



Developing a Competitive Aviation Industry
Case Study: Sub-Saharan Africa

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Aviation and Tourism Business

Digital Business Opportunities

Master's Thesis

2023

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Degree Master of Hospitality Management
Thesis title Developing a Competitive Aviation Industry Case Study: Sub-Saharan Africa
Number of pages and appendix 68+1
<p>The global aviation industry is dynamic and have been changing consistently due to globalization, technology, and demand. Previous literature has referred the African Aviation Industry as having a huge potential for growth, but currently lagging behind comparatively. To achieve the growth, this project was designed to investigate the issues facing the industry and make recommendations that will enhance the industry performance to achieve its projected status.</p> <p>Theoretically, the thesis was commenced on the foundation of strategic business management framework that encompasses concepts like innovation, technology, sustainability, and leadership. With a population of over a billion people and about 54 countries it does not seem empirically right why the Sub-Saharan African Aviation Industry lags behind. After the Yamoussoukro declaration in 1999 that sought to establish a framework for liberalization in the region not much has been achieved in this regard.</p> <p>In investigating the issues identified, the research was conducted using a qualitative research method, the aim of this method was explore the issues and draw conclusions and recommendations subject to further research. Key results are the lack of patriotism, lack of effective liberalisation efforts, politics, and security issues, lack collaboration and ineffective leadership.</p>
Keywords Sustainability, Innovation, strategic management, business development, leadership

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1 INTRODUCTION

Sub-saharan Africa accounts for about 20% of the global earth size , and inhabited by 17 percent of world population. Its aviation industry represents only 3% of the world's aviation industry. It contributed \$80 billion to Africa's (GDP) with 6.9 million jobs created (gisreportsonline 2023). Comparatively it still lags that of other continents. Yet compared to other continents, the aviation industry in Africa lags in terms of everything. African airlines together recorded loses of about 150- 200 million in 2020 (gisreportsonline 2023). This research development seeks to investigate the current problems, obstacles and provide a road map for the rapid development of the aviation industry in Sub-Saharan Africa (SSA). The problem seems multi-faceted, and the research will focus on the diverse areas of the problems and narrow down to what are the likely achievable proposals for the development of the industry.

1.1 Background

Based on a report from the International Air Transport Association report (IATA 2019), monthly air passenger market analysis indicates that African airlines have the lowest passenger share globally. Passenger air traffic accounted for 2.1% of the aviation market share and is the lowest compared to other regions. Africa's population accounts for about 17% of the global population and comparing to its market share of 2.1% in the aviation industry indicates the struggling nature of the aviation industry.

According to information sourced from (gisreportsonline 2023), the African aviation market data were as follows over the past years:

Foreign arrivals into Africa increased to 7 percent between 20170 - 2018, totalling \$67m.

Africans have the minimum level of affordability in terms of air tickets as compared to the population of Latin America, North America, and Europe.

Passenger distribution in African airlines were the lowest comparatively too.

The most profitable route in Africa is the Johannesburg-Dubai and is managed by a foreign airline.

- Busiest airports in Africa in terms of passenger data are Johannesburg; Cairo; Cape Town; Addis Ababa; Casablanca; Algiers; Nairobi; Lagos; Tunis and Durban.
- The travel and tourism industry in Ethiopia grew tremendously to about 48% in 2018.

- The biggest travel hub is Addis-Ababa currently, overtaking Dubai.
- Ethiopian Airlines flies to 58 destinations in Africa.

Currently ten best performing airlines in Africa include Ethiopian, air Maroc, South African airlines, Kenya airlines, Mauritius Airline, Egypt air, Rwandan air, Safa air, Fast jet, and Air Seychelles (Africa business insider 2023).

Data from the African Development Bank shows that fuel which accounts for about 20 – 40% of an airline's operating costs. Also, airport fees in SSA are more expensive than what is charged in Europe with maintenance, commercial fees being double on average (gisreportsonline 2023). Indirect fees of leasing are higher too (gisreportsonline 2023), there is also significant uncertainty about Africa's demand for air travel. Data from IATA indicates that airlines have an average load factor of 71 % which is below the 81.2% averaged globally. Air travel in Africa remain quite expensive due to low purchasing power, tourism promotion, high operating costs, and lack of investments from governments.

