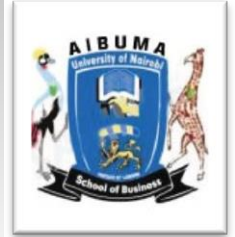




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**IMPLEMENTATION OF AVIATION SAFETY STANDARDS AND  
PERFORMANCE OF AIR TRANSPORT INDUSTRY: A CONCEPTUAL  
PERSPECTIVE**

Nelson K. Mwikya<sup>1\*</sup> Mulwa Sabina Angeline<sup>2</sup>

<sup>1</sup>PhD Student in Project Planning and Management University of Nairobi

<sup>2</sup>Lecturer University of Nairobi, Department of Extra Mural Studies.

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**ABSTRACT**

*The air transport industry has played an increasingly important role during the last quarter of the 21st century as a facilitator of overall economic activity and a critical element in certain economic sectors. Kenya has experienced a number of air accidents mostly with light aircrafts and helicopters in the recent years, and preventing accidents has remained a major challenge. Even though Kenya is experiencing challenges in terms of air accidents, the growth of air transport in terms of increased number of passengers through the airports, increase in number of operating aircrafts, increased license registrations, and air business expansion is evident. This paper is based on conceptual literature review on the relationship between monitoring of the implementation of aviation standards and performance of Air Transport. From the literature reviewed it is evident that the operational performance of the air transport industry in Kenya is closely dependent on monitoring of implementation of aviation safety standards which include continuous aviation training programs, proper and quality aviation personnel certification procedures, aviation infrastructure and proper data management on aviation safety procedures and concerns. The monitoring of the implementation of aviation safety standards is done by Civil Aviation Authority of Kenya.*

**Keywords:** *Aviation Safety Standards, Data Management, Monitoring, Customer Satisfaction, Operational Performance, Air transport Industry*

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\* Corresponding email: [nkyalom@yahoo.com](mailto:nkyalom@yahoo.com)

## 1. Introduction

The air transport industry plays a major role in world economic activity. One of the key elements to maintaining the vitality of civil aviation is to ensure safe, secure, efficient and environmentally sustainable operation at the global, regional and national levels. Air transport has become a necessity to ensure the efficient and cost effective movement of goods and services (Obwaya, 2010). Many industrial and commercial activities rely almost entirely on air transport for their existence (Foyle, 2007). It is also one of the fastest growing sectors of the world economy. According to the International Aviation Travel Association (IATA) Vision 2050, over the past 40 years there has been a tenfold expansion in travel volumes and a 14 times expansion in freight, which compares to a 3 to 4 times growth of the world economy (Roelena and Klompstra, 2012).

According to the Airports Council International (ACI) found in Layton (2012), it is projected that 9 billion passengers will use air transport each year by 2025, up from 4 billion in 2007. ACI also reports that the global air transport industry generates significant employment by providing around 32 million work opportunities directly or indirectly to the world's labour force. Whilst it is acknowledged that the slow recovery from the world-wide financial crisis is still impacting on growth, it is expected that global aviation will recover and still realise the original projected growth over the medium to long term (Ayres, 2013; Obwaya, 2010). Even though flying is one of the safest forms of transportation, headline-grabbing disasters still occur at frequent intervals and Africa has been labelled as one of the most aviation disaster prone regions in the world (Kwiatkowski, 2010).

Worldwide, the International Civil Aviation Organization (ICAO), a United Nations specialized agency is recognized

as the organization responsible for facilitating collaboration in the development of international civil aviation Standards and Recommended Practices (SARPs) and ensuring harmonized application of the SARPs to facilitate the continued growth of aviation (ICAO, 2013). Safety is essential for the existence of civil aviation, which is one of the key enablers of the rapidly developing global economy. Stolzer et al. (2008) states that although aviation is among the safest mode of transportation in the world today, accidents still happen and in order to further reduce accidents and improve safety, proactive approaches must be adopted by the aviation community.

