results, and that it was this economic incentive upon which the entire industrial safety movement was initiated. Yet on the other hand, most organisation executives would reason that no money will be spent on a safety project un less its economic benefits have been clearly spelt out (Wood, 1997).

Therefore, whereas the results indicate Uganda's civil aviation management system has provided for non punitive audits, the results identified gaps in the implementation and enforcement of the audit requirements; issuance of regulations and guidance information on safety management system, the "No Blame Culture" and the operational cost benefits when the acceptable safety levels are realized. The literature emphasised the importance of controlling as a tool that ensures functions are being carried out according to plan; it

identifies deviations and demands for timely corrective actions. It encourages sharing of audit results, incidents and accidents experiences among organisations to minimises re-occurrence. Controlling functions provide feedback information to planning and organising functions, this enables improvement of the safety regulation, guidance information and procedures requirements formulation by the management system which will further improve flight safety compliance and performance.

5.3 Conclusion of the Study

The study sought to come up with conclusions that are supported by empirical evidence about how civil aviation management influence flight safety. The discussion of the analysis results led to the conclusion that:

The three predictor variables relationship to flight safety is positive, direct and strong the magnitude of 99.8%. Civil aviation organising has the strongest individual relationship at Pearson product moment correlation (r) value of +0.774. Confidently it can be concluded that civil aviation management causes variation in flight safety performance to a magnitude of 99.6%, leaving out only 0.4% variation related to other factors.

Basing on the statistical regression analysis it can also be concluded that civil aviation planning; organising; and controlling have a very strong and significant influence on flight safety performance. Planning functions influence flight safety by a magnitude of 32.7%, organising functions by 45.7% and controlling functions a magnitude of 20.2%. Or that civil aviation management has an overall influence of 98.6% on flight safety, this leaves out only

1.4% variation caused by other factors. The analysis results indicated that this conclusion can be stated with statistical confidence level of 95%.

It is not clear as to what the 1.4% influence is attributed to, however, even though it is a small percentage, it may be significant. The literature indicated that other factors that may influence effective management include how the management system is operationalised to include staffing, coordinating and leading management functions requirements which were not included in the scope of this study. Human behaviour is another significant influential factor, it is normally a result of work-place environment which include the company policy, administration, supervision, working conditions, interpersonal relations, salary, status and job security. The influence could be aggravated by the national civil aviation policy and the civil aviation act.

5.4 Recommendation

Civil aviation management is the major and primary factor that causes variation in flight safety performance. Uganda Civil Aviation Authority, the Republic of Uganda Ministry of Works and Transport and the East African Community regional safety agency CASSOA who are the key players in civil aviation management in Uganda should endeavor to improve civil aviation management systems in order to improve and promote flight safety performance to the minimum international level of 75% compliance and implementation of ICAO Standard and Recommended Practices (SARPs). This initiative results should be realized before the next Universal Safety Oversight Audit Program (USOAP) audit in Uganda that is due in mid

2011. Based on the study findings, analysis and conclusions, the recommendations listed below are made;

1. Evaluate Uganda's civil aviation management system to identify non compliance gaps in relation with the requirements of ICAO eight critical elements of an effective safety oversight system. This is in terms of a supportive Civil Aviation Act; compliant regulations; a well structured regulatory authority; trained, qualified and experienced safety inspectors; guidance information; services providers certification obligations; services providers surveys and audit programs; and resolution of safety concerns arising.

2. Develop a state safety program (SSP) and enforce the implementation of safety management systems (SMS) to enhance establishment of objective services providers acceptable level of safety.

3. Establish programs which ensure that the civil aviation regulations are continuously updated and kept uniform to the greatest possible extent with the minimum Standards and Recommended Practices (SAPs) established and issued from time to time under the Convention.

4. Develop and issue guidance information for all safety performance related activities to guide the service provider's effective compliance.

5. Promote a relationship between the regulator and the regulated for the shared responsibility for civil aviation safety management, to enhance voluntary compliance with the regulations; voluntary error reporting and non punitive safety culture

management system. This shall promote a culture that shares audit safety findings, reported incidents, errors, and observed risks to flight safety between organisations to minimize re-occurrence.