Apart from Ethiopian Airlines, other carriers have not been profitable. South African Airways have been generating losses since 2011 and have received government support in the form of bailout and a 51 % sale to a strategic consortium which negotiations are still ongoing (CH Aviation 2023). Relatively Kenya airlines registered losses of about \$75 million and has been undergoing restructuring (gisreportsonline 2023). A proposed partnership between Kenya airlines and South African airlines could be seen as a merger depending on its impact on regional competition (CH Aviation 2023).

The SSA aviation industry is important for the continent and there is the need to developed it rapidly to compete globally, the interest and dedication in developing the industry will increase trade, grow its tourism industry, enhance foreign investment, and weave a modern society (Goldstein 2001). Currently, the aviation industry suffers from a multifaceted range of issues that is hindering investments and growth of the industry as compared to other developed economies. Issues of mismanagement and the lack of competitive innovative strategies coupled low investments from governments have caused corruption, high ticket costs and weak financial results (ICAO 1984).

The 1984 Mbabane Declaration on African Air Transport was launched in 1988, including the Yamoussoukro Declaration. Relative to these declarations, some governments implemented privatisations strategies in the airline and airport sector, countries such as Kenya, South Africa and Cote d'Ivoire pursued corporatisation and commercialisation of their assets sector (Goldstein 1999). Global air traffic from Africa has weakened over the last decade, ranging from 4% in 1985 to 3.71% in 1996, notable airlines who had access to foreign markets from Africa include Ghana Airways and Nigerian Airways (Goldstein 1999). Aside the low and reducing global presence of airlines from Africa, most countries in SSA also do not do well in terms of domestic markets and except for Nigeria and South Africa (Goldstein 1999).

1.2 Research Objective and questions

As briefly explained in chapter 1.1. the aviation industry in sub-Saharan Africa is lagging in comparison to other regional locations like Europe, Asia, North America etc. The objective of this study primarily investigates the reasons for the struggling industry and proposed a development plan for the progress of the aviation industry in the long and short term. Further, the research aims to contribute to literature with its findings and recommendations, as well as providing a basis for further research.

To achieve the above objectives, the research will be conducted and focused on main and sub research questions:

Main Research question

Why is the Aviation industry of Sub-Saharan Africa lagging?

Sub-research questions:

What are the main obstacles facing the Aviation industry?

How can technology aid in the development and sustainability of the industry?

1.3 Structure of the study

This research project is sectioned into 6 chapters, Chapter 1 introduces and provides a background of the project and the relevance of the project. The second chapter provides a literature review of the study, the chapter provides relevant models adopted for the study that

links the phenomenon of the real issues to existing concepts or theories. The third chapter involves the methodology to be applied for the study, research approach and the data analysis method to be applied. The fourth chapters introduce the findings of the study, thus providing results of the case study research where primary data collected from stakeholders will be analysed and presented. Chapter 5. provides a development plan for the study, this chapter will be based on the findings from chapter 4 and theoretical concepts, real life phenomenon that will aim to meet the objective of the study. Lastly, chapter 6 deals with the discussion and conclusion section of the study.

