

**INTEGRATION FLOW MANAGEMENT AND OPERATIONS EFFICIENCY: A
STUDY OF THE AVIATION INDUSTRY IN KENYA**

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DECLARATION

This research project is my original work and has not been submitted for the award of a degree or any other qualification in any other university.

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God bless you all.

DEDICATION

To my son, Einstein Imbiti

ABSTRACT

The essential impacts of flow management originate from a mutual understanding, greater transparency, as well as an improved communication coupled with the information and material flows. The study sought to investigate the relationship between integration flow management and operations efficiency among firms in Kenya's aviation industry. For the study design, a descriptive survey research design was adopted. The objectives of the study included: to identify the various integration flow management practices adopted in Kenya's aviation industry; and establish the relationship between integration flow management and operations efficiency among firms in Kenya's aviation industry. Both secondary and primary data were utilized in the study. The collection of primary data was done by the use of semi-structured questionnaires. On the other hand, secondary data was retrieved from the annual financial and corporate reports of the firms. The respondents in the study were operations managers of the firms. A census approach was applied in the study in which case, the sampling frame consisted of all the 66 airlines in Kenya. For measuring the output of the responses obtained from the participants, a 5-point Likert scale was used. Descriptive and inferential statistics were used to describe and analyze the variables numerically. These included simple means and standard deviations, Analysis of variance (ANOVA), and Chi-Square test. The study establishes a statically significant relationship between integration flow management and operations efficiency among firms in Kenya's aviation industry. The study concludes that; Active Employee Involvement, Infrastructure & Technology, Cooperation & Teamwork, Adaptation of Points View, and Integral Re-organization are the main integration flow management practices constitute the main streams of integration flow management practices that have had a significant effect on the operations efficiency of firms in the aviation industry in over the years. The study recommends that firms, not only in the aviation industry invest adequately in technology and information technology to ensure scalability and agility during process-reengineering. Given the fact that integration flow management is partly people-centered, the study recommends that firms within and beyond the aviation sector implement strategic change management strategies besides investing in complementary assets like re-training to counter resistance to new operations management approach like integrated flow management. It is clear that for a study of this magnitude, there is a need to conduct a survey on a bigger number of firms. Nevertheless, material and time resources could not allow this to be done. Because of this reason, the study concentrated on firms in Kenya's aviation industry. Due to the sensitivity of operations efficiency matters, some of the respondents were noncommittal posing a major challenge in the field during the data collection costing the researcher since he had to do a lot of data editing after field work. Moreover, further studies should focus on determining the specific linkages between the significant cost reductions, performance increases and an end-to-end re-organization of material and information flows. In this context, future researchers should concentrate on examining the extent to which the respective orientation of relevant company structures can enhance operations efficiency.

TABLE OF CONTENTS

DECLARATION.....	ii
ACKNOWLEDGEMENT.....	iii
DEDICATION.....	iv
ABSTRACT.....	v
LIST OF TABLES	x
LIST OF FIGURES	xi
ABBREVIATION	xii
CHAPTER ONE: INTRODUCTION.....	1
1.1 Background to the Study	1
1.1.1 Integration Flow Management.....	2
1.1.2 Operations Efficiency	3
1.1.3 Integration Flow management and Operations efficiency.....	4
1.1.4 The Global Aviation Industry	6
1.1.5 Aviation Industry in Kenya	7
1.2 Research Problem.....	9
1.3 Objectives of the Study	12
1.3.1 General objective.....	12
1.3.2 Specific objectives	12
1.4 Value of the Study.....	13
CHAPTER TWO: LITERATURE REVIEW.....	14
2.1 Introduction	14

2.2 Theoretical Framework	14
2.2.1 Situative Theory	14
2.2.2 Configuration Theory	15
2.2.3 Systems Theory	16
2.3 Flow Management Practices	16
2.3.1 Adaptation of Points of Views.....	18
2.3.2 Integral Re-organization	19
2.3.3 Cooperation and Teamwork	20
2.3.4 Infrastructure and Technology.....	20
2.3.5 Active Employee Involvement	21
2.4 Operations Efficiency Measures	22
2.5 Summary of Empirical Studies	23
2.6 Conceptual Framework	25
CHAPTER THREE: RESEARCH METHODOLOGY	26
3.1 Introduction	26
3.2 Research Design	26
3.3 Population of the Study	26
3.4 Data Collection.....	26
3.5 Data Analysis	27
3.6 Summary of Data Analysis Methods	28
CHAPTER FOUR: DATA ANALYSIS, FINDINGS, AND DISCUSSION	29
4.1 Introduction	29

4.2 Response Rate	29
4.2 Demographic Information	29
4.2.1 Job Position of the Respondents	29
4.2.2 Working Experience	30
4.3 Integration Flow Management	31
4.3.1 Adaptation of Points of View	31
4.3.2 Integral – Reorganization	33
4.3.3 Cooperation and Teamwork	35
4.3.4 Infrastructure & Technology	37
4.3.5 Active Employee Involvement	38
4.4 Integration Flow Management and Operations Efficiency	40
CHAPTER FIVE: SUMMARY, CONCLUSION, AND RECOMMENDATIONS	42
5.1 Introduction	42
5.2 Summary of the Findings	42
5.3 Conclusion.....	44
5.4 Recommendations	45
5.5 Limitations of the Study	45
5.6 Suggestions for Further Research	46
REFERENCES.....	47
APPENDICES	49
APPENDIX I: INTRODUCTORY LETTER	49
APPENDIX II: QUESTIONNAIRE	50

APPENDIX III: LIST OF AIRLINES IN KENYA 55

LIST OF TABLES

Table 2.1: Summary of empirical studies	24
Table 4.1 Adaptation of Points of View	32
Table 4.2 Integral-Reorganization	34
Table 4.3 Cooperation & Teamwork	36
Table 4.4 Infrastructure & Technology	37
Table 4.5 Active Employee Involvement	39
Table 4.6 Test statistics	40
Table 4.7 ANOVA	41

LIST OF FIGURES

Figure 2.1: Conceptual Framework	25
Figure 4.1 Positions of Respondents.....	30

ABBREVIATION

ANOVA	:	Analysis of Variance
GDP	:	Gross Domestic Product
IATA	:	International Air Transport Association
ICAO	:	International Civil Aviation Organization
KAA	:	Kenya Airports Authority
KCAA	:	Kenya Civil Aviation Authority
KLM	:	Royal Dutch Airline
KQ	:	Kenya Airways
LCC	:	Low-Cost Carriers
ROE	:	Relative Operational Efficiency
SOC	:	System Operations Control
STA	:	Scheduled Times of Arrival
TMC	:	Traffic Management Coordinators

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

A continuous development process (Bruckner & Schiefer, 2014) is the only thing that can overcome the tension between efficiency and flexibility. Flow management is a novel integral approach of management whose purpose as a development process aims at significantly increasing the companies' productivity in practice and concrete proved methods and procedures. The crucial effects of the flow management originate from a mutual understanding, greater transparency, as well as an improved communication along the flows of material and information flows (Wagner, 2015).

Since the current study focuses on the components of technical and organizational management, there is an exclusion of all the theoretical approaches concerning the behaviour of organizations or individuals. To maintain a clear focus on the main problem of integrated flow management, there has been an assumption of the oriented design of the cooperation of actors and their willingness to contribute to the efficiency of operations. Consequently, the study will be informed by three theories; situative theory, configuration theory, and the systems theory. Advanced by Wolf (2008), the principal assumption of the situative theory is that if the alignment of the organizational structure is to the specific context, then there is 'efficiency' in the organization. Therefore, in situative theory, the existence of universal, efficient organizational structures is denied. Contrary to situative theory, the configuration theory by Doty and Huber (1993) assumes the patterns of multidimensionality in cause-and-effect. In configuration theory, it is suggested that a non-linear interdependence exists between the variables of design and context. According to the systems theory by McShane and Von Glinow (2003), the systems of organizational management comprise of many internal subsystems that

need a continual alignment with the each other. With the continued growth of companies, they start developing more and more complex subsystems, which in the process of the transformation of inputs to outputs need to have a coordination with each other. The result of this is that the increased interdependencies may become so complex that the occurrence of just a minor event in one subsystem could lead to an amplification of serious consequences that were unintended in other areas in the organization

The main reason why individual airlines are becoming more successful on their own is because most of the time they operate efficiently. Therefore, efficient operations come with some benefits including cost containment as well as exceedingly meeting the needs of the customer. Additionally, efficient operations are necessary because it allows the successful passengers check-in. they are able to be processed effectively at the gate as well as get favorable services onboard. With this, they are in a better position of getting to their destinations on time together with their luggage.

1.1.1 Integration Flow Management

Integration flow management is a modern approach whose focus is an end-to-end planning of the flow of information and material from suppliers to the customers. In turn, there is an extension of material flow from the raw material to the finished product or the solid waste. Flow management places the installation of a lasting process of changes into the center with the information flow covering all steps from customer inquiry to supplier order. The great benefits that come from flow management are because of improved communication, greater transparency, as well as a mutual understanding that comes along with the flow of information and material (Rogers & Lambert, 2012).

By recognizing the end-to-end flow of material and information, there is a stimulation of the employees into questioning the existing situations, thus developing various scopes for re-organization. With flow management, therefore, all the relevant areas of planning and structures are aligned systematically with the flow information and material. Information and material flows are great importance for the economic performance of the company and for compliance of manufacturing companies. The manufacturing companies are the ones concerned with manufacturing the physical parts of the aircraft and airplanes. This process requires a company to plan and control the complex material flows. Essentially, the material flows relevance comes from the size of the material costs as illustrated by Wagner (2015).