5.5 Limitations of the Study

No previous study literature on civil aviation management and its relationship with flight safety in Uganda could be found, this could be the first study of its kind on the subject. I was also not possible to obtain a bigger sample size because many of the targeted population were either working in foreign countries; or were no longer active in civil aviation and their licences had expired, yet the bigger the sample, the more representative of the entire population the findings are .

5.6 Contribution of the Study

This study is an addition to the existing body of knowledge in civil aviation management and flight safety in Uganda. Civil aviation safety is every one's concern; it should not be left to the Civil Aviation Authority alone nor is it a responsibility of the services providers only. The knowledge in this study is expected to motivate general interest in an industry whose management is currently considered exclusive. Civil aviation is an open industry; it accepts constructive criticism and safety development ideas. Any one with an idea that can improve flight safety, or notices any thing that can put flight safety at risk is encouraged bring it forward. Voluntary safety information, identification of hazards and risky events in the

operational areas reporting, is the baseline upon which preventive and predictive civil aviation safety management is based. The study findings in addition may be used by civil aviation administrators and the policy makers to enhance flight safety management.

5.7 Area for Further Research

This was a survey design study, on the civil aviation management system to find out how it influences flight safety. Another related area for research would be a "Case design study on the Civil Aviation Authority" to find out how the management system has been operationalised and how effective it is in respect of promoting and maintenance of international flight safety standards.

REFERENCES:

Amin, M.E. (2005). *Social science research.* Kampala: Makerere University Printers.

Balunywa, J.W. (1994). *A handbook of business management.* Kampala: The Business Publishing Group.

Baron, R. (2008, March). Management Matters – The Challenges of an Error Reporting System. *Aircraft Maintenance Technology –Journal*. 64 – 65.

Bateman, T.S., & Snell, S.A. (2004). *Management: the new competitive landscape* (6th Ed.). McGraw-Hill/Irwin.

Burin, J.M. (2009, February). Steady State. *Aero safety world journal*, 23.

(CAR's, 2006). Republic of Uganda Civil Aviation Regulations, 2006.

Denscombe, M. (1998). *The good research guide for small-scale social research projects.* Buckingham UK: Open University Press.

EAC. (2007). *The treaty for the establishment of the East African Community* (EAC Publication). Arusha, Tanzania.

EAC Secretariat. (2007). *Protocol on the Establishment the East African Community Civil Aviation Safety and Security Oversight Agency* (CASSOA). (EAC Publication). Arusha, Tanzania.

FSF. (2006). *Global aviation safety roadmap.* Flight Safety Foundation ISSG Publication

FSF-I. (2006). Implementation *of global aviation safety roadmap.* Flight Safety Foundation ISSG Publication

GAIN. (2001).*Operators flight safety handbook.* Global Aviation Information Network Publication.

GAIN. (2004). *A roadmap to a just culture: enhancing the safety environment*. Global Aviation Information Network Publication.

Ganson, G. (2009, March). Safety Matters - Developing a Health and Safety Program. *Aircraft Technology Journal*, 42-43.

Gibbins, E.J. (1996). *Managing transport operations 2nd Edition.* London: Clays Ltd, St Ivesplc.

Gupta, V. (1999). *SPSS for beginners and intermediate users.* VJ Books Inc. Publication.

Halsall, P. (1998). Frederick Taylor. *Modern History Handbook-Principles of Scientific Management 1911.* New York: Harper Bros.

Horine, G.M. (2005). *Absolute beginner's guide to project management.* Indianapolis Indiana: Que Publication.

ICAO. (1995). ICAO Doc. 8335-AN. *Manual of operations inspection, certification and continued Surveillance* (ICAO Publication). Montreal, Canada. ICAO Printers.

ICAO. (2006). *Convention on international civil aviation- ICAO Doc. 7300. 09Ed.* (ICAO Publication). Montreal, Canada. ICAO Printers.

ICAO-A. (2006). *The establishment of a state's safety oversight system ICAO Safety oversight manual- ICAO Doc. 9734A-AN. 2nd. Ed.* (ICAO Publication). Montreal, Canada. ICAO Printers.

ICAO-B. (2006). *The establishment of a regional safety oversight systems ICAO safety oversight manual- ICAO Doc. 9734B-AN. 1st Ed.* (ICAO Publication). Montreal, Canada. ICAO Printers.