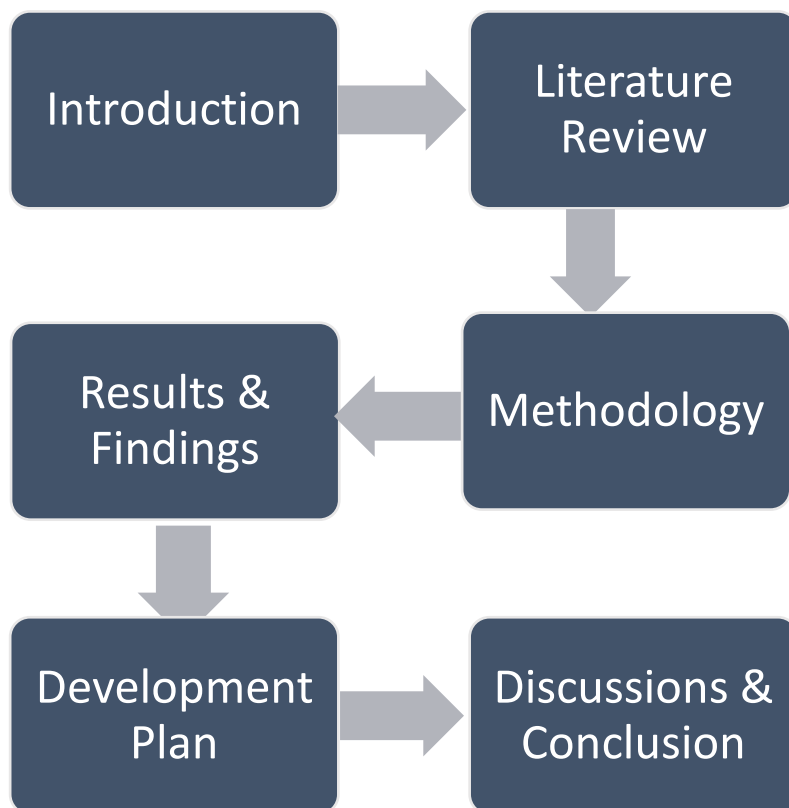


Figure 1. Structure of the study

2 LITERATURE REVIEW

Air transport is the fastest growing transport industry, it is a major user of technological output and involves extensive, sophisticated infrastructure, it is also major contributor of national income and economic development of many countries (Button & Stow 2000). The industry has grown within a strictly regulated environment although there have recently been important changes with moves towards greater liberalization (Button & Stow 2000). This section provides a literature review of the global outlook of an Aviation industry and its relative business models and concepts. The success of the aviation industry is heavily dependent on its major and minor stakeholders for success and for the industry to develop faster and competitively much will depend on strategic business implementation, sustainability, new business models, innovation, and leadership.

2.1 Sustainable business development

Corporations in industrialised nations keep transforming businesses to include strategies and practices of sustainable business development (Rainey 2006). Developed nations are shifting from structures of the 20th century to a highly interactive management framed in global context of political, social, economic, environmental, market and technological realities of the 21st century (Rainey 2006). This chapter presents the concepts of sustainability that enable various stakeholders in the aviation industry of sub-Saharan Africa to aid the industry to meet its full potential.

Sustainable business development is rooted from environmental conservative practices and the concepts of degradation (Rainey 2006), this relates to the current of the aviation sector achieving a sustainable net zero future. SBD improves results, prevent degradable impacts, risk reduction by solutions (Rainey 2006). SBD concept implies that strategic management will improve activities that enhances business value and create exciting new opportunities (Rainey 2006). According to Hassanien et al. (2010) business development includes a wide range of activities that create new or changed offerings, markets, and processes. Further, SBD enhances sales, improves customer satisfaction, augments quality, diminishes costs and achieves benefits for organisations (Hassanien et al 2010).

The Aviation industry in Sub-Saharan Africa faces multiple issues of economic incapability, sustainable issues, and market access, hence the concept of SBD if adopted by organisations could elevate the status of the industry and enable it to reach its potential. SBD provides opportunities for organisations to better differentiate their businesses, their products, and their

reputations by creating offensive strategies for serving and satisfying markets, customers, and stakeholders (Rainey 2006). SBD typically focuses on three main dimensional concepts namely social, economic, and environmental.

The aviation industry faces issues of climate change conservation and prevention. Presently, an organisation's performance is measured and based on how they do business sustainably, thus creating value for all stakeholders. Sustainable development is an essential part of an organisation's growth, hence designing and implementing a strategic plan must encompass sustainable strategic decisions. According to Marrewijk (2003), environmental concerns are central to an organisation's sustainability at a corporate level. Sustainability at the corporate level is a multifaceted concept that involves strategies, internal processes, financial and the human factor. (Marrewijk 2003).