In aviation, integration flow management facilitates Traffic Management Coordinators (TMC) who creates a plan for the delivery of the aircraft to the runway in a manner that allows them to meet the airport's capacity in terms of the configuration of the runway, aircraft type, and the wind. The plan comprises of scheduled times of arrival (STA), sequences at the meter fix, which are normally published points along routes of flight of an aircraft. Seamless flow of real-time data is essential given the fact that the operations of the air traffic control are based on the principle of "first come, first served." Nonetheless, to determine the most efficient and safest flow in traffic, the controllers are required to apply their best judgment. This is usually in consideration of the different aircraft types, and if there has been a request of priority handling.

1.1.2 Operations Efficiency

Operations efficiency is the ability to do a delivery of services and products in a cost effective but without compromising the quality. Operational efficiency incorporates several techniques and strategies used in accomplishing the main goal of the delivery of quality goods to the customers in a manner that is timely and cost-effective. Resource utilization, production, distribution, and inventory management are all common aspects of operational efficiency. Thus,

with operational efficiency, there is the creation of business agility, the generation of new opportunities, the reduction of costs, as well as the enhancement of customer experience. Still, it has proved challenging to the service providers to optimize operational efficiency in both the business and technology.

Operations efficiency is measured as a ratio of observed productivity to maximum productivity. The desired performance is measured by the maximum levels of productivity. The analysis methods is based on the analysis level. For instance, operational efficiency at the micro-level is measured at points on the shop floor including by the machine, workstation, and laborer. On the other hand, at the macro-level operational efficiency can be measured at the national, industry, and firm level. The process of analyzing the efficiency and productivity analysis is associated with the economics of production economics, whose focus is assessing and using an aggregate description of technology in answering questions as Hackman (2008) illustrates. Some of the questions may include the efficiency of the firm in the utilization of its input for the production of its outputs. The other one is whether the firm is utilizing the right mix of inputs or whether it is achieving the right output mix under the prevailing prices. At the same time, one may want to know the company plans on responding to a price hike where the output is critical. One may also want to know the efficiency of the firm when it comes to scaling its operations. Similarly, it is good to know if the capability of the company to be productive has improved over time. Lastly, one may want to know the comparison of the firm to its competitors.

1.1.3 Integration Flow management and Operations efficiency

It is possible to realize significant performance increases and cost reductions using an end-to-end re-organization of the flow of information and material as well as orienting the relevant structures of the company respectively. When the employees are involved, they are motivated, which brings about positive impacts that surpass the implementation phase. Especially for

medium-sized companies, the experience from pilot studies has shown that flow management comes with many beneficial effects (Wagner, 2015). The adjustment of information system and structures coupled with behavioral changes allow the ecologic and economic re-organization material and information flow to be better than before. In this connection, the reduction, simplification, as well as flexibility of the flow of information eventually leads some positive effects including minimizing material costs and the loss in material value through destruction, rejects, among others. At the same time, it reduces the handling and processing costs (production or rather process costs) during the procedures of storage, transportation, cleaning, setting up, as well as processing the product (Bruckner & Schiefer, 2014).

Integration flow management also leads to increase in performance. This is done by lowering the processing times, optimum inventories, increasing process safety at the lower process duration in the preparation of tenders, product development, production planning, and procurement. High performance also originates from reaction capability and high adjustment with the constantly changing markets. Flow management ensures that all relevant areas of planning and structures like organizational structures, projects, business processes, technologies, and IT-systems are aligned systematically according to the flows of material and information (Rogers & Lambert, 2012).

In aviation, Integration Flow management enables firms' benefits from the integration of automated systems and advances in information technology for the improved capabilities in system operations control centers (SOCs), which is the airline operations' 'brain.' It functions by distributing data to the appropriate personnel as well as helping in the coordination of the resulting decisions. The purpose of integrating the various systems (the nervous system) is for enhancing the data transportation and sharing through the SOC network. As such, the software solutions are able to generate the data, which provides decision support for the personnel of

SOC. Similarly, with automation, it is possible to improve the exchange of information within the SOC. It also allows information exchange between the SOC as well as the external operational groups like airport control centers, line maintenance, and air traffic control, pilots flying aircraft, hangar facilities, and the departments of airline engineering.

1.1.4 The Global Aviation Industry

Over the years, rapid growth has been seen in the global airline, despite the elusiveness in robust and consistent profitability. Using the revenue to measure growth, the amounts has doubled within the last decade with 2004 recording US\$369 billion to a 2015 projection of \$746 billion. Low-cost carriers (LCCs) that have been rapidly expanding in the emerging markets are known to control about 25 percent of the worldwide market. The growth of the LCCs has been also facilitated by their gains in the developed markets according to the IATA reported. Still, the profits accrued from these markets are very small with an overall of 3 percent (IATA, 2016). The center of gravity of the industry is shifting because of the fast growth of air travel in the developing markets like Latin America. Particularly, Asia is creating a huge shift in the center of gravity of the industry. The largest portion of profits in the industry is however taken by the Middle East-based carriers including Etihad Airways, Emirates, and Qatar Airways. Initially, the largest profit holders were from the Europe-Asia traffic from legacy airlines of those continents (IATA, 2016).

When it comes to matters of employment, on a global scale, over 8.4 million people have been employed directly by the air transport sector. The sector also supports tens of millions of people by giving induced and indirect employment. The air transport sector is a vital part of travel and tourism, which is the world's largest industry. At the same time, numerous opportunities for specialized training and education have been made available by the sector to many young people. The other success story that the sector has recorded is that of women empowerment. Because of

this, the number of female pilots worldwide is about 4,000. Again, by scaling-up the existing technologies in sustainable transportation, many doors can be opened for high-level jobs as well as driving sustainable and long-term economic growth (ICAO, 2015).

The African authorities need to address aviation deficiencies related to security as well as to strengthen the regulatory framework have endorsed an African Union-backed plan. Accordingly, the International Civil Aviation Organization together with the International Air Transport Association and other organizations have made a commitment to support the Africa Union's Africa Strategic Improvement Action Plan. Through the plan, African governments are encouraged to foster oversight on the regulations by adopting globally accepted standards in security and safety (ICAO, 2015).

1.1.5 Aviation Industry in Kenya

In Kenya, the airlines that are registered in the country locally employ about 6,000 people. Again, through their supply chain, they offer other 8,000 jobs. Some of the jobs in the supply chain include those in the distribution sector that deliver aviation fuel, those that work in the sector of catering to prepare the meals that are served by airlines. Another category of 8,000 jobs also exists that the aviation industry supports, through the household spending by the people the airlines and their supply chains employ. To Kenya's economy, these airlines contribute about KES 7.1 billion directly. Additionally, there is an

indirect contribution of about KES 2.9 billion by the industry through the output its supply chain supports. In addition to that, another KES 3.1 billion originates from the airlines' employees' spending as well as their supply chains. In total, the registered airlines in Kenya make a contribution of more than KES 13.0 billion to the country's economy as well as supporting 22,000 jobs (GoK, 2015).

In Sub-Saharan Africa, the market of air transport market is a strong presentation of dichotomy. However, Eastern and southern Africa there is a growth in the market having three strong hubs together with three major African carriers that dominate the domestic and international markets, which are becoming concentrates as well (Bruckner & Schiefer, 2014). Still, despite this success, the Kenyans sector is stagnating, due to the creation of a vacuum because of the collapse of its main carriers coupled with the demise several regional airlines have faced. The reason for the slump is the fact that better services are demanded by the customers in the aviation industry. The customers require faster transportation, more transparency in the business transactions, as well as an immediate response to business exceptions and situations, which is a major deficit in the aviation sector in Kenya (Ochieng & Abudho, 2013).

In the Kenyan aviation industry, one of the biggest challenges that are being seen is that of safety. For instance, 2011 statistics shows that the average accidents in air traffic in Kenya were nine times greater than the global average. The high frequency of the accidents is blamed on the inconsistency seen in implementing and enforcing internationally accepted practices and safety standards. Therefore, Kenya's aviation industry needs to focus on the improvement of safety by making this a priority when it comes to developing the aviation industry in Kenya. Apart from the safety challenges, the country's aviation also faces issues like a lack of human and physical resources, poor airport infrastructures, lack of transit facilities, and limited connectivity. Despite all the efforts the country has been making in the past decade, the country is still lagging behind when it comes to both 'hard' and 'soft' infrastructure. As such, it is critical that the country invests in both types of infrastructure as a way of reviving the industry in Kenya (Ssamula & Venter, 2013).

Issues of safety aside, the aviation industry is still suffering from the lack of government action and regulations. Although there is sufficient evidence and awareness of the role played by the aviation industry in the continent, the government is not prioritizing it. Additionally, even though the aviation industry in Kenya is becoming increasingly liberalized and more foreign companies are coming in, there is still reluctance on the side of the government in opening their skies. This is due to the fear that the national airlines could be undercut by fearing foreign competition. The fear is baseless because some of these airlines lack a commercial viability since they are only used as symbols of sovereignty. Given all these challenges, the government needs to enhance the regulation of aerospace management, the safety of airlines, and consumer protection. The other issues the Africa's aviation industry is facing is the lack of aviation skills and experts, high airport fees and taxes, restriction on facilities and transit visas, as well as weak connectivity (Irindu& Rhoades, 2012).