ICAO. (2008). Safety *oversight audit program final report on the safety oversight system of the civil aviation authority – Uganda*.(ICAO Publication). Montreal, Canada. ICAO Printers.

ICAO ACIP. (2008). *Steering committee meeting report* (ACIP Publication Feb. 2008). Montreal, Canada. ICAO Printers.

ICAO. (2009). *Safety management manual. ICAO Doc. 9859 AN/474 2nd. Ed*. (ICAO Publication). Montreal, Canada. ICAO Printers.

ICAO Annexes. *ICAO Annexes to the Chicago convention on international civil aviation* (ICAO Publication). Montreal, Canada. ICAO Printers.

Kombo, D.K., & Tromp, D.L.A. (2006). *An introduction to* p*roposal and thesis writing*. Nairobi Kenya: Pauline's Publications Africa.

Kok, T . (2008, July). Putting Safety First in Africa. *AERO Safety World Journal,* 18 – 22.

Koontz, H., O'Donnell, C., & Weihrich, H.(1986). *Essential of management 4Ed.* New York: McGraw Hill.

McNamara, C. (2002). Nuts and Bolts Guide to Leadership and Supervision in Business

NTSB (2009). United States of America National Transport Safety Bureau Expresses Concern as Air carriers Suspend Proactive Safety Programs. *Aircraft Maintenance Technology.*

Oncu, A., & Kose, A. H. (2002) . Re-Considering the Meaning of "Scientific Management" from a Marxist Perspective. Retrieved Dec.14, 2009, from http:// w.w.w. clogic.eserver.org/4- 2/oncu.html

O'Brien, B. (2008, March). Fine Point – Bad Air – A Human Factor Case Study. *Aircraft Maintenance Technology Journal*, 66 – 69.

Priestley, S. (2006). Scientific Management in the 21st Century. Retrieved Dec. 14, 2009, from http://w.w.w.F:\MNGT\ Scientific Management in the 21st Century.htm

The Government of Uganda. (1991). *Chapter 354 The civil aviation authority Act.* (The Uganda Gazette No. 12 Volume LXXXVII dated 25 March, 1994) UPPC Entebbe, Uganda

The Government of Uganda. (2006). *The civil aviation regulations, 2006* (The Uganda Gazette No. 64 Volume XCVLX dated 27 October, 2006) UPPC Entebbe, Uganda

Sakaran, U. (2006). *Research methods for business.* New York: John Wiley & Sons, Inc.

(SI 2006 No.51). *Statutory Instruments 2006 No. 51. Republic of Uganda Civil Aviation Regulations, 2006* UPPC Entebbe, Uganda.

Wood, R.H. (1997). *Aviation safety programmes - a management handbook.* Colorado USA: Jeppesen Sanderson Inc.

Appendix 1

Questionnaire for: CAA Inspectors & Officers; Pilots and Engineers Respondents

Date: ……..

Dear Respondent,

This questionnaire is designed to study Civil Aviation Management and Flight Safety in Uganda. The information you will provide shall be used for academic purposes of this study. It shall help me to evaluate the effectiveness of the civil aviation management system and how it influences the industry flight safety administration in Uganda.

I kindly request you to respond to each question frankly and honestly because your answer determines the validity of this study.

Thank you very much for your time and corporation

Yours Cordially

Henry L Kitaka.

Section 1: Please tick (√) the applicable statement

(a) What organization do you work for?

1. Air Operator □ **2**. Maintenance Organization □ **3**. CAA □ **4.** ATO □

(b) What is your Profession?

1. Pilot □ **2**. Licensed Engineer □ **3**. CAA Safety Inspector or Officer □

4. Management □

(c) Number of Years of Civil Aviation Service in Uganda:

1. (5 yrs & below) □ **2**. (6 – 10) yrs. □ **3.** (11 -15 yrs) □ **4**. (16 & above) □

Section 2

Please Tick (√) the appropriate number (5 to 1) against each of the questioner statement in section: **B1, B2, B3 and B4:**

Strongly Agree (SA) Tick (√) 5, Agree (A) Tick (√) 4, Un Certain (UC) Tick (√) 3, Disagree (D) Tick (√) 2, Strongly Disagree (SD) Tick (√) 1.