According to the International Civil Aviation Organization-ICAO (2006), it is incumbent on governmental civil servants to ensure safety within a nation's airspace, including the safety of foreign aircraft operators. Creating an oversight agency is the standard method of aircraft operator regulation, and the ever-increasing scope of aviation safety initiatives worldwide justifies a higher level of coordination among these oversight agencies (Dillingham, 2007). The grouping of nations by region would ensure that the benefits of safety initiatives are shared and that duplications in effort are avoided. Aviation regulatory oversight is defined as the airline safety rules adopted by national governments or regional organizations (Layton, 2012).

Improving air safety has always been the top priority for the airline industry, and having an acceptable air safety record is important to an airline's growth and success (Liou et al., 2008). Nevertheless with global aviation activity forecast continuing to rise, and the probability that this will bring with it an attendant increase in the accident rate, there is concern that traditionally reactive methods for reducing risks to an acceptable level may not be sufficient (Yueh-Ling, Wen-Chin, and

Kuang-Wei, 2010). Safety problems in aviation can be seen as developing when there is a disparity between the demands of the operational task to be performed (ie the flight) and the various factors and support systems which manage these flight risks (Civil Aviation Safety Authority (CASA), 2008).

In recent years, the systemic origins of many aircraft accidents have led to heightened interest in the way in which organizations identify and manage risks, and to the development of safety management system (SMS); the approach for understanding and managing safety is evolving (Hsu, 2004). In order to reinforce the conviction that safety management is a managerial and systemic business process, as of 23rd November 2006, International Civil Aviation Organization (ICAO) demanded Contracting States to establish a safety program for the acceptance and oversight of safety service providers' SMS. SMS requirements are already a standard for air traffic services and airports, and the requirements became standard for airlines (Maurino, 2007). Therefore, to design, develop, and implement an SMS that complies with ICAO requirements and applies a system safety approach to deliver services has therefore become the most important goal within the airline industry (Yueh-Ling, Wen-Chin, and Kuang-Wei, 2010).

In Finland, the aviation safety programme describes how Finland has ensured through legislative means that the service providers have the required safety management system, that the member state monitors the functioning of the safety management systems, and that the responsibilities and authorities of the individual operators in the member state are clearly defined (Finnish Transport Safety Agency- FTSA, 2015). The aviation safety programme also serves as a tool for describing the complex network of regulations composed of the legislation of individual sectors of aviation

as a single, clear entity with the objective of improving aviation safety. The Finnish Transport Safety Agency commits itself to providing sufficient resources for the adoption, maintenance and development of the aviation safety programme (FTSA, 2015).

In Africa, a report by the African Development Bank (ADB, 2012) found in Mthuli (2012) reveals that the performance of the African aviation industry is still lagging behind those of the rest of the world. Nonetheless, demand for air transport has increased steadily over the past years with passenger numbers and freight traffic growing by 45% and 80%, respectively (Njeru, 2015). According to the Global Safety Information Exchange (GSIE) rating contained in the ICAO Safety Report (2014), runway safety related events which include abnormal runway contact, bird strike, ground collision, ground handling, runway excursion, runway incursion, loss of control on ground, collision with obstacle(s), undershoot/overshoot and aerodrome represented 68% of the total number of accidents, 78% of fatal accidents and 80% of all fatalities in 2013.

The ICAO Safety Report (2014), further notes that, while Africa accounted for the lowest percentage of global traffic volume at only 2%, it had the highest regional accident rate at 10% of the global share. Cognizant of the major challenges that Africa faces related to aviation safety, several programs have been developed and implemented by various aviation stakeholders. One of the notable programs developed by ICAO is the Comprehensive Regional Implementation Plan for Aviation Safety in Africa (AFI Plan) established in January 2008 with the aim to support African States in addressing aviation safety deficiencies

In Kenya, the Kenya Civil Aviation Authority (KCAA) is the body that

oversees air transport in Kenya. Kenya is a signatory to the Chicago Convention on International Civil Aviation Organization, and in accordance to Article 37 of the Convention she is obligated to comply with the ICAO SARPs (KCAA, 2016). Kenya Civil Aviation Authority (KCAA) is a non-profit state corporation established on 24th October 2002 by the Civil Aviation (Amendment) Act, 2002 with the following primary functions: Regulation and oversight of Aviation safety & Security, Economic regulation of Air services, Provision of Air Navigation Services and Training of Aviation personnel. KCAA's overall strategy as reflected in its strategic plan is based on its commitment to provide a safe and efficient civil aviation environment that contributes to the achievement of Kenya's developmental objectives, as articulated in the Vision 2030 (Gathai, Ngugi, Waithaka, and Kamingi, 2012).