1.2 Research Problem

In order to have the capability of modifying, maintaining, and improving workflow, first, it is important to understand its dynamic behavior and performance. Consequently, a popular trend is coming up where the process of decision-making is integrated into the organization's business processes. Given that the customers require faster services, instant response to business exceptions and situation, and transparency in business transactions, the competitive advantage of organizations will be jeopardized without having the capacity to deliver real-time information and give feedback on their business operations (Ochieng&Abudho, 2013).

A number of factors hamper the rapid expansion of the aviation industry in Kenya. They include lack of infrastructure and adequate resources, poor records of security and safety, limited connectivity and distance, lack of government action and regulation, among others. Because of

these constraints, there is increased competition and increased costs of operation that are in turn causing a surge in the oil prices. By addressing these challenges, the country will be able to unlock the potential the aviation has for future growth. In the country's aviation industry, there is almost a new set of challenges each day. The employees are then required to deal with the issues to achieve efficiency and safety in moving cargo and passengers.

One of the problems is an increase in oil prices that brings about large expenses for the airlines. There is, therefore, the need to effectively utilize the available resources for the improvement of productivity while reducing labor costs at the same time. The aviation industry is confronted with having to deal with irregular operations that are caused by simple events like a mechanical problem on one aircraft. The irregular operations also occur due to weather storms that lead to the closure of many airports and thus the cancellation of flights. They also face external and internal difficulties like limitations in air traffic control that eventually leads to a reduction of on-time performance to unacceptable levels. Besides the challenges faced with safety, the aviation industry in Kenya is dealing with other issues that include poor airport infrastructures, inadequate human and physical resources, lack of transit facilities, and limited connectivity. Although the country has made some substantial progress in the past decade, it is still behind as compared to other regions due to lack of hard and soft infrastructure. Thus, there is urgent need that adequate investment is made in the acquisition of the hard and soft infrastructure that will be useful supporting the industry (Ssamula& Venter, 2013).

Many studies have been done in the past concerning operations efficiency. One was carried out by Bruckner and Schiefer, (2014) to study the effect the Dual-core model had on the tools of decision making on the performance of an organization. The results of the study showed that whether workflow systems were available or not, a rich source of activity logs still exists, which

are possible to transform into valuable business metrics for the provision of adequate feedback concerning the performance and quality of the business operations that have been executed. Ahmed (2014) carried out a descriptive survey on Kenya's aviation cluster and found that the competition in the Kenyan aviation market is different as opposed to other industries in the country. According to their study, demand side commercial practices raise switching costs for users. Ssamula and Venter (2013) conducted a multiple case study on sparse Travel demand within the aviation industry in Africa established that creating synthetic demand driven economies of scope to make it more attractive for passengers and travel agents despite the fact that Kenya has been losing its global competitiveness over the last two decades. Irandu& Rhoades (2012) conducted a study on the role of knowledge management when linking operations to organizational effectiveness and established that; technology and data flow management significantly influences the performance of manufacturing firms in Kenya. According to Irandu and Rhoades (2012), most airlines in Kenya operate without the capabilities of the delivery of feedback and real-time information concerning the operations of their business at the expense of their competitive advantage. Normally, with the existence of structures but with insufficient material data there is always an obstruction of the efficient flow of information and material and information. Tuin, Kelly, and Donald (2010) conducted a demand forecast aimed at establishing a supply chain model for Kenya Medical Supplies Agency (KEMSA) extending to the year 2020-2024. The study came up with a modeling framework that consisted of three models that were separate but interlinked. The first one was a health model used in the prediction of the quantity and location of the health conditions of future interest that were treatable. The other model aimed at the translation of the projected health conditions for delivering the needs of the supply system. Their last model was that of a supply chain, whose function was to generate the metrics of interest through the modeling of the flow and pull of materials that are generated

through the network of the supply chain. Though the study provides vital insights into the concept of integrated flow management, the study is limited to the extent that it focuses on supply chain management, which is just one of the many aspects of operations efficiency.

Despite numerous studies on operations efficiency, not many studies have specifically investigated the role of integrated flow management in enhancing operations efficiency in the domestic aviation industry. Against this backdrop, this study sought to investigate the extent to which the airline companies in Kenya have adopted Integration flow management approaches to enhance their operational efficiency. Towards this end, the study wanted to address the research question; what is the effect of adopting flow management on the operations efficiency of firms in Kenya's aviation industry?

1.3 Objectives of the Study

1.3.1 General objective

The study's main objective was establishing the relationship between integration flow management and operations efficiency among firms in Kenya's aviation industry.

1.3.2 Specific objectives

The study's specific objectives were as below.

- i. To identify the various integration flow management practices adopted in Kenya's aviation industry
- ii. To establish the relationship between integration flow management and operations efficiency among firms in Kenya's aviation industry

1.4 Value of the Study

On a theoretic level, there will be the relation of the various results of this thesis to the existing literature on operations efficiency and flow management, while challenging the assumptions made in the literature at the same time. On new knowledge, the outcome of the investigation will provide possible further research in the aviation market in general and the Kenyan aviation industry in particular.

On the policy level, the findings of the study will serve as an awakening call to the regulatory authority in Kenya to initiate a strategic shift while taking cognizance of the importance of integration flow management and the importance of having an efficient and effective aviation infrastructure. Further to this, the study will be vital for policy makers in the establishing the trade-offs between pro- and anticompetitive forces.

On the managerial level, the findings of the study will enable operations managers to understand how fundamental changes in industry bring to the force crucial operations strategic decisions on network configuration and distribution systems. Towards this end, the study will provide vital insights on the possible obstacles to data and material flow that negatively impact on the efficiency and competitiveness of firms in the aviation industry.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter is a review of the empirical and theoretical literature from past studies on operations planning and firm performance. The chapter focuses on; the theoretical framework, integrated flow management, operations efficiency, empirical literature, the conceptual framework of the study, and a summary of the empirical literature.

2.2 Theoretical Framework

This section builds the theoretical framework of the study by drawing on the situative theory, configuration theory, and the systems theory.

2.2.1 Situative Theory

Advanced by Wolf (2008), the situative theory is a contingency approach, which allows one to choose from the alternative designs for a given problem based on a particular target system. By examining the conditions of that specific framework, it is possible to get a concrete solution for the problem using this approach. The principal assumption used in situative theory is that efficiency is received in an organization if there is an alignment of the organizational structure to the specific context. Hence, the situative theory does not agree with the issue of organizational structures being universally efficient. Instead, it aims at searching for formal structures that can result in situatively reasoned efficiency fitting it with the specific factors in that context. As Donaldson (2001) says contextual conditions such as size, strategy, technology, and task uncertainty influence these contextual conditions, which in turn will have an effect on the organizational design. Because these contextual conditions affect the variables of organizational structures, this research's focus has been termed as the structural contingency theory (Donaldson, 2001).

According to the situative theory, the significant environmental factors of an organization as well as the organization's characteristic determine its operations efficiency. The relevance of the situative theory to the current study is pegged on the fact that; these organizational characteristics correspond to 'integration flow concept.' A 'configuration' means the combined specific 'integration flow concept' together with a specific 'operations efficiency aspect' in a manner that the connection of the situation and configuration are the factors that determine the configuration's success.

2.2.2 Configuration Theory

Contrary to the situative theory, the configuration theory by Doty and Huber (1993) looks at the organization as a system that is influenced by the environment. This has, in turn, driven other theorists to gain an interest in the analysis of the impact such incidents had on organizational performance. It is through such analyses that the contingency theory came to being. The configuration theory is anchored on four general principles including the fit concept, configurational thrift, equifinality thinking, and discontinuity of transition. According to the 'fit concept,' the interpretation of an organization's success can be made based on at least two variables. The assumption is that the concepts of 'fit' of the operations efficiency and the operations strategy, together with the 'fit' with the integrative instruments and measures can result into improved firm competitiveness.

These two 'fits' therefore have a correspondence with the idea of external and internal coherence. The meaning of 'Equifinality' is that it is possible to get to the same end state even when you start from a situation that was different initially. This is known as the functional equivalence of situations. When this is transferred to the integration flow management problem, it means that different ways can be used in improving the efficiency of operations. According to Wolf (2000), information processing potential is central. It then encourages a focus on the technical and

informational aspects. The meaning of configurational thrift, on the other hand, is that the number of successful configurations is limited. Many times, the number of configurations is usually smaller than that of the variable combinations, which results when the characteristics are systematically combined.

2.2.3 Systems Theory

According to the systems theory by McShane and Von Glinow (2003), organizational management systems comprises of lots of internal subsystems, which have to be in a continuous alignment with each other. With the continuous growth of companies, subsystems that are more complex emerge, meaning that they have to be coordinated with each other during the process of getting outputs from the inputs. With that, it is possible for the interdependencies to get so complex that the occurrence of any minor event in a subsystem could be magnified into a serious consequence that was not intended, thus affecting other parts of the organization.

The Systems theory fits into the current study given the fact that its application is made as a way of supporting the way cooperative relationships are understood. There has however been an enhancement of the theory into another systems theory. In this one, systems comprise of interdependent and related components that include outputs, boundaries, transformation mechanisms, inputs, and interfaces that interact with the environment. Autonomy and complexity can define a system, and the environment cannot influence it directly. The only thing that can be generated from the outside of the system is the scope that is used to control the autonomy.

2.3 Flow Management Practices

In flow management, the center is the area a lasting change process is placed. Today, the other conditions together with the market environment are changing rapidly. Therefore, the companies need to be in a position of dealing with the new risks and opportunities from the inside very fast.