Section B 1 : Civil Aviation Planning

	STATEMENT	**SCALE**				
		SD	A	UC	D	SD
1	The Civil Aviation Regulatory institution must be compliant with the ICAO standards	5	4	3	2	1
2	The compliance status of a Civil Aviation Authority is reflected in industry performance	5	4	3	2	1
3	Approvals are granted after demonstration of compliance with the requirements.	5	4	3	2	1
4	Acceptable Level of Safety performance has been defined by CAA	5	4	3	2	1
5	The CAA has capacity for the civil aviation activity scope in Uganda	5	4	3	2	1
6	Safety performance is realized by placing safety concerns where they influence operations	5	4	3	2	1
7	Adoption of pro-active safety measures to prevent accidents and incidents is emphasized by the Regulations.	5	4	3	2	1
8	Work analysis, risks and hazards identification in work areas as a preventive measure is required	5	4	3	2	1
9	It is a States obligation to adopt ICAO recommended industry practices	5	4	3	2	1
10	Implementation / Compliance audits are regulatory requirements.	5	4	3	2	1

Section B 2 Civil Aviation Organizing

	STATEMENT	SCALE				
		SA	A	UC	D	SD
1	Resources allocation influences organization safety performance	5	4	3	2	1
2	Guidance information on how to develop organization purpose and expected performance has been Issued	5	4	3	2	1
3	The CAA and operators have shared responsibility for aviation safety management	5	4	3	2	1
4	Sufficient safety standards implementation guidance information has been issued.	5	4	3	2	1
5	Approvals are based on safety management competency	5	4	3	2	1
6	A standard format is applied for requirements compliance evaluation and implementation.	5	4	3	2	1
7	Safety performance procedures are documented and practiced	5	4	3	2	1
8	Errors and violations have been defined and differentiated.	5	4	3	2	1
9	The Regulations are favorable for the Civil Aviation industry in Uganda	5	4	3	2	1
10	The types of aircraft accepted on the Uganda Register are defined	5	4	3	2	1

Section B 3: Civil Aviation Controlling

	Statement	Scale				
		SA	A	U C	D	SD
1	Uganda's Regulations are adequate to acquire the international Acceptable Level of Safety.	5	4	3	2	1
2	CAA performs regular audits and surveys to evaluate industry safety performance.	5	4	3	2	1
3	Industry safety audits are performed to identify non conformity for correction and not for penalizing.	5	4	3	2	1
4	The certification process entrenches regulatory controls in the service providers procedures	5	4	3	2	1
5	Managing operational risks and errors contributes to safety management control	5	4	3	2	1
6	Good work-place conditions promotes (fosters) safety performance	5	4	3	2	1
7	Uganda has documented a State Safety Program (SSP) to guide Safety Management Systems (SMS)	5	4	3	2	1
8	Guiding information to implement the "no blame safety culture" has been issued by CAA	5	4	3	2	1
9	CAA has defined Safety "un safe acts and bad behaviors .	5	4	3	2	1
10	Attaining the Acceptable Level of Safety has operational cost control benefits	5	4	3	2	1

Section C: Flight Safety

	Statement	Scale				
	Safety Administration	SA	A	UC	D	SD
1	Flight Safety is a function of civil aviation services provider- it involves implementation and compliance with established safety requirements	5	4	3	2	1
2	Acceptable Level of Safety is a satisfactory measure of the degree of flight safety management.	5	4	3	2	1
3	Safety issues generate concern but very little action	5	4	3	2	1
4	Operators were guided by CAA to implement and comply with the 2006 Civil Aviation Regulation.	5	4	3	2	1
5	Implementation the year 2006 Regulation should have been a full scale national project	5	4	3	2	1
	Safety Implementation					
6	Effective flight safety management is assured when functional procedures are documented	5	4	3	2	1
7	Flight Safety services providers appreciate the importance of developing and documenting procedures	5	4	3	2	1
8	Flight Safety services providers compliance with established procedures is acceptable demonstration of requirements compliance	5	4	3	2	1
9	The operators can strive for higher safety standard than that established by the Regulations	5	4	3	2	1
10	The CAA and the industry relationship is harmonious	5	4	3	2	1
	Safety Management System					
11	Development and documentation of procedures is dependent on established Acceptable Level of Safety.	5	4	3	2	1

12	Operators compliance with the safety requirements is influenced by CAA's enforcement measures	5	4	3	2	1
13	There is a requirement for the industry to carry out internal audits for compliance.	5	4	3	2	1
14	There is a company procedure for safety culture, error reporting and non punitive practices	5	4	3	2	1
15	Safety procedures are regularly analyzed to assess their continued compliance and effectiveness .	5	4	3	2	1

Appendix 2

Interview Schedule:

Study Topic: Civil Aviation Management and Flight Safety

1. Introduction:

This interview schedule has been prepared for a study on the relationship between Civil Aviation Management and Flight Safety in Uganda.