Although air transport is among the safest means of transport, risk is a constant reality as is true of any human activity and in effect aviation operations are prone to accidents. The global nature of the aviation industry, the complex and dynamic aviation environment requires that aviation regulators, air operators, and service providers cooperate to maintain a safe air transport system (Dannatt, 2006). According to the Kenya Transport Sector Support Project (2013), the aviation industry in Kenya has recorded major growth over the last 10 years. For instance, in 2004, about 5.5 million passengers were handled at Kenyan airports. This figure rose to 6.9 million in 2009 and to 8.6 million in 2012. The growth and increased importance of the aviation sector in the development of Kenya can be attributed to KCAA's safety oversight and regulatory functions. There is need to establish whether aviation safety monitoring has any influence on operational performance of the air transport industry in Kenya.

According to the Ministry of Transport (2013), Air Accident Investigation records reveal that aircraft accidents have continued to rise despite Kenya Civil Aviation Authority having strengthened its safety oversight by recruitment, training, developing safety procedures and enforcement. A number of safety oversight program have also been conducted by US Federal Aviation Administration (FAA) through its program Safe Sky for African initiative and World Bank to both the aviation regulator and the industry (Ministry of Transport 2013). Kenya has experienced a number of air accidents particularly with light aircrafts and helicopters in the recent years, and preventing accidents has remained a major challenge (Ombasa and Ngugi, 2014). Even though Kenya is experiencing challenges in terms of air accidents, the growth of air transport evidenced by increased number of passengers through the airports, increase in number of operating aircrafts, increased license registrations and increased importance of the aviation sector in the development of Kenya cannot go unnoticed. This growth and overall performance in the air transport industry can be attributed to KCAA's safety monitoring and regulatory functions. There is desire to establish whether monitoring the implementation of aviation safety standards has any influence on operational performance of the air transport industry in Kenya.

## 2. Research propositions

- i. Monitoring of aviation training programs determines the level of performance of air transport industry
- ii. performance of air transport industry depends on the effectiveness of monitoring of aviation personnel certification procedures
- iii. performance of air transport industry depends on the

effectiveness of monitoring of aviation infrastructure

- iv. Monitoring of data management significantly influences operational performance of air transport industry

### 3. Methodology

The conceptual study paper was informed by literature review that formed the population of the study. Research propositions guided the reviewing of the relevant information. Both internal and external desk research was employed to gather information for this research. Relevant information was gathered from different sources such as online desk research, ICAO published data, government published and corroborated with customer comments data that is already published by airlines and civil aviation. Analytical approach to research methodology was based on description of the facts as advanced by authors, comparing the facts and compiling to summarize the findings

### 4. Performance of air transport industry

Airline operational performance is impacted in the short-term both by individual carrier issues as well as externalities such as weather and air traffic control decisions (PricewaterhouseCoopers-PWC, 2014). Despite the decline in on-time and flight cancellation performance in 2013 if compared to 2012's record-breaking performance, US carriers have measurably improved operating performance over the past five years. These improvements can be attributed in part to the impact of consolidation: as airlines have merged, carriers have removed capacity from the system and increased overall efficiency in their operations (Scuffham *et al.*, 2002). Between 2008 and 2013, the number of domestic flights decreased more than the number of domestic passengers driving increasing load factors. This reduced flying has created a better balance between

runway and airspace supply and demand, reducing congestion delays and allowing airlines and airports to recover from disruptions and delays more quickly and with less passenger inconvenience (Franke and John, 2011).