Therefore it is, vital that the existing blockages that interfere with the regular development and changing process are identified and removed. Thus, the aim of flow management is to recognize and remove the blockages regularly. As such, it is not an issue of setting up a rigid organizational information and material flows. The employees' abilities thus only need a continuous development to equip them with the ability to do an analysis of the existing structures and the flows. In some case, where necessary, they need to act in a coordinated, fast, and efficient way in order to change the existing structures and flows (Wagner & Trobel, 2015).

Here, the word 'flow' functions as a metaphor, which has two meanings. The first meaning is to have the capability of reorganizing the complex information and material flows in a purposeful and efficient way. In the other meaning, it will make a company as a whole to 'flow' to mean that it will enhance the installation of a lasting process of development. Still, from the point of flow management, business processes most of the time make a contribution to the generation of interfaces and interruptions along the flow of information and material and information. Here, we lose the end-to-end overview of the company. Hence, within the flow management scope, re-organizing the business processes, particularly the complex ones is intensively sensible (Diego & Marin, 2013).

The focus of flow management is changing the flow of information and material. Whether indirectly or directly employees are charged with the function of planning, organization, and controlling. After the change in material and information flows has occurred organization and personnel development usually follow. The capacity of organizations to organize the efficient flows is greatly influenced by the basic principles of development and planning. The integral parts of the procedure are the basic principles, instruments, and methods management flow (Jeong & Philips, 2011). They will be elaborated further in the next section.

2.3.1 Adaptation of Points of Views

With the use of change of perception, it should be easier to do an analysis of the existing behaviour and structures. It also aids in the adjustment of the employees' differing points of view, as well as many other functions of the employees a lot more. It is clear that each employee, as well as every division in an organization, has its own point of view. Different product names are covered by the perception differences. This leads to the question that seeks to understand the division that is at fault for the unsuccessful product development projects in management, sells, production, and development. Therefore, the different points of view create misunderstandings, which make it difficult to come up with a joint search for the most appropriate solution. The misunderstanding is especially common among the different department of the organization. Still, the same may be experienced among the various hierarchical levels of the organization, making it important to standardize perceptions. For instance, during the pilot project, controllers went to the ground to get a better understanding of the processes of the airlines (Lee & Johnson, 2012).

With the long-term development of the company, it is will be easier to clarify the whole orientation of the company. In this regard, the employees are able to get their targets by deriving them from the company's strategy and vision. During this process, there is a uniform alignment of the targets of the upper and middle management together with that of all the employees. In order to ensure there is a lasting, coordinated, and targeted development of the company, there will be an assessment of all the further approaches and activities. Again, looking into the company is an effective way that can be useful to draw up the strategy. The information concerning the present status of development of the company is retrieved during the first two phases, that is, the 'assessment and 'modeling' of the annual management cycle. The further

definition of the strategies is done by determining, adjusting, and implementing them into targets as illustrated by Diego and Marin (2013).

2.3.2 Integral Re-organization

In most of the companies' department, the division, as well as and the person-orientated interests, goals, and thinking patterns are still in control. The various departments including that of Sales, production, logistics, and development, among others act in their own logical way. The respective stimulant and target systems are leading to more of this behavior. When this happens, it is less successful to ensure the organization of the company. However, using flow management, which increases cost efficiency as well as the company's future compliance. It takes into account the integral claim through the orientation of the flow of information and material, together with their respective processes and structures (Wagner & Strobel, 2015).

Flow management is used in supporting and controlling the companies in a permanent and process of change. Due to the market conditions and external demands, some permanent changes are being experienced at all levels in the company. The fundamental challenge of a coordinated change process lies in the coordination of all the different levels that experience the change. Essentially, all the activities right from development strategies to small optimizations should all move in a similar direction. Through this, it is possible to focus all the forces, thus ensuring the economic change process. In flow management, the three associated cycles of development are linked to each other closely. The first cycle is the long-term development of the company. Cycle 2 is the annual management cycle, while the third cycle is the continuous development process (Diego & Marin, 2013).

2.3.3 Cooperation and Teamwork

The flow management scope supports the purposeful capability of communication and cooperation between the employees. There can only be a flexible and efficient organization of the complex information and material flows if there are a close cooperation and exchange among the participants. Primarily, the resistance and blockades that hinder cooperation need to be removed for this to take place. Some of the issues that hinder good cooperation include mutual prejudices; old behaviours, mutual prejudices, as well as the conflicts of interests stand as a hindrance to this cooperation. For efficiency, there must be a resolution of the resistances and blockades. As such, in some workplaces, the organizational structures can be replaced by teamwork (Lee & Johnson, 2012).

The major aims of flow management are not just checked as well as improve the structures, processes, and flows only once. Contrary to the creation of rigid rules, flow management places the company in a position of perceiving, analyzing, and changing, the structures, processes, and flows. With every market change and new demand, the company needs to make internal adjustments. This way, the company will be on the move always. In this case, the ideal thing to do is to let the employees carry out these small adjustments on their own. Additionally, for the change process to be successful, there must be coordination in the manner in which the activities are carried out. At all the stages of change, there should be the involvement of the respective people and the information and material flows. If not, the involved parties need to be informed at least (Wagner & Strobel, 2015).

2.3.4 Infrastructure and Technology

In the companies, the most visible levels are technologies, buildings, and infrastructure. This is the most accessible level and is consistently perceived. The infrastructure, buildings, and technology are material flows' physical basis. However, this basis only determines material

flows partially. Based on the automation degree, the employees of production, the areas store, transportation, dispatch, as well as technology will make the necessary decisions on the material flows' real structure. Traditionally, material flow moves in a certain order. The first step is the arrival of the materials from the supplier. It will be followed by the transportation of the materials to the company, then storage and processing. The final step is when the material will leave the company as either a residual waste or physical product. Here, 'material' means auxiliary materials, raw materials, spare parts and tools, energy, water, among others (Diego & Marin, 2013).

Numerous structures can be found in a company including responsibilities, divisions, authorizations, hierarchy levels, working groups, projects, processes, regular meetings, and many others. All these elements strongly affect the information and material flows. Due to the highly complex information and material flow, it is not easy to correlate the flows with the structures (Wagner & Strobel, 2015).

2.3.5 Active Employee Involvement

When it comes to flow management, the employees play a critical role. Project managers, the individual management representatives, as well as the external consultants cannot do the implementation of flow management. Even though these groups may be a great support to the process of development, the employees, however, should do decision-making. This is because, in many of the occasions, the employees are the ones that are more familiar with the problems faced by the company. Nevertheless, the processes of decision-making that have been set by the companies hinder the employees from presenting and implementing the solutions. In the long run, these employees just end up feeling frustrated. According to Bendul and Karl (2012), when there is active involvement of the employees in the process of change, and they are made to feel

as important partners in the change process, they identify more with the company together with the pending measures.

With active involvement, the significant potential within the employees is not only freed, but they also become motivated. Due to the complex and multilayered nature of companies, it is both difficult to organize and change them. For easier understanding of a company, the scope of flow management clearly, stipulates the various levels of planning. In the day-to-day life of a company, the levels are interwoven with the daily activities of the company. However, they will be viewed separately here. The area that will be considered most in this study is that of the interactions that occur among the levels. This is because one level is likely to be affected by the deficits and weak points in one level (Wagner & Strobel, 2015).

2.4 Operations Efficiency Measures

Operational efficiency is defined as the capability of delivering services and products cost effectively without compromising the quality. Efficiency has ever since been defined as a certain ratio of the outputs and the inputs of the given activity (Wong & Naim, 2010). Two key approaches are applied to measures operations efficiency, relative operations efficiency, and best-observed throughput. On the other hand, the ratio of throughput in comparison to the best-observed throughput is known as Relative operational efficiency (ROE). For the measurement of efficiency, *Relative benchmarks* are regularly because related comparable machine, firms, process, firm, among others, can be identified easily. The estimation of ROE is done by the identification of the best-observed performance in a set of data when the same task is being performed by multiple operations. Thus, as a machine of A, the estimation of the relative operational efficiency (ROE) can be done as below.

$$\text{Relative Operational Efficiency (ROE)} = \frac{\text{Actual Throughput}}{\text{Best Observed Throughput}}$$

The determination of the *Best observed throughput* is often done by the use of historical performance data using the assumption that, without changing the conditions, the actual throughput should be equal to or close to the historically best performance. Xia and Chen (2011) defines *Best* as the largest possibly achievable productivity.

$$Productivity = \frac{Output}{Input}$$

$$Efficiency = \frac{Productivity}{Productivity\ of\ Best\ Practice}$$

2.5 Summary of Empirical Studies

The ensuing research is based on a summary of the literature thus presented. Much of the review considers empirical works published in academic journals from 1988 to 2016. The review started with the study's theoretical framework. The chapter then delves into the conceptualization operations efficiency and flow management. Table 2.1 summarizes the empirical literature.

Table 2.1: Summary of empirical studies

Author	Objectives	Findings	Gap
Ahmed, S. (2014)	To investigate Kenya's aviation cluster in Global aviation	Competition in the Kenyan aviation market is different as opposed to other industries in the country.	The study falls short of unraveling the antecedents of firm competitiveness through operations efficiency
Ssamula, G. & Venter, L. (2013)	To examine Sparse Travel demand within the aviation industry in Africa	Creating synthetic demand driven economies of scope to make it more attractive for passengers and travel agents despite the fact that Kenya has been losing its global competitiveness over the last two decades.	The study is limited to the extent that, there is no clear link between operations efficiency and economies of scope
Bruckner, K. & Schiefer, F. (2014).	To investigate the performance and dynamic behavior of workflow systems	within and without workflow systems, there is often a rich source of activity logs that can be transformed in valuable business metrics that provide an accurate feedback about the quality and performance of executed business operations	The study is limited to the extent that it only factored one aspect of Integrated flow management.
(Ochieng, Y. & Abudho, G. 2013).	To determine the effect of real-time information delivery capabilities and feedback on business operations	Organizations without real-time information delivery capabilities and feedback of their business operations will sacrifice their competitive advantage	While their study provides vital insights into the role of data flow management on performance, the study fails to investigate the role of data and material intergrade flow in enhancing operations efficiency.