The information you will provide shall be used for academic purposes of this study. It shall help me to evaluate the effectiveness of the civil aviation management system and how it influences the industry flight safety administration in Uganda.

I kindly request you to respond frankly and honestly because your answers will determine the validity of this study results and conclusions.

I thank you very much for the opportunity you have accorded me to interview you. .

2. Preliminaries:

(i) Organisation: Airline □ Maintenance Organisation □

Aviation Training organisation □ Aviation Authority □

(ii) Title of Respondent: ……

(iii) Occupation: Pilot □ Engineer □ CAA Safety Inspector □

Management □

3. Interview Guide Statements

Civil Aviation Planning

1. Approvals are granted after demonstration of compliance with the requirements
2. Acceptable Level of Safety performance has been defined by CAA
3. The CAA has capacity for the civil aviation activity scope in Uganda
4. It is a States obligation to adopt ICAO recommended industry practices

Civil Aviation Organizing

5. Guidance information on how to develop organization purpose and expected
6. performance has been Issued
7. The CAA and operators have shared responsibility for aviation safety management.
8. Approved are based on safety management competency.
9. A standard format is applied for requirements compliance evaluation and implementation.
10. Acceptable behavior; un-acceptable behavior; errors and violations have been defined.
11. CAA has defined Safety “un safe acts and bad behaviors .

Civil Aviation Controlling

12. Uganda’s Regulations are adequate to acquire the international Acceptable Level of Safety.
13. CAA performs regular audits and surveys to evaluate industry safety performance.
14. Uganda has documented a State Safety Program (SSP) to guide Safety Management Systems (SMS)
15. Attaining the Acceptable Level of Safety has operational cost control benefits

Key Informers Data Record Sheet

Statement No. …… Respondent Answer Scale Rating

Respondent Answer Scale Rating: Agreed ☐ Disagreed ☐

Notes: ……

……

……

……

Statement No. …… Respondent Answer Scale Rating

Respondent Answer Scale Rating: Agreed ☐ Disagreed ☐

Notes:

……...

……

……

……

Statement No. …… Respondent Answer Scale Rating

Respondent Answer Scale Rating: Agreed ☐ Disagreed ☐

Notes:

……

……

……

……

Appendix: 3

Questioner - Content Validity Index (CVI) Computation.

Instrument Acceptable Minimum CVI - 0.7 (Amin. 2005 p.288)

Number of expert Judges - 3

Total Number of Instrument items - 45

Notes:

- IJCVI: Stands for "Inter Judge Content Validity Index" of each questioner item
- IJCVI = Item Valid Score (from judges) ÷ Number of Judges
- Instrument CVI = Total IJCVI ÷ Number of Items in the Instrument

	Items of the Questioner														
Judges	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	x	√	√	√	√	√	√	√	√	√	√	√	√	√	√
2	x	√	√	√	x	√	√	√	√	√	√	x	√	√	√
3	√	√	x	√	x	√	√	√	√	√	√	x	√	√	√
IJCVI	0.33	1.0	0.67	1	0.33	1	1	1	1	1	1	0.33	1	1	1

Judges	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	√	√	√	x	√	√	√	√	√	√	√	√	√	√	√
2	√	√	√	√	x	√	√	√	√	√	√	√	√	x	√
3	√	√	√	√	√	√	√	√	√	√	x	√	√	√	√
IJCVI	1	1	1	0.67	0.67	1	1	1	1	1	0.67	1	1	0.67	1