Geoffrey (1998) defines a set of aviation performance indicators which include; accessibility to desired destinations through air transportation, accessibility to airport system, cost effectiveness of air transport, industry sustainability, air transport safety and security and customer satisfaction among other things. The United States Department of Energy (1995) found in Mokaya, Chocho, and Kosgey (2009) also defined a set of system performance indicators, including system delays, flexibility, predictability, reliability and availability. These indicators have been used to define performance measurement criteria for the civil aviation industry within their states. As Molden (1998) says aviation performance assessment is for the purpose of improving system operations, determining progress against strategic goals as an integral part of performance-oriented management, to diagnosing constraints within the system and to ascertain the general health of the system.

### 5. Monitoring the implementation of aviation standards

Statistical data highlights that effective implementation of the critical elements related to safety oversight systems is instrumental to the achievement of positive and industry-wide safety outcomes. These outcomes are further aided by adherence to safety-relevant ICAO Standards and Recommended Practices (SARPs), as well as associated procedures and guidance materials (ICAO, 2011). To enforce adherence to the safety-related guidance, all member states are monitored through the Universal Safety Oversight Audit Programme (USOAP) activities. This monitoring is crucial for air transport

industry that operates under very risk conditions as evident in literature.

Ranging from operational safety to the prevention of terroristic attacks, safety is a central issue in the aviation industry (Dragomir, 2013). With statistics such as one fatality per 7.1 million air passengers, Michaels and Pasztor (2011) in Dragomir (2013) established that the year of 2011 was by far the best year commercial aviation worldwide has encountered regarding safe air travel. Aviation in general is considered to be the safest mode of transportation (Oster et al., 2013). According to Moses et al. (1990) and Flannery (2001) safety is reflected upon as the absence of an accident. Safety is difficult to measure, thus most scientific literature agrees upon using the number of accidents as proxy for measuring safety (Oster et al., 2013; Barnett, 2000; Lofquist, 2010). Even though the airline industry is considered safe, accidents still happened.

Air transport is a major contributor to global economic prosperity and plays a key role to facilitate economic growth, especially in developing nations (Mthuli, 2012). According to ICAO (2013), most ICAO Member States in Africa continue to face challenges in the effective implementation of SARPs, resulting in safety deficiencies that pose challenges to the growth of civil aviation in the region. The Comprehensive Regional Implementation Plan for Aviation Safety in Africa (AFI Plan) was established in January 2008 to support African States in addressing aviation safety deficiencies. The implementation of the AFI Plan is led by the ICAO Regional Offices in Dakar and Nairobi, and supported by ICAO Headquarters, Member States and aviation safety partners (ICAO, 2013). Africa has also demonstrated its commitment to promote reliable and sustainable safe air transport by adopting a high-level set of

targets designed to improve aviation safety (Ombasa and Ngugi, 2014).

Aviation has achieved a remarkable safety record, with fewer than 4 accidents experienced per million departures worldwide (Liou *et al.*, 2008). Nonetheless, runway-related event categories consistently represent a large percentage of accidents on a yearly basis. According to Roelena and Klompstaa (2012), improvements in runway safety are therefore essential if we are to achieve our overall objective to continually reduce the global accident rate, as well as related fatalities, despite a continual increase in air traffic for the foreseeable future. As a result, the international aviation community has called upon ICAO to demonstrate leadership in the effort to reduce the number of runway-related accidents and incidents. Through its Runway Safety Programme, ICAO aims to coordinate a global effort to enhance runway safety (ICAO, 2013).