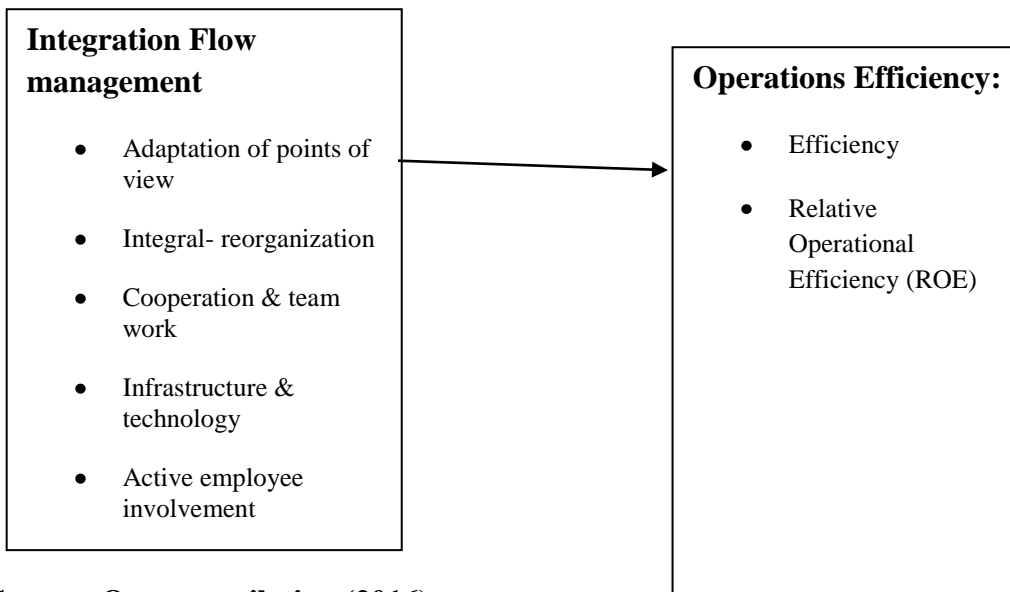
2.6 Conceptual Framework

In the current study, the dependent variable was the Operations efficiency of the firms in the aviation industry. The independent variables, in this case, were the adaptation of points of view; integral- reorganization; cooperation & teamwork; infrastructure & technology; and active employee involvement. The conceptual framework is presented in Figure 2.1.

Figure 2.1: Conceptual Framework

Dependent Variables

Independent Variable



Source: Own compilation (2016)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter focuses on the study population, research design, sampling frame and sample size calculation, methods of data collection, data collection methods, and data analysis methods that were used in the study.

3.2 Research Design

A descriptive survey design was adopted for the study. Using a descriptive survey design, the researcher obtains large amounts of data from a sizable population in a manner that is highly effective, easy and economical using questionnaires. Additionally, a descriptive survey gives the researcher room for obtaining quantitative data that can be analyzed using descriptive and inferential statistics according to Saunders et al. (2002).

3.3 Population of the Study

In the current study, the population comprised all the airlines operating in Kenya. Sixty-six airlines are on a roll (KCAA, 2016). A census approach was applied in the study in which case, the sampling frame consisted of all the airlines operating in Kenya. As Lewis & Thornhill (2009) say, the application of the census approach is good because it ensures that there is validity in the data collected because it allows for the use of some information-rich cases for the study.

3.4 Data Collection

Both secondary and primary data were utilized in the study. The collection of primary data was done using a semi-structured questionnaire subdivided into three sections. Section 1 consisted of questions aimed at getting demographic data of the respondents. Section 2 consisted of questions aimed at getting data on the integration flow management practices of the firms while section 3

consisted of questions aimed at establishing the relationship between integration flow management and operations efficiency.

Secondary data on the operations efficiency of the firms was obtained from the annual financial reports for the reference period. The data that was extracted include the statement of financial position, income statement, and notes to the accounts. The analysis of secondary data helps in saving the time that would have been spent to collect data. This is especially common in the collection of quantitative data. Here, collecting secondary data aids in the provision of higher quality and larger databases that would pose challenges for a researcher to collect on his own. To measure the response of the items, the respondents answered, a 5-point Likert scale was applied in measuring each item that the respondents answered. The rationale for the use of the Likert scale is because it is economical and quick to administer and score. At the same time, it can be adapted easily to most situations where one wants to measure attitude. It can also provide a reliable and direct assessment of attitudes following the construction of the scales. The Likert scale lends itself well to item analysis procedures.

3.5 Data Analysis

Inferential and descriptive statistics were used in the description and analysis of the variables numerically. These included simple means and standard deviations, Analysis of variance (ANOVA), and Chi-Square test.

The research model will be computed as follows;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5$$

Where;

Y = Operations efficiency (Productivity)

β_0 = Constant

β_1, β_2 , = Coefficients of the independent variables

X_1 = Adaptation of points of View

X_2 = Integral-reorganisation

X_3 = Cooperation & Team work

X_4 = Infrastructure & Technology

X_5 = Active employee involvement

3.6 Summary of Data Analysis Methods

Objective		Section of the Questionnaire	Data Analysis Method
i.	To identify the various integration flow management practices adopted in Kenya's aviation industry	Section 1 and 2	Descriptive statistics: Frequency, Mean, Variance, and the Standard deviation
ii.	To establish the relationship between integration flow management and operations efficiency among firms in Kenya's aviation industry	Section 3	Analysis of Variance (ANOVA), Chi-Square test

CHAPTER FOUR

DATA ANALYSIS, FINDINGS, AND DISCUSSION

4.1 Introduction

The study sought to establish the relationship between integration flow management and operations efficiency among firms in Kenya's aviation industry. This chapter presents the research findings by focusing on; demographic characteristics of the respondents, data analysis and suggestions by the respondents based on the study's specific objectives. Data on sustainable integration flow management and operations efficiency was analyzed using descriptive and inferential statistics.

4.2 Response Rate

Sixty-six (66) questionnaires were administered to the respondents. Forty-Seven (47) of these questionnaires were returned, which represented 71.21% response rate. There was sufficiency and representation on the response rate as it is in conformity with the stipulation of Mugenda and Mugenda (2003). According to Mugenda and Mugenda (2003), to able to analyze and report, a 50% response rate is adequate, 60% is good, and that the best one is that of 70%.

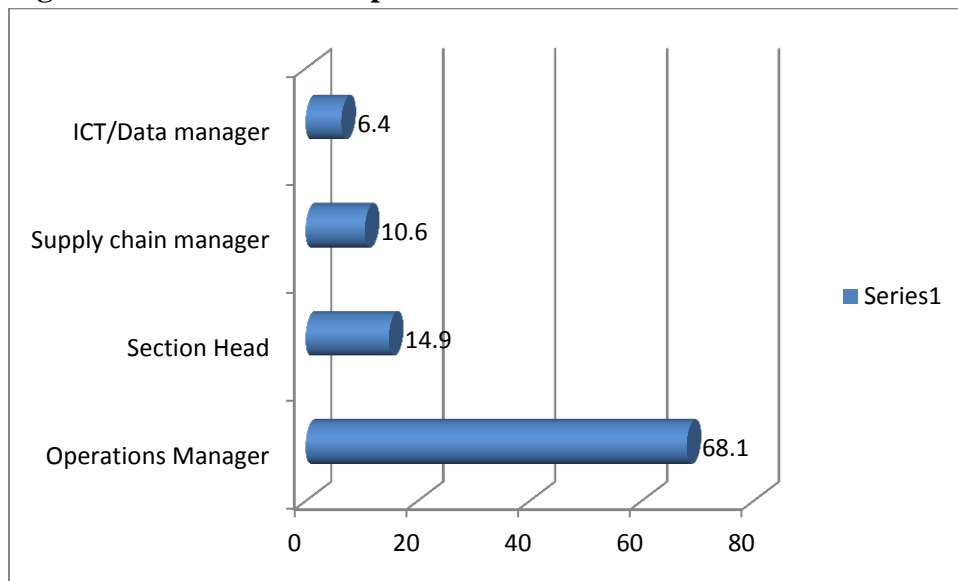
4.2 Demographic Information

The respondents' demographic characteristics that were tested include Job position and working experience.

4.2.1 Job Position of the Respondents

Integration flow management involves managers spanning all the functional areas of an organization. Cognizant of the above, an inquiry was made into the job positions of the respondents. The results are depicted in figure 4.1.

Figure 4.1 Positions of Respondents



From the findings in figure 4.1, it is clear that most of the respondents were operations managers with only 6.4% of respondents being ICT//Data managers. This implies the information was collected from respondents who are directly involved in making key operations decisions thus were better placed and aware of the integration flow management practices adopted by the airlines.