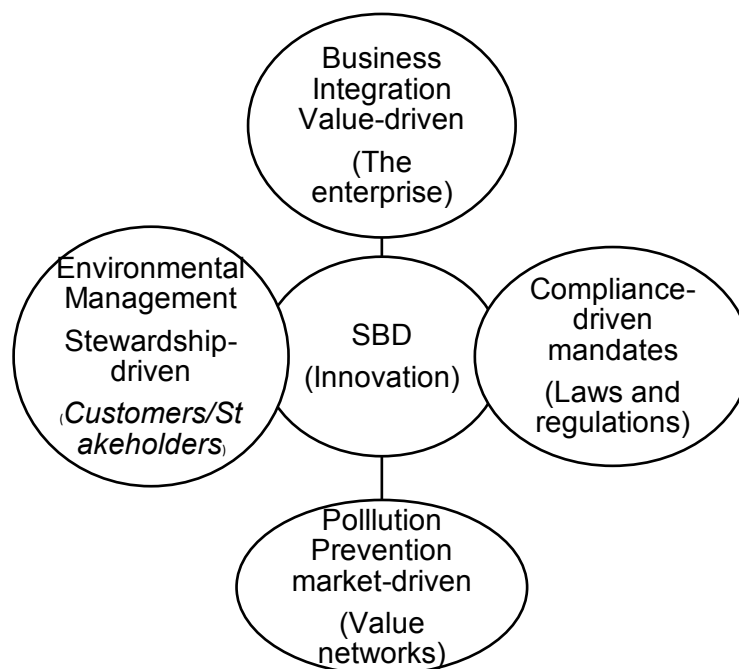


Figure 2. A simplified view of SBD and its precursors and embedded constructs (Rainey 2006)

SBD implies that the need for sustainable operations and legal parameters are put in place to ensure strict adherence of all stakeholders (Rainey 2006). SBD enables organisations within an industry to systematically approach opportunities in creating a business with much more innovative ideas that have sustainable effects on the environment (Rainey2006). In all these leadership is pivotal in the sense that it creates and transforms businesses with a

vision and a chain of positive values for organizational growth. The adoption of the SBD concept will aid and improve the SSA aviation industry in multiple fronts by implementing this strategy, the shift towards SBD will require senior management commitment from all stakeholders and the ongoing support of financial and intellectual capability through strategic partnerships.

2.2 Business model innovation in Aviation

Concepts of business models is largely influenced in the development and practice of corporate practice or governance (Lecocq et al., 2010; George & Bock 2011). The development of business models begins from an innovative standpoint where the coming into being of proper environmentally friendly practices are embedded in innovation development (Schneider et al 2013). Customer retention process, such as re-modelling of business activities from traditional business models and the entrants of born global companies has revolutionised the entire industry such as low-cost airline, Airbnb, mobile applications, smart airports, and customer automation processes (Teece 2010; Johnson et al. 2008).

Business model innovation in the aviation industry requires firms to change their business models to a more dynamic model such as Maintenance, Repair and Overhaul (MRO) industry. Currently, there are few MRO's in the industry and there is a urgent need for more to be developed in other to meet the growing market. MRO providers in the the global abiation industry are channelled within their products and processes (Schneider et al 2013). The entry of competitors in developed economies has revolutionised the industry by way low-cost airline or retailing markets which have forced companies in the industry to realise their conventional business models are failing (Johnson et al., 2008). The effect of deregulation and the creation of single markets such as the European union has influenced the growth of its airlines and tourism industry as well, this is a blueprint for stakeholder in the Sub-Saharan aviation industry can use as a blueprint.

Aircraft MRO involves tasks undertaken to ensure the consistent airworthiness of aircrafts and its components (Mordor intelligence 2023). The MRO industry performs overhaul inspection, defect rectification, replacement, and the embodiment of modifications (Mordor intelligence 2023). MRO operations in the SSA aviation industry is segmented based the MRO type, aircraft type, and geography, by this the market is segmented into engine MRO, components and modifications MRO, interior MRO, airframe MRO, and field maintenance (Mordor intelligence 2023). The aircraft market is segmented into fixed-wing aircraft and rotorcraft and by

aviation/industry type, the market is segmented into commercialisation, military, and general aviation (Mordor intelligence 2023). For the aim and purpose of this project, the literature focuses on the commercialization and generalization of the SSA aviation industry.