### **Monitoring of Aviation Training Programs**

ICAO adopted a new Training Policy in 2010 to better support implementation and standardization efforts through courses, workshops and seminars on emerging issues. This policy applies to all training provided by ICAO Bureaus, Regional Offices and training organizations issuing a certificate of completion or a certificate of achievement accompanied by the ICAO logo and better defines ICAO's role in the provision of aviation safety and security training. The organization has also implemented a more formal assessment process addressing the following critical areas affecting the provision of effective aviation training: organizational and official certifications, facilities and technology supporting training, training delivery, instructor qualification, training design and development, training quality systems as an effective tool to implement

competency-based and cost effective training.(ICAO, 2014)

According to a report by the Training Expert Working Group (TEWG) (2011) in order to meet the demand for aviation training in Africa, there is a need to invest in the modernization and expansion of the existing training organizations, and/or develop new ones. Investment is required to modernize existing and develop new training facilities including classrooms, training aids such as simulators and learning laboratories, and information technology to be at par with international training standards. Additional operational expenditures will also be required for the training organizations to be able to increase the number of qualified instructors and maintain their qualifications in line with the applicable international requirements. However, in order to attract the funds needed for such investment and sustain the operational expenditures, the training organizations need to improve on their ability to generate adequate funds through their training activities.

### **Monitoring of Aviation Personnel Certification Procedures**

ICAO has defined competency as “the combination of knowledge, skills and attitudes (KSAs) required performing a task to a prescribed standard under a certain condition”. ICAO estimates that the number of commercially operated aircraft will have increased from 61,833 in 2010 to 151,565 in 2030, and the number of departures from around 26 million to almost 52 million. Its projection on human resource requirement up to 2030 shows that more than 2 million jobs will be created for pilots, maintenance personnel and air traffic controllers as a result of retirement of professional staff and the anticipated growth of the industry. The industry growth is expected to more than double the requirements for pilots, maintenance personnel and air traffic

controllers during the period. A comparison by the ICAO study of the number of personnel who will require to be trained annually with the capacity of the existing training institutions shows that there is a shortfall of training capacity equivalent to 160,000 pilots, 360,000 maintenance personnel and 40,000 air traffic controllers. The global demand for aviation personnel is therefore expanding faster than the supply and this has adverse implications on global aviation safety if no action is taken to address the shortage on time.

During the Association of African Aviation Training Organizations (AATO) Consultative Assembly held in Niger in 2013, it was agreed that harmonization of aviation training among African States will offer an opportunity not only to increase the availability of affordable and quality training throughout the continent, but also promotes compatibility among operators and safety oversight organizations, improve efficiency and effectiveness and reduce the economic burden on States and aviation services providers who have to comply with different requirements for the training of their personnel. According to Cable and Parsons (2001), employee retention refers to the techniques employed by the management to help the employees stay with the organization for a longer period of time. Employee retention strategies go a long way in motivating the employees so that they stick to the organization for the maximum time and contribute effectively. Sincere efforts must be taken to ensure growth and learning for the employees in their current assignments and for them to enjoy their work.

Borman and Motwidlo (1993) indicate that the continuing prosperity of an organization is likely to be enhanced by employees who hold attitudes, value and expectations that are closely aligned with the corporate vision. Cable and Parsons (2001) further postulates that, hiring

capable people is just a starting point, but building and sustaining a committed workforce is more likely to be facilitated by the employment of sophisticated human resource management infrastructures. Arguably according to Schuler and Jackson (1987) human resource management policies and practices can be strategically designed and installed to promote desirable employee outcomes, which include the enhancement of their role and behaviour. Yet, despite such acknowledgements, organizations and management often time lack the commitment to improve and cement the linkage between employees and their organizations.

### **Monitoring of Aviation Infrastructure**

According to Ali and Pernia (2003) infrastructure consists of hard and soft components. The hard and visible infrastructure, such as roads, railways, electricity, and telecommunications, must be accompanied and supported by its soft component, such as policies and regulations, to enable the system to perform well and generate impacts. The right mix and synergy of the two is important to ensure that the infrastructure system supports inclusive growth and poverty reduction. Well-functioning and efficient infrastructure promotes inclusiveness by expanding access to vital services and improving economic opportunities for all. A report by Ncube (African Development Bank 2012), reiterates that the air transport industry faces various challenges including poor airport infrastructures, lack of physical and human resources, limited connectivity, and lack of transit facilities. Although substantial progress has been made during the past decade, Africa still lags behind other regions in terms of “soft” and “hard” infrastructure. It is therefore critical that African countries invest in the soft as well as hard infrastructure to support the industry.