4.2.2 Working Experience

The adoption and implementation of an operations strategy require a workforce with substantial operations management experience. In this context, the study wanted to determine the number of working years of the respondents in their current positions among the airlines. According to the findings, up to 70.2% of the respondents had more than sixteen years of working experience, while those in the 11-15yrs constituted 14.9% of the respondents. The fact that only 8.5% of the respondents had less than 5 years working experience implies that the data collected was from employees who have massive experience and familiarity with operations planning in the respective firms.

4.3 Integration Flow Management

Significant performance increases and cost reductions can be realized by reorganizing the flow of information and materials end-to-end as well as orienting the company structures respectively. Towards this end, the study sought to investigate the extent to which firm in Kenya's aviation sector have adopted various flow management practices. The responses of the respondents were analyzed based on a Likert scale ranging from 1 to 5 with 1 being Very Small Extent; 2 representing a Small Extent; 3 is a Moderate Extent; 4 showing a Large Extent; and 5 representing a Very Large Extent.

4.3.1 Adaptation of Points of View

The perception change should facilitate the analysis of behaviour, the existing structures and enable new behaviour. It can also be used in adjusting the employees' differing points of view, as well as much more. Therefore, each employee and every division view the company in their own way. In light of the above, an inquiry's was made into the extent to which airlines have adopted differing points of view. Table 4.1 shows the results in this section.

Table 4.1 Adaptation of Points of View

	N	Mean	Std. Deviation
	Statistic	Statistic	Statistic
Has your airline cultivated a change of perception that facilitates the analysis of existing structures?	47	3.2340	1.00461
Has the airline implemented cross- functional processes to narrow variances in the points of view for the avoidance of any misunderstandings?	47	3.1064	.69888
Does the airline's encouragement of a joint effort in searching for practical solutions more challenging, especially among the different departments?	47	2.1064	1.41781
To what extent, is the airline ensuring that all the approaches and activities that follow the changes will be assessed based on specific targets?	47	4.1489	1.23321
What mechanisms have the airline put in place to ensure that the company's long-term development will determine the basic orientation of all changes?	47	3.4043	1.51312
To what extent do the external requirements of the airline and its market analyses play a vital role in the development operations plan development?	47	4.0851	1.11958
Has the airline established a change of perception that induces new behavior?	47	2.0000	.78019

According to the findings in table 4.1, the fact that the airline ensures that specific targets will assess all further approaches and activities for a change is the most influential practice associated with the adaptation of points of view that has been adopted by the airline firms to a large extent with the highest mean at 4.1489. This will be followed by ensuring that the external requirements of the airline together with its market analyses are vital in developing the operations plan development at 4.0851. The long-term development of the company will help in establishing the

mechanisms of ensuring that the changes' basic orientation. It will also help in cultivating a change of perception that facilitates the analysis of existing structures; and the implementation of cross- functional processes to narrow variations in the points of view in avoiding misunderstandings have been adopted to a moderate extent with a mean of 3.4043, 3.2340, and 3.1064 concurrently.

The findings above corroborate Diego and Marin (2013) who asserts that the clarification of the orientation of the company is clarified by looking at the long-term company development. In this regard, the targets of the employees will be derived using the company's strategy and vision. They further argue that because of this, all the staffs' targets would be used in jointly aligning the targets for the middle and upper management. Towards this end, the targets will be used in assessing all the following approaches and activities for a change. This ensures the possibility of a lasting, targeted, as well as coordinated company development. The definition of the strategies is done further through goal determination and adjustment as well as the implementation of concrete targets.

4.3.2 Integral – Reorganization

Flow management does the control and support of companies. This is done through a change process that is permanent and coordinated given that the market conditions and external demands keep changing permanently at all levels. Cognizant of the above, the study aimed at investigating the extent to which firms in Kenya's aviation industry have adopted integral reorganization processes. The findings are depicted in table 4.2.

Table 4.2 Integral-Reorganization

	N	Mean	Std. Deviation
	Statistic	Statistic	Statistic
To what extent, has the orientation of the flow of information and material with the respective processes and structures has been done by your airline?	47	4.2553	1.20629
Does the airline involve itself in undertaking information sharing among the various functional units?	47	4.2979	1.06148
Does the airline support and control companies in a way that in a process change that is permanent and coordinated?	47	2.5106	1.28321
What mechanism has the airline put into to ensure that an efficient and end-to-end re-organization of the flow requires the individual interest to take a backseat?	47	2.6170	1.40733
What mechanisms has the airline established to ensure that Conflicts regarding goals are made transparent and replacement with a joint constructive finding of goals done?	47	4.6809	.51526
To what extent is the airline's Flow management processes is based on the following development cycles that are linked closely with each other	47	1.7660	.78610

Going by the findings in table 4.2, most of the airline firms have put in place mechanisms to ensure that there is transparency in the conflicts regarding goals and a replacement done with a joint constructive way of finding goals to a very large extent with the highest mean at 4.6809. According to the findings, the airline undertakes Information sharing among the various functional units; and the fact that the airline has oriented information and material flows to their

respective processes and structures have been adopted to a large extent in Kenya's aviation industry with a mean of 4.2979 and 4.2553 respectively. The same gave an indication that most of the airline firms based their processes of flow management on development cycles that are linked closely with one another to a small extent with the lowest mean at 1.7660.

The findings support Wagner and Strobel (2015) who argue that flow management places the whole company into the centre with the intention of increasing the efficiency in cost as well as ensuring the company's entire future compliance. They further claim that integral-reorganization aims at the orientation of information and material flows, including as their respective processes and structures. The main functions of flow management are controlling and supporting and controls companies in the process of permanent and coordinated change.

4.3.3 Cooperation and Teamwork

Contrary to the creation of rigid rules, flow management strives to put the company in a position where it is capable of perceiving, analyzing and changing by themselves, the processes, flows, and structures. Towards this end, an inquiry was made into the extent to which airlines in Kenya have applied cooperation and teamwork to enhance their operations efficiency. The results are presented in table 4.3.

Table 4.3 Cooperation & Teamwork

	N	Mean	Std. Deviation
	Statistic	Statistic	Statistic
Is the airline's capability, and communication between the employees purposefully supported?	47	2.6383	.79196
Has the airline, put in place structures that ensure close exchange and cooperation among participants to ensure that Complex material and information flows smoothly?	47	1.4894	.80413
In contrast to creating rigid rules, flows management to what extent has the airline repositioned itself to perceive, analyze and change, by themselves, flows, processes, and structures?	47	3.1489	1.38279
To what extent has your airline established structures to ensure relevant to permanent changing processes, to carry out the activities in a coordinated way?	47	4.3191	1.06539

As per the findings in table 4.3, the most influential practices associated with cooperation and teamwork is the airline's establishment of structures to ensure relevance to the permanent changing processes, to carry out the activities in a way that is coordinated with a mean of 4.3191. This implies that most of the airlines have adopted the practice to a large extent. The airline has repositioned itself to perceive, analyze and change, by themselves, processes, flows, processes and structures in a manner contrasting the creation of rigid rules, which has been adopted to a moderate extent by 3.1489. There has also been the adoption of other cooperation and teamwork practices to a small extent with putting in place structures that ensure close exchange and cooperation among participants to enable Complex material and information flows smoothly being adopted to a very small extent as indicated by the lowest mean at 1.4894.

The above findings are in agreement with Lee and Johnson (2012) who postulate that the scope of management flow offers a purposeful support to the communication and cooperation capability between the employees. As a result, alongside the flows, there can only be a flexible and efficient organization of the complex information and material flows with a close cooperation and exchange between the participants. Initially, there has been the removal of resistances and blockades that hindered cooperation. The process of good cooperation has been blocked by longstanding modes of behaviour, such as apparent conflicts and mutual prejudices. To enhance the efficiency of this process, there should be the recognition and resolution of these blockades.

4.3.4 Infrastructure & Technology

Numerous structures can be found in a company including divisions, responsibilities, hierarchy levels, authorizations, regular meetings, working groups, processes, and projects, et cetera. All these elements strongly affect information and material flows. Cognizant of the above, the study sought to investigate the extent to which infrastructure and technology have influenced flow management in the aviation industry. The results are depicted in table 4.4.

Table 4.4 Infrastructure & Technology

	N	Mean	Std. Deviation
	Statistic	Statistic	Statistic
To what extent does your airline acquire and maintain appropriate resources like; IT, and training?	47	3.5319	1.21317
Has your airline put in place mechanisms to ensure that historically grown structures do not hinder a simple and efficient control of the material and information flows?	47	2.2128	1.10210
Does your airline establish structures with respect to the material and information flows and then reflect, by how much the flows are optimum supported or made unnecessary complicated?	47	2.8085	1.27924

According to the findings in table 4.4, the fact that the airline has airline acquired and maintained appropriate resources like; IT, and training to a large extent has a mean of 3.5319 indicating that

the practice has been adopted to a very large extent based on the Likert scale. The next most influential practice in this category is the fact that the airline has established structures with respect to the information and material flows and then reflecting by how much the flows optimally made unnecessarily complicated or supported with a mean of 2.8085 implying that this practice has been adopted to a moderate extent.

The findings above are in tandem with Diego and Marin (2013) who assert that due to the complex nature of information and material flows, it is difficult to correlate the structures the structures to the flows. They further contend that buildings, infrastructure, and technology are the physical basis of the material flows. However, the material flows on this basis are only determined. Again, depending on the automation degree, the employees of the areas store, production, transportation, production, dispatch, and technology make the decisions concerning the actual structure of material flows.

4.3.5 Active Employee Involvement

Through active involvement, the significant potential within the employees is revealed. It also results into increased motivation. The nature of companies is that they cannot be purposefully changed and organized easily due to their complex and multilayered characteristics. An inquiry was made into the extent to which active employee involvement has been applied to facilitate integration flow management. The results are presented in table 4.5.