2.3 MRO market trends in SSA

According to Mordor Intelligence (2023), the aircraft fleet on the African continent is about over 15 years and that indicates a struggle for new fleet modernisation as well as infrastructural needs. The demanding trend for MROs to capture market opportunities due to the inadequacy of such in the industry, and in March of 2022, Egypt air begun maintenance & engineering services at the Kotoka airport in Ghana (Mordor intelligence 2023). Though by market statistics this is not enough among others, new aircraft orders in Africa are expected to be constrained over the next decade due to geopolitical tensions, unreliable safety records, high import fees and high taxes on aviation fuel (Mordor intelligence 2023).

The global MRO market in the aviation industry was about \$82.5 billion in 2020, it is expected that western Europe, Asia-pacific and North America will generate most of the revenue from MRO services (Marketresearchreports 2023).

Global Commercial Aircraft MRO Market Insight by Geography Value (in USD bn) in 2020

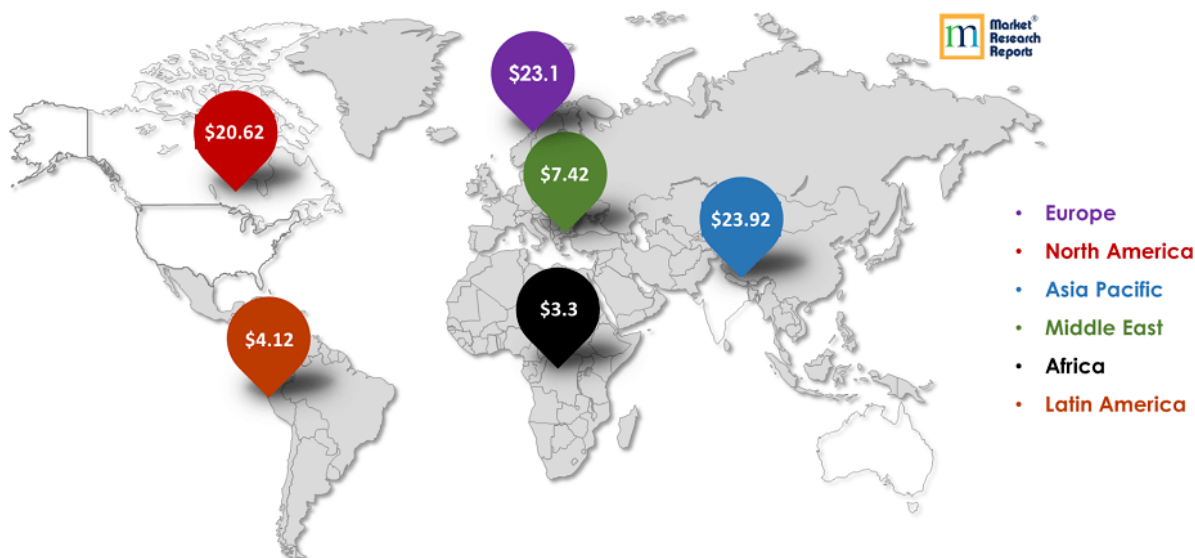


Figure 3. Global MRO Market Insight (Market research reports 2023)

The above figure shows the market value in the MRO market globally, with Africa's value being the lowest despite its recognised huge potential for growth. This also explains the lagging behind in terms of aviation development comparatively. Relatively, to its low value the market is largely dominated by foreign MRO companies. As explained above, the market is fragmented with the presence of local and foreign MRO companies providing various services to aircraft operators. According to the data from market research reports (2023) on MRO operations in SSA, Raytheon Technologies Corporation, Safran SA, Lufthansa Technik, Leonardo S.p.A. and Airbus SE are the market leaders. From the list, it is worrying to know that none of the companies are originally home grown in SSA and there is a need for existing companies to develop their business models through partnerships to incorporate MROs which can be a huge revenue return for the industry.

In recent past, there have been increasing number of investments by foreign companies and the partnering of local companies to gain technical expertise. Local companies in the SSA region are partnering with OEMs in order to gain technical expertise and MRO certifications to perform on-site services (Market research reports 2023). Though not enough partnership is being witnessed, an example is Caverton Offshore Support Group PLC, one of the leading providers of marine, aviation, and logistics services in Nigeria – which commenced an MRO facility in 2021 (Market research reports 2023). Relatively, Ethiopian Airlines Association and UTD aviation solutions signed a tripartite MoU to collaborate on providing MRO services as part of the Brown Condor Initiative (BCI), the project aims to provide Ethiopian airlines with MRO facilities so to ease the US MRO resource crunch relating to facilities and workforce limitations (Market research reports 2023).