Vision 2030 is Kenya’s national blue print which is envisaged to create a prosperous country and good life by 2030. In this vision, infrastructure falls under the economic pillar which include amongst others; accelerating on-going infrastructure development by focusing on quality and functionality; building infrastructure in support of identified flagship projects which contribute to social equity and economic goals; improving efficiency and effectiveness of infrastructure at all levels of planning, contracting and constructing. The Government has put more emphasis on infrastructure development; a number of strategies were employed to improve the available infrastructure facilities to maximize economic and social goals (GoK, 2007).

The vision proposes a number of strategies to be pursued including strengthening the existing framework and accelerating the speed of implementation. Others will include raising efficiency and quality of infrastructure, enhancing local content of identified projects, support identified flagship projects, benchmarking infrastructure facilities with globally accepted standards and targeting projects in neglected areas to increase connectivity and stimulate economic activities. In addition the vision hopes to enhance Private Sector participation in provision of infrastructure facilities and services strategically complimented by Public Sector Interventions; Infrastructure Financing through Capital Markets. The government has expressed its intention to increase private sector participation in the provision of infrastructure services to rehabilitate the national infrastructure. It wishes to do so in order to lower the costs of doing business in Kenya, provide affordable and efficient modes of transport for Kenya and increase overall living standards (GoK, 2012).



In 2011 the Kenya Airports Authority launched a five year strategic plan that has become the blueprint for the development of all the Kenyan airports. Consequently Jomo Kenyatta International Airport (JKIA) has seen unprecedented growth as a result of the implementation of five key areas that are entrenched in the strategic plan which were, Revenue Enhancement and Business Growth, Product and Service Improvement, Infrastructural development, Business Process Automation and the positioning of JKIA as the Premier Hub of Africa. Despite all these initiatives, the increased air traffic flow, rapid technological change and lack of sustainable strategies could still be a hindrance in maintaining the current infrastructure (GoK, 2012).

### **Monitoring of Data Management**

Data-based decision making is one of the most important facets of any management system. The type of safety data to be collected may include accidents and incidents, events, non-conformance or deviations and hazard reports (Yueh-Ling, Wen-Chin, and Kuang-Wei, 2010). The quality of the data that are used to enable effective decision making must be considered throughout SSP and SMS development and implementation. Unfortunately, many databases lack the data quality necessary to provide a reliable basis for evaluating safety priorities and the effectiveness of risk mitigation measures. Failure to account for the limitations of data used in support of safety risk management and safety assurance functions will result in flawed analysis results that may lead to faulty decisions and discredit the safety management process (ICAO, 2013b).

Given the importance of data quality, organizations must assess the data used to support safety risk management and safety assurance processes using the following criteria: a) Validity- data collected are acceptable as per established criteria for

their intended use. b) Completeness- no relevant data are missing. c) Consistency- the extent to which measurement of a given parameter is consistent can be reproduced and avoids error. d) Accessibility- data is readily available for analysis. e) Timeliness. Data are relevant to the time period of interest and available promptly. f) Security- data are protected from inadvertent or malicious alteration. g) Accuracy- data are error-free. In the context of safety data collection and analysis, the term safety database may include the following type of data or information which can be used to support safety data analysis: a) accident investigation data; b) mandatory incident investigation data; c) voluntary reporting data; d) continuing airworthiness reporting data; e) operational performance monitoring data; f) safety risk assessment data; g) data from audit findings/reports; h) data from safety studies/reviews; and i) safety data from other States, regional safety oversight organizations (RSOs) or regional accident and incident investigation organizations (RAIOs), etc (Yueh-Ling, Wen-Chin, and Kuang-Wei, 2010).