Table 4.5 Active Employee Involvement

	N	Mean	Std. Deviation
	Statistic	Statistic	Statistic
What role do employees play in flow management in the airline?	47	3.9362	1.20514
To what extent do the airline employees actively participate in the process of changes and are respected as an important partner of the changes?	47	3.9574	1.36664
Has your airline put in place mechanisms to ensure that employee involvement frees not only significant potentials in the employees but also leads to a clear push in the motivation?	47	2.7447	1.48131
Are various planning levels a discerned within the scope of the flow management?	47	1.9574	.95456
Does the airline ensure that Weak points and deficits of one level do not also influence the other levels?	47	4.1702	1.29076

It is clear from the findings in table 4.5 that the airlines' endeavor to ensure that one level deficits and weak points do not have any effect on the other levels. They also want to ensure that there is an active participation in the change processes by the employees of the airline. Again, the airlines want the employees to be respected and considered important partners in the change process. They also want their employees to take part in flow management in the airline as the main practices, which they adopted to a large extent with a mean of 4.1702, 3.9574, and 3.9362 respectively. The same findings indicate that the airlines have various levels of planning as discerned within the flow management scope to a small extent as indicated by the low mean of 1.9574.

The findings above concur with Bendul and Karl (2012) who argue that when it comes to flow management, employees play a vital role. In an organization, the people that cannot implement flow management include project managers, external consultants, and the individual management representatives. They authors say that in a company, the employees are more familiar with the problems the company faced. However, most of the already established processes of decision-making do not allow the chance for presenting and implementing solution

approaches. Eventually, the employees only end up feeling frustrated. The employees' identification with the pending measures and the company will depend on how actively they are allowed to participate in the change process.

4.4 Integration Flow Management and Operations Efficiency

Significant performance increases and cost reductions can be realized through an end-to-end re-organization of information and material flows as well as how relevant they are oriented with the structures of the company. The second objective of the study was the establishment of the relationship that existed between Integration flow management and operations efficiency. The Chi-Square test was applied to test the influence of the predictor variables on the dependent variable. The results are presented in table 4.6.

Table 4.6 Test statistics

	Adaptation of Points View	Integral Re- organization	Cooperation & Teamwork	Infrastructure & Technology	Active Employee Involvement	Operations Efficiency (Relative Operational Efficiency- ROE)
Chi-Square	43.745 ^a	33.362 ^b	58.851 ^a	14.596 ^a	33.319 ^a	7.383 ^c
df	4	2	4	4	4	35
Asymp. Sig.	.000	.001	.000	.003	.000	.002

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 9.4.

b. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 15.7.

c. 36 cells (100.0%) have expected frequencies less than 5. The minimum expected cell frequency is 1.3.

From the findings in table 4.6, it is clear that; Adaptation of Points View; Cooperation & Teamwork; and Active Employee Involvement had a chi-square value of 0.0. On the other hand, Integral Re-organization had a chi-square value of 0.001 while Operations Efficiency had a chi-

square value of 0.002. According to the same findings, Infrastructure & Technology had a value of 0.003. Apparently, all the value p for the chi-square values for all the variables was less than 0.05 indicating that there was a substantial difference in the variables from what could have been expected by chance. It was thus concluded that the integration flow management practices had a significant effect on the operations efficiency of firms in the aviation industry.

To determine the combined effects of the predictor factors on the dependent measure, the application of Analysis of Variance (ANOVA) was made for the estimation and testing of the interaction effects. The results are presented in table 4.7.

Table 4.7 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.212	5	.042	1.757	.000 ^a
	Residual	2.295	41	.056		
	Total	2.506	46			

a. Predictors: (Constant), Active Employee Involvement, Infrastructure & Technology, Cooperation & Teamwork, Adaptation of Points View, Integral Re-organization

b. Dependent Variable: Operations Efficiency (Relative Operational Efficiency- ROE)

The findings in table 4.7 indicate that the F static is 1.757 with a p-value of 0.0. This implies that the impact of Integration Flow management on operations Efficiency is significant at 95% confidence level.

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

The study sought to establish the relationship between integration flow management and operations efficiency among firms in Kenya's aviation industry. This chapter presents; the summary of the findings, the conclusions and the recommendations of the study.

5.2 Summary of the Findings

The first objective of the study was the identification of the various integration flow management practices adopted in Kenya's aviation industry. The study revealed that Active Employee Involvement, Infrastructure & Technology, Cooperation & Teamwork, Adaptation of Points View, and Integral Re-organization are the main practices of integration flow management that have been adopted by firms in Kenya's aviation industry in a bid to enhance their operations efficiency.

On the adaptation of points of view, the study revealed that the airline's endeavor to ensure that all further approaches and activities for changes are assessed using specific targets is the most influential practice that has been adopted by the airline firms. To a very large extent, this has been followed by ensuring that the external requirements of the airline together with the market analyses play a fundamental role in developing the operations plan. They must establish mechanisms to ensure that the long-term development of the company determines the basic orientation of all changes; cultivating change of perception that facilitates the analysis of existing structures; and the implementation of cross- functional processes to narrow variances in the points of view has been adopted to a moderate extent to avoid misunderstandings.

On integral–reorganization, going by the findings most of the airline firms have put in place mechanisms to ensure that there is transparency in conflicts regarding goals and they are replaced using a common constructive finding of goals to a very large extent. According to the findings, the airlines’ endeavor to undertake information sharing among the various functional units; and the fact that airline firms undertake information sharing among the various functional units constitute the adoption of practices to a large extent in Kenya’s aviation industry.

When it comes to teamwork and cooperation, the most significant practices are the airlines’ establishment of structures to ensure relevance to the changing processes that are permanent to be able to carry out the activities, to a large extent, in a coordinated manner. Other than the airline repositioning itself to perceive, analyze, and change, by themselves, flows, structures, and processes, contrary to the creation of rigid rules, which has been adopted to a moderate extent. Cooperation and teamwork practices have been adopted to a small extent by putting in place structures that ensure close exchange and cooperation among participants to enable complex material and information flows smoothly being adopted to a very small extent.

On Infrastructure and technology, the fact that the airline has acquired and maintained appropriate resources like; IT and training have been adopted to a very large extent. The next most influential practice in this category is the fact that structures have been established with respect to the information and material flows and then reflecting by how much the adoption of the flows has been made unnecessarily complicated or optimally supported to a moderate extent.

On active employee involvement, the study revealed that the airlines’ endeavor to ensure that deficits and weak points of one level do not have any influence on the other levels. It was also revealed that the employees of the airline participated actively in the change process as well as considered vital partners in the change process. The other revelation is that the employees’ roles

in flow management in the airline are the main practices that have been adopted to a large extent by firms in the aviation industry. The same findings indicate that the airlines have various levels of planning as recognized within the flow management scope to a small extent.

The study's second objective was establishing the relationship between integration flow management and operations efficiency among firms in Kenya's aviation industry. From the findings, Cooperation & Teamwork and Active Employee Involvement had a chi-square value of 0.0. On the other hand, Integral Re-organization had a chi-square value of 0.001 while Operations Efficiency had a chi-square value of 0.002. Apparently, all the value p for the chi-square values for all the variables was less than 0.05, an indication that a significant difference existed in the variables from what could have been expected by chance. It was thus concluded that the integration flow management practices had a major effect on the operations efficiency of firms in the aviation industry.

5.3 Conclusion

The study establishes a statically substantial relationship between operations efficiency and integration flow management among firms in Kenya's aviation industry. The study concludes that; Active Employee Involvement, Infrastructure & Technology, Cooperation & Teamwork, Adaptation of Points View, and Integral Re-organization are the main integration flow management practices. They constitute the main streams of integration flow management practices that have had a significant effect on the operations efficiency of firms in the aviation industry in over the years.

The study further concludes that the adoption and successful implementation of integration flow management practice, enhances the competitiveness of a firm through operations efficiency. For instance, putting in place enabling factors like adaptation of points of view amongst other

integration flow management practices, leads to a coordinated and long-term firm development. In the same context, the study concludes that cooperation and team work fosters the establishment of structures to ensure relevance to the permanent changing processes, to carry out the activities in a way that is coordinated.

5.4 Recommendations

Going by the findings of the study, technology, and information seems to be the central theme in integrated flow management practices. Towards this end, the study recommends that firms not only in the aviation industry invest adequately in technology and information technology to ensure scalability and agility during process-re-engineering.

The study recommends that firm managers within and beyond the aviation sector implement strategic change management strategies besides investing in complementary assets like re-training to counter resistance to new operations management approach like integrated flow management. The study unraveled a significant relationship between integration flow management and operations efficiency underscoring the need for local firms to implement this operation management approach to build their core competency through operations efficiency.

5.5 Limitations of the Study

It is clear that in a study of this magnitude, a good number of firms need to be surveyed. However, due to insufficient material resources and time, this was not possible, making the researcher focus the study on firms in Kenya's aviation industry.

Due to the sensitivity of operations efficiency matters, some of the respondents were non-committal posing a major challenge in the field during the data collection costing the researcher since he had to do many data editing after fieldwork. Despite these challenges, the validity of the findings emanating from this study cannot be compromised.

5.6 Suggestions for Further Research

Further studies can be conducted to test and confirm the factor loadings in different firms so as to establish the validity and strength of the model. In the same context, there is a need for further research to focus on the critical success factors in the implementation of Integrated Flow Management practices. The need for further research into this aspect of operations planning is further compounded by the facts that Integrated Flow Management is a relatively new phenomenon in Kenya.