Judges	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
1	**√**	**√**	**√**	**√**	**√**	**√**	**√**	**√**	x	**√**	**√**	**√**	**√**	x	x
2	**√**	**√**	**√**	**√**	**√**	**√**	**√**	**√**	**√**	**√**	**√**	**√**	**√**	x	x
3	**√**	**√**	**√**	**√**	**√**	**√**	**√**	**√**	**√**	**√**	**√**	**√**	**√**	**√**	**√**
IJCVI	1	1	1	1	1	1	1	1	0.67	1	1	1	1	0.33	0.33

Total IJCVI = 39.67

Total Number of Instrument items - 45

Instrument CVI = 39.67 ÷ 45 = 0.88

Appendix: 4

INSTRUMENT RELIABILITY TEST RESULTS

Questionner Instrument Pilot Test – Retest Pearsons Correlation Results

Table: 1 The Research Questionner Instrument Pilot Test – Retest Pearsons Correlation Results

Correlations

		First Pilot Test	Test Re-test
First Pilot Test	Pearson Correlation	1.000	-.803
	Sig. (2-tailed)	.	.407
	N	3	3
Test Re-test	Pearson Correlation	-.803	1.000
	Sig. (2-tailed)	.407	.
	N	3	3

The Test – Retest scores correlation result in Table: 1 showes that the instrument had a significant (inverse) Coefficient of Stability of 0.803 (80.3%). This meant that the instrument was stable, reliable and could be depended on to give consistent repeated results.

Cronbach Alpha Instruments Reliability Test Results

The coded data was subjected to Statistical Program for Social Scientists (SPSS) Scale Cronbach Coefficient Alpha reliability test to confirm the instrument internal consistence and reliability to collect data for the study. An acceptable instrument should have a Cronbach Coefficient Alpha reliability value of at least 0.8. Mugenda and Mugenda (1999 p.96).

Below are the study instrument reliability test results for the whole instrument fifty (50) items, for the forty five (45) items less the respondent's demographic information items, for the individual predictor variables Civil Aviation Planning, Organising and Controlling, and for the Dependent Variable items.

Table: 2 The Study Instrument Items Reliability Statistics

Cronbach Alpha	N of Items
.863	50

Source: Field Data

Table:3 The Study Instrument (Less the respondents Demographic Information Items) Reliability Statistics

Cronbach Alpha	N of Items
.886	45

Source: Field Data

Table: 4 Civil Aviation Planning Items Reliability Statistics

Cronbach Alpha	N of Items
.711	10

Source: Field Data

Table:5 Civil Aviation Organising Items Reliability Statistics

Cronbach Alpha	N of Items
.750	10

Source: Field Data

Table: 6 Civil Aviation Controlling Items Reliability Statistics

Cronbach Alpha	N of Items
.618	10

Source: Field Data

Table :7 Civil Aviation Flight Safety Items Reliability Statistics

Cronbach Alpha	N of Items
.652	15

Source: Field Data

Appendix 5

The Critical Elements of an Effective Safety Oversight System

Safety oversight is defined as a function by means of which States ensure the effective implementation of the safety-related Standards and Recommended Practices (SARPs) and associated procedures contained in the Annexes to the Convention on International Civil Aviation and related ICAO documents. An individual State's responsibility for safety oversight is the foundation upon which safe global aircraft operations are built. Lack of appropriate safety oversight in one Contracting State, therefore, threatens the health of international civil aircraft operations. Addressing the critical elements would enable the effective implementation of safety-related policies and associated procedures.

Source: ICAO Doc.9734A-AN (2006). Safety Oversight Manual: The Establishment of a State Oversight System.

Critical Element No. 1: Primary Aviation Legislation

The provision of a comprehensive and effective aviation law (The Civil Aviation Act) consistent with the environment and complexity of the State's aviation activity, and compliant with the requirements contained in the Convention on International Civil Aviation.

Critical Element No. 2: Specific Operating Regulations

The provision of adequate regulations to address, at a minimum, national requirements emanating from the primary aviation legislation and providing for standardized operational procedures, equipment and infrastructures (including safety management and training systems), in conformance with the Standards and Recommended Practices (SARPs) contained in the Annexes to the Convention on International Civil Aviation.

Critical Element No. 3: State Aviation System And Safety Oversight Functions

The establishment of a Civil Aviation Authority (CAA) and/or other relevant authorities or government agencies, headed by a Chief Executive Officer, supported by the appropriate and adequate technical and non-technical staff and provided with adequate financial resources. The State authority must have stated safety regulatory functions, objectives and safety policies.