After collecting safety data through various sources, organizations should then perform the necessary analysis to identify hazards and control their potential consequences (ICAO, 2013b). Among other purposes, the analysis may be used to: a) assist in deciding what additional facts are needed; b) ascertain latent factors underlying safety deficiencies; c) assist in reaching valid conclusions; and d) monitor and measure safety trends or performance. Effective safety management is data driven. Sound management of the organization's databases is fundamental to ensuring effective and reliable safety analysis of consolidated sources of data. Given the potential for misuse of safety data that have been compiled strictly for the purpose of advancing aviation safety, database management must include the

protection of that data. Database managers must balance the need for data protection with that of making data accessible to those who can advance aviation safety (ICAO, 2013b).

Safety management processes identify hazards with the potential to adversely affect safety. These processes also provide effective and objective mechanisms to assess the risk presented by hazards and implement ways to eliminate these hazards or mitigate the risks associated with them. The result of these processes is to facilitate achievement of an acceptable level of safety while balancing the allocation of resources between production and protection. From a resource allocation perspective, the concept of a safety space is especially useful in describing how this balance is achieved (ICAO, 2013b).

#### **5. Relationship between and among variables**

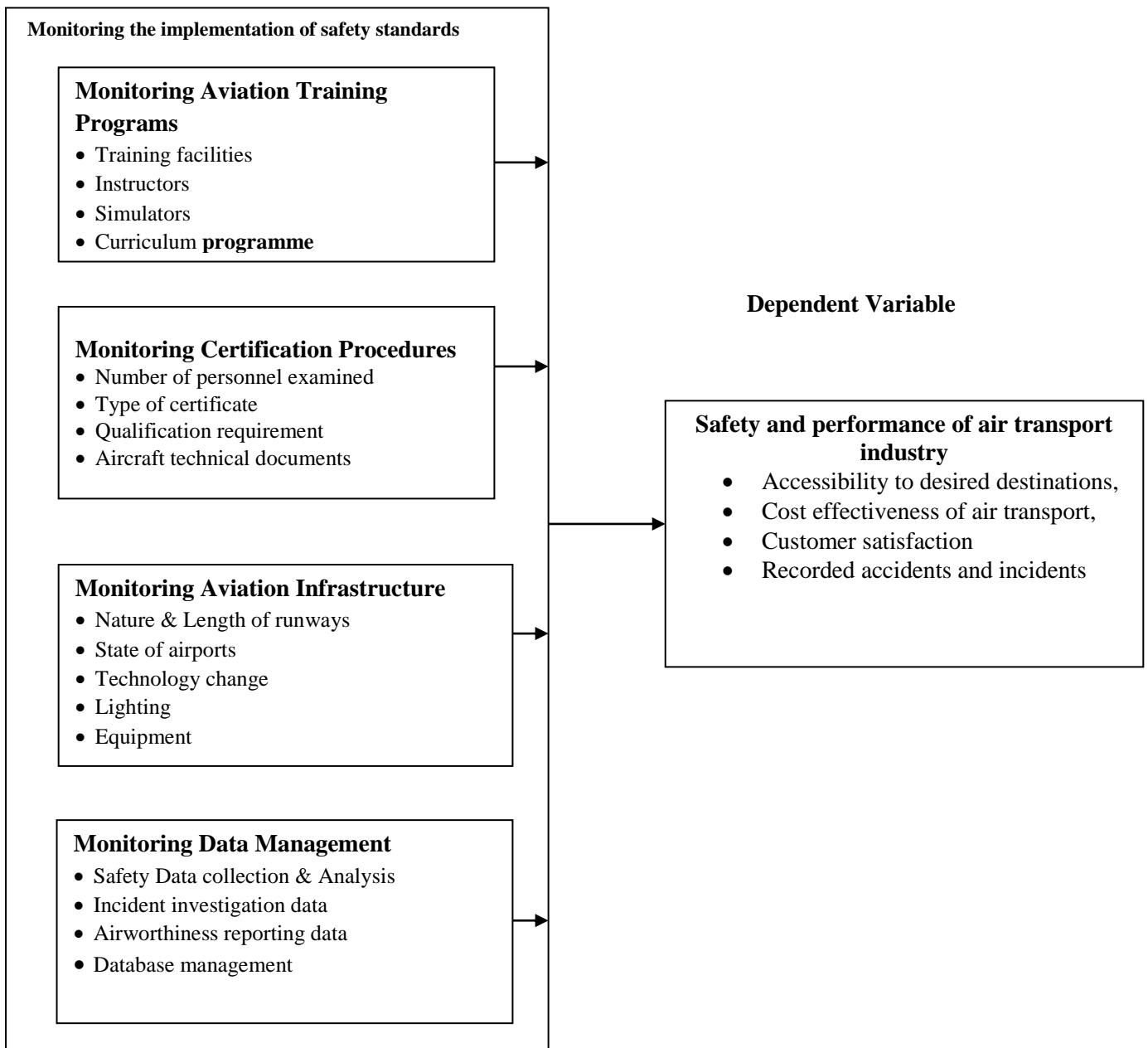
Some of the studies reviewed, Geoffrey (1998) established a significant relationship between air transport safety and aviation performance indicators. Mokaya, Chocho, and Kosgey (2009) also established a significant relationship between air transport safety and aviation performance indicators. Safety and Performance in this conceptual study is measured through indicators such: First, accessibility to desired destinations which means arrival time is as per the schedule, no hidden costs and maximum comfort is ensured. Secondly, the cost effectiveness of air transports. This implies that both the