Moreover, further studies should focus on determining the specific linkages between the significant cost reductions, performance increases and an end-to-end re-organization of material and information flows. In this context, future researchers should concentrate on examining the extent to which the respective orientation of relevant company structures can enhance operations efficiency.

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APPENDICES

APPENDIX I: INTRODUCTORY LETTER



UNIVERSITY OF NAIROBI
SCHOOL OF BUSINESS

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Nairobi, Kenya

DATE 8/10/2016

TO WHOM IT MAY CONCERN

The bearer of this letter NELSON DAWI IMBII

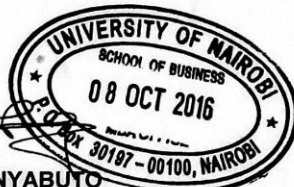
Registration No. DG1/71148/2014

is a bona fide continuing student in the Master of Business Administration (MBA) degree program in this University.

He/she is required to submit as part of his/her coursework assessment a research project report on a management problem. We would like the students to do their projects on real problems affecting firms in Kenya. We would, therefore, appreciate your assistance to enable him/her collect data in your organization.

The results of the report will be used solely for academic purposes and a copy of the same will be availed to the interviewed organizations on request.

Thank you.



PATRICK NYABUTO
SENIOR ADMINISTRATIVE ASSISTANT
SCHOOL OF BUSINESS

APPENDIX II: QUESTIONNAIRE

In partial fulfillment of the requirements for the award of the Degree, I am required to undertake an empirical study to enable me write a thesis, hence this study. To this end, I Nelson Imbiti is carrying out a study “**INTEGRATION FLOW MANAGEMENT AND OPERATIONS EFFICIENCY: A STUDY OF THE AVIATION INDUSTRY**”. This is to request you to offer me the necessary support to collect primary data, which will be used for academic purposes only.

PART 1: GENERAL INFORMATION

- 1) Name of your Airline?
- 2) What is your position in the Airline?
.....
- 3) For how long have you been working with this Airline?
.....

PART 2: INTEGRATION FLOW MANAGEMENT

- I.** Has your Airline adopted any form of integration flow management Practices?

Yes ☐ No ☐

Please tick where appropriate

- II.** To what extent has your Airline implemented the following integration Flow Management Practices?

COLLABORATION PRACTICES

A. Adaptation of Points of View

- i Has your airline cultivated change of perception that facilitates the analysis of existing structures? Yes [] No []

Explain.....
...

- ii Has the airline implemented cross- functional processes to narrow differences in the points of view to avoid misunderstandings? Yes [] No []

Explain.....

iii Does the airline encourage joint search for constructive solutions more difficult.

Especially between different departments? Yes [] No []. To what extent?

Large extent _ _ _ _ Small extent (Please tick)

iv Does the Airline set specific targets to assess further activities and approaches for changes? Yes [] No []

Explain.....

v List the mechanisms the airline has put in place to ensure that the basic orientation for all changes is determined by the long-term company development?

.....
.....

vi To what extent do the airline's external requirements as well as market analyses play an important role in the operations plan development? Tick

Large extent _ _ _ _ small extent (Please tick)

vii Has the airline established change of perception that induces new behavior? Yes [] No []

Explain.....

B. Integral re-organization

viii To what extent has your airline oriented material and information flows to their respective structures and processes?

Large extent _ _ _ _ Small extent (Please tick)

ix To what extent does the airline undertake Information sharing among the various functional units?

Large extent _ _ _ _ Small extent (Please tick)

x To what extent does the airline supports and controls companies in a permanent, coordinated process of changes?

Large extent _ _ _ _ Small extent(Please tick)

xi Has the airline put into place mechanisms to ensure that an end-to-end and efficient re-organization of the flow requires the individual interest to take a backseat? Yes [] No []

Explain.....

- xii List the mechanisms the airline has established to ensure that Conflicts regarding goals are made transparent and replaced by a joint constructive finding of goals?

.....

- xiii To what extent is the airline's Flow management processes based on the following development cycles, which are closely linked with each other: (tick as many as applies)

Continuous development process []

Long-term company development []

Annual Management Cycle []

C. Cooperation and Teamwork

- xiv Is the airline, capability and communication between the employees purposefully supported? Yes [] No []

Explain.....

- xv Has the airline, put in place structures that ensure close exchange and cooperation among participants to ensure that Complex material and information flows smoothly?

Yes [] No []. Please explain;

.....

- xvi In contrast to creating rigid rules, to what extent has flow management ensured the airline reposition itself to perceive, analyze and change, by themselves, flows, processes and structures?

Large extent _ _ _ _ _ Small extent (Please tick)

- xvii To what extent has your airline established structures to ensure relevant to permanent changing processes, so as to carry out the activities in a coordinated way?

Large extent _ _ _ _ _ Small extent (Please tick)

D. Infrastructure and Technology

xviii To what Extent does your airline acquire and maintain appropriate resources like; IT, and training?

Large Extent _ _ _ _ _ Small Extent (Please tick)

xix Has your airline put in place mechanisms to ensure that historically grown structures do not hinder a simple and efficient control of the material and information flows?

Yes [] No []. Please explain.....

.....

xx Does your airline establish structures with respect to the material and information flows and then reflect by how much the flows are optimum supported or made unnecessary complicated? Yes [] No []. Please explain;

.....

xxi **E. Active Employee Involvement**

xxii Do employees play a role in flow management in the airline? Yes [] No []

Explain.....

.....

.....

xxiii To what extent do the airline employees actively participate in the process of changes and are respected as important partner of the changes?

Large Extent _ _ _ _ _ Small extent (Please tick)

xxiv Has your airline put in place mechanisms to ensure that employee involvement frees not only significant potentials in the employees but also leads to a clear push in the motivation? Yes [] No []

Explain.....

.....

.....

xxv Are various planning levels a discerned within the scope of the flow management? Yes [] No []. Please

explain.....

.....

xxvi Does the airline ensure that Weak points and deficits of one level do not also influence the other levels? Yes [] NO []

Explain.....
.....
.....

Any other observation on integration flow management practices

PART 3: INTEGRATION FLOW MANAGEMENT AND OPERATIONS EFFICIENCY

III. Please provide us with the following information regarding your Airline's Operations Efficiency based on the company's financial statements, if not sure , approximate.

	A. Measures of Firm Performance	2015
i.	Relative Operational Efficiency (ROE)	
ii.	Reduction in cycle Time%	
iii.	Efficiency	

THANK YOU VERY MUCH FOR YOUR VALUABLE TIME!!!!

APPENDIX III: LIST OF AIRLINES IN KENYA

1. 748 AIR SERVICES
2. SAUDI ARABIAN AIRLINE
3. ROYAL MANC
4. AIR UGANDA
5. AIR FRANCE
6. AIR MOZAMBIQUE
7. GRAY BIRD
8. SMALL PLANET
9. AIR KENYA EXPRESS
10. AIR MOROCCO
11. BRITISH AIRWAYS
12. CHINA SOUTHERN AIRLINES
13. EGYPT AIR
14. EMIRATES AIRLINE
15. ETIHAD AIRWAYS
16. ETHIOPIAN AIRWAYS
17. FASTJET
18. FLY 540
19. JAMBOJET
20. KENYA AIRWAYS LTD
21. KLM ROYAL DUTCH AIRLINE
22. PRECISION AIR
23. RWANDA AIR
24. SOUTH AFRICAN AIRWAYS
25. SAUDI AIRLINES
26. QATAR AIRWAYS
27. AFRICAN SAFARI AIRWAYS LTD

28. AIRVAN KENYA LIMITED
29. WESTERN AIRWAYS LTD
30. EUROCYPRIA AIRLINES LTD
31. SALAAM AVIATION LIMITED
32. PAN AFRICAN AIRWAYS LTD
33. RAM AIR SERVICES LLC
34. PREMIAIR LIMITED
35. GLOBAL AIR CHARTERS
36. CMC AVIATION LTD
37. AIRSTREAM KENYA LIMITED
38. SAFARILINK AVIATION LIMITED
39. FAI-RENT A-JET AG
40. AIR MEDITERRANEE 25 RUE
41. SUPERIOR AVIATION SERVICES
42. MISSION AVIATION FELLOWSHIP
43. MONARCH AIRLINES LIMITED
44. PHOENIX AVIATION LIMITED
45. ASTRAL AVIATION LTD
46. AYAAN AIR LIMITED
47. AIRKENYA EXPRESS LIMITED
48. KILI AIR CHARTER COMPANY
49. BALLOON SAFARIS LTD
50. ALLIED AIR LIMITED
51. AIRWORKS (K) LTD
52. NEXUS AIR LIMITED
53. CAPITAL AIRLINES LTD
54. NORTHWOOD AGENCIES LIMITED
55. NOTHERN AIR LTD

56. TRANSLIZ AVIATION (K) LIMITED
57. SKYSHIP COMPANY LIMITED
58. KENYA SAFARI WINGS LIMITED
59. EVERETT AVIATION CHARTER
60. AIRBORNE AFRICAN ANTICS LTD
61. Z.BOSKOVIC AIR CHARTERS LTD
62. AIR LAMU LIMITED
63. MUSIARA LIMITED
64. WESTWIND SAFARIS LIMITED
65. AFRICA ECO-ADVENTURES LIMITED
66. AFRICAN HORIZONS AIR SAFARIS LIMITED

Source: Kenya Civil Aviation Authority (2016)