Critical Element No. 4: Technical Personnel Qualification and Training

The establishment of minimum requirements for knowledge and experience of the technical personnel performing safety oversight functions and the provision of appropriate training to

maintain and enhance their competence at the desired level. The training should include initial and recurrent (periodic) training.

Critical Element No. 5: Technical Guidance, Tools And The Provision Of Safety Critical Information

The provision of technical guidance (including processes and procedures), tools (including facilities and equipment) and safety critical information, as applicable, to the technical personnel to enable them to perform their safety oversight functions in accordance with established requirements and in a standardized manner.

This includes the provision of technical guidance by the oversight authority to the aviation industry on the implementation of applicable regulations and instructions.

Critical Element No. 6: Licensing, Certification, Authorization And Approval Obligations

The implementation of processes and procedures to ensure that personnel and organizations performing an aviation activity meet the established requirements before they are allowed to exercise the privileges of a licence, certificate, authorization and/or approval to conduct the relevant aviation activity.

Critical Element No. 7: Surveillance Obligations

The implementation of processes, such as **inspections and audits**, to proactively ensure that aviation licence, certificate, authorization and/or approval holders continue to meet the

established requirements and function at the level of competency and safety required by the State to undertake an aviation-related activity for which they have been licensed, certified, authorized and/or approved to perform. This includes the surveillance of designated personnel who perform safety oversight functions on behalf of the CAA.

Critical Element No. 8: Resolution of Safety Concerns

The implementation of processes and procedures to resolve identified deficiencies impacting aviation safety, which may have been residing in the system and have been detected by the regulatory authority or other appropriate bodies. This would include the ability to analyse safety deficiencies, forward recommendations, support the resolution of identified deficiencies as well as take enforcement action when appropriate.

Source: ICAO Doc.9734A-AN (2006). Safety Oversight Manual: The Establishment of a State Oversight System.

Appendix 6

THE ROLE OF ICAO AND THE CONTRACTING STATE IN CIVIL AVIATION AIR TRANSPORT MANAGEMENT

The International Civil Aviation Organisation (ICAO)

International Civil Aviation Management started way back in 1944 at an international meeting that took place in Chicago United States of America at the end of the Second World War. This meeting attended by fifty two (52) States there after referred to as Contracting States issued a statement, there after referred to as the December 7, 1944 Chicago Convention on International Civil Aviation.

On May 13, 1947 the Convention established the International Civil Aviation Organisation (ICAO) and entrusted it with the responsibility of developing standards for regulating international civil aviation. At present, one hundred and ninety one (191) States including Uganda signed became party to the Convention (ICAO, 2000).

ICAO has developed and issued the Annexes to Convention setting out the minimum International Standards and Recommended Practices (SARP) in the different specialities and dimensions that constitute the base line for Civil Aviation Safety Management. Under the Convention, Contracting States are obliged to develop and implement Civil Aviation Regulations that are uniform to the greatest possible extent with the minimum Standards and Recommended Practices (SARPs) in the Annexes.

Since then ICAO has issued eighteen (18) Annexes:

1 - Personnel Licensing

2 - Rules of the Air

3 - Metrological Services for International Air Navigation

4 - Aeronautical Charts

5 - Units of Measurements to be used in Air and ground Operation

6 - Operation of Aircraft

7 - Aircraft National Registration Marks

8 - Airworthiness of Aircraft

9 - Air Transport Services Facilitation

10 - Aeronautical Telecommunication

11 - Air Traffic Services

12 - Search and Rescue

13 - Aircraft Accident and Incident Investigation

14 - Aerodromes

15 - Aeronautical Information Services

16 - Environmental Protection

17 - Aviation Security

18 - Air Transportation of dangerous goods

Gibbons, E.J. (1996), in his book Managing Transport Operations listed the aims and objectives of the ICAO as follows:

1. To ensure the safe, and orderly growth of civil air transport throughout the world.

2. To encourage the development of airports and navigation facilities for international civil aviation.

3.To reduce wasteful competition.

4.To ensure that all nations have a fair opportunity to manage and operate international civil air transport.

5. To avoid discrimination among the Contracting State.'

In accordance with the Convention, a State has complete and exclusive sovereignty over the airspace above its territory. However, on adhering to the Convention, States agree to comply to certain principles and arrangements in order that international civil aviation may be developed in a safe and orderly manner.

The safe and orderly development of international civil aviation requires that:

1. All civil aviation operations are conducted under internationally acceptable minimum operating standards, procedures and practices.

2. States collaborate to achieve standardization and harmonization in regulations, rules, standards, procedures and practices.

   Effective implementation of International Standards and Recommended Practices by a Contracting State should be effected under the rule of law promulgated in the State. The Convention there fore requires Contracting State enact a national legislative framework (The Civil Aviation Act) referred to as the primary aviation legislation.

   The legislative framework provides for the development of and promulgation of Civil Aviation Regulations consistent with the State acceptance of the provisions of the Annexes to the Convention and the establishment of a State Civil Aviation Management Institution (The Civil Aviation Authority). The Act should empower the Authority to enforce compliance with the developed Regulations (ICAO-A, 2006).

Appendix: 7

Letter of Introduction to the Field to Carry Out Research

UGANDA MANAGEMENT INSTITUTE

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256-31-2265138 /39 /40
256-75-2259722
Telefax: 256-41-4259581 /314
E-mail: admin@umi.ac.ug

Plot 44-52, Jinja Road
P.O. Box 20131
Kampala, Uganda
Website: http://www.umi.ac.ug

Your Ref:

Our Ref: **G/35** **26 August 2009**

TO WHOM IT MAY CONCERN

MASTERS IN MANAGEMENT STUDIES DEGREE RESEARCH

Mr. Henry Luwemba Kitaka is a student of the Masters Degree in Management Studies of Uganda Management Institute 17th Intake 2008/2009 specializing in Project Planning and Management, Registration number: **08/MMSPPM/17/007.**

The purpose of this letter is to formally request you to allow this participant to access any information in your custody/organisation, which is relevant to his research.

His Research Topic is: ***"Civil Aviation Management and Flight Safety in Uganda".***

Benon C. Basheka
HEAD, HIGHER DEGREES DEPARTMENT/PROGRAMME MANAGER, MASTERS DEGREES IN MANAGEMENT STUDIES

Appendix 8

Krejcie and Morgan's Table (1970)

For Determining Sample Size

N	S	N	S	N	S	N	S
10	10	150	108	460	210	2200	327
15	14	160	113	480	214	2400	331
20	19	170	118	500	217	2600	335
25	24	180	123	550	226	2800	338
30	28	190	127	600	234	3000	341
35	32	200	132	650	242	3500	346
40	36	210	136	700	248	4000	351
45	40	220	140	750	254	4500	354
50	44	230	144	800	260	5000	357
55	48	240	148	850	265	6000	361
60	52	250	152	900	269	7000	364
65	56	260	155	950	274	8000	367
70	59	270	159	1000	278	9000	368
75	63	280	162	1100	285	10000	370
80	66	290	165	1200	291	15000	375
85	70	300	169	1300	297	20000	377
90	73	320	175	1400	302	30000	379
95	76	340	182	1500	306	40000	380
100	80	360	186	1600	310	50000	381
110	86	380	191	1700	313	50000	381
120	92	400	196	1800	317	75000	382
130	97	420	201	1900	320	1000000	384
140	103	440	205	2000	322		

Note: N is the population ; and S is the Sample Size.

Krejcie and Morgan's Table (1970). Cited in Amin, 2005

Appendix; 9

Documentary Review – Check-list

1. Certified Organisations:

(ii) Name of Organisation - ……

(iii) Location of Operating Base - Uganda Based Foreign Base

(iv) Type of Organisation - AOC AMO ATO

(v) Status of Approval Certificate - Current Expired

2. Pilots / Engineers Review

(ii) Profession - Pilot Engineer

(iii) Status of License - Current Expired

(iv) Location of work organisation - Uganda Based Foreign Base

3. Aircraft Accidents Information

(ii) Aircraft State of Registry - Uganda Foreign

(iii) Aircraft Make - ……

(iv) Accident Site - ……

(v) Number Fatalities - ……

(vi) Damage to the Aircraft - Minor Major Destroyed

(vii) Year of Accident - ……

Fight Sector - Into Entebbe Out of Entebbe