According to Herszenhaut (2010, 7) different business models have sprung up recently due to the sustainable profitability and how competitive those business have become. Africa's environment requires a sustainable, modern, and collaborative business model to realize its predicted potential of growth. Operating environment for airlines is not homogenous, hence the diversity in geographies, policies, economies, and unexpected issues such as covid-19 across the globe implies the need for bespoke strategies which can respond to challenges (Heinz & O'Connell 2013).

2.4 Strategy and Sustainable business development

The aviation industry has proven to be one of the main pillars of economic growth, it is also one of the determinant factors for the growth of the tourism industry of any nation. To enhance the

development of the industry, decision makers must consistently take strategic decisions to ensure the growth of the industry. In view of the ongoing trend in ensuring the sustainability of the environment strategic decisions and makers are implored to consider the issues of climate safety in designing strategic plans and organisational performance. As stated above in the introductory chapter of this project cost is one of the main obstacles facing the aviation industry, this inadvertently affected the purchasing power of people as they cannot afford the cost of travel to many destination tourist sites in Africa. There is a need for a strategic plan and implementation by stakeholders to ensure a leapfrog for the industry, to achieve these issues of sustainability, leaderships, partnerships, innovation, and transparency must be adopted at all stages of the strategic planning and development.

According to Eriksson and Steenhuis (2015), for any country's tourism industry to grow and perform competitively much depends or will depend on the state and reliability of its aviation sector. The situation is even made worst due to the lack of reliable alternative mode of transport between African countries. Just a few of African aviation organisation's such as airlines, airports are seemed to be growing slowly and have a known global image but are not competitive enough, an example are Ethiopian airlines, and Kenya airlines (Schutte & Stanz 2014). The effects of the leadership crises have led the companies to go bankrupt and consequently shut down operations, example of such are Ghana Airways and Nigeria Airways (Amankwah-Amoah & Debrah 2017).

The way forward for the industry's improvement and subsequent competitiveness is through strategy. Freedman (2015) states that every business has competition, and it is the effectiveness of strategy that makes some companies more than the others. This reiterates the importance of leadership in strategic business development championing the implementation of strategies to achieve the desired results. Strategy is a reflection and planning of future objectives, factors that need to be considered, selecting best options according to a company's vision and putting those into practice either in the short or long term (Thompson et al. 2007). Relatively, Angwin et al. (2015) also defines strategy as an agreed sets of plans by a company purposely to win a competitive advantage over its competitors in a market. The aviation industry consists of several stakeholder's hence the need for close collaboration is needed to implement a unified strategy. Every industry needs an effective strategic planning and leaders to make it competitive (Augier & Marshall 2017).

2.5 Strategic Planning and Leadership

A strategic leader is the one who is effective in his/her decision making. Realistically, performing companies are those that are strategically led and managed effectively (Serfontein & Hough 2011). Previous literature alludes to the fact that, strategic leaders are essentially needed and are usually the main brain behind the growth and development of organisations. Leadership is a skill that are taught but also those with the natural traits turn to be the best leaders in any capacity. It is imperative for stakeholders in the SSA industry understand that leaders make significant difference hence the need to invest heavily collaboratively in creating industry leaders. According to Pitelis and Wagner (2018), strategic leadership is the capability of anticipating, working with others, implementing change, and creating value for an organisation.

The effects of corruption, abuse of political power & interference, lack of effective leadership and economic factors have led to the crippling and underdeveloped state of the aviation industry in Sub-Saharan Africa. The business environment has always been challenging and the failures of organisations to consistently develop and be unaware of their environment leads to relinquishing its competitive advantage to other organisations. As proven by statistics the aviation industry in SSA is largely dominated by foreign companies especially in the airline sector. A basic objective of a strategic leader is to be focused on an organisation's growth and environment and a better understanding of the market behaviour (Simsek et al. 2015). Business environments changes rapidly especially in this era of technology; therefore, organisations need competent leaders that have the acumen and qualities to steer an organisation to growth (Rumelt 2