passenger and the airline should gain. The cost of travelling and operating the costs should not be prohibitive. Thirdly, customer satisfaction is key indicator of performance in any service industry. Lastly, the study measures recorded accidents and incidents. Zero or very few incidents imply good performance in terms of profitability and passenger safety and security. The predictor variable in this study is monitoring the implementation of aviation safety standards. This is operationally defined as monitoring of aviation training programme whose indicators include: training facilities, instructors, Simulators and Curriculum. Also monitoring certification and re-certification procedures are discussed under the number of personnel trained, type of certificate and qualification requirement. This is followed by monitoring aviation, infrastructure whose indicators include: nature & length of runways, state of airports, technology change, and lighting. The last concept is monitoring data management. Under this the following indicators are observed: safety data collection & analysis, incident investigation data, airworthiness reporting data and database management

#### **6. Conceptual framework**

In this hypothesized model, concepts under study and their relationships are discussed. In the framework, the dependent variable is the performance of air transport industry.

**Independent Variables**



The air transport industry plays an increasingly important role in the world economic activity as it opens up world markets to local business. Air transport has become a necessity to ensure the efficient and cost effective movement of goods and services. Rise of air accidents and particularly on light aircrafts and helicopters has led to the air transport regulator (KCAA) to enhance safety monitoring for the air transport industry in the country. This has led to growth of the

air transport industry confirmed by evidenced by increased number of passengers through the airports, increase in number of operating aircrafts, increased operator's license registrations and increased utilisation of the aviation sector. In order to reduce air accidents, KCAA has embraced safety monitoring so as to improve efficiency, competency and performance in the air transport industry.. From these findings it can be observed that monitoring the implementation of safety

standards has influence on operational performance of air transport industry in Kenya that can be summarized by the following propositions:

**Proposition 1:** Monitoring of aviation training programs determines the level of performance of air transport industry

**Proposition 2:** performance of air transport industry depends on the effectiveness of monitoring of aviation personnel certification procedures

**Proposition 3:** performance of air transport industry depends on the effectiveness of monitoring of aviation infrastructure

**Proposition 4:** Monitoring of data management significantly influences performance of air transport industry

## 8. Conclusion

Air transport is a key pillar of the economy in Kenya. Performance of the industry has been growing which has been evidenced by attainment of 60% and above on effective implementation of safety management systems, continuous increase in number of air operators, increase in number of certified aviation personnel, increased customer satisfaction, airline business expansion and increase in new routes both at global and regional levels and a reduction of air accidents in the country. These developments in the operational performance can be linked to monitoring the implementation of safety standards by KCAA the regulator of the industry which has been influenced through; continuous aviation training programs, proper and quality aviation personnel certification procedures, aviation infrastructure and proper data management on aviation safety procedures and concerns. There is need for a study to bridge this gap in knowledge that exists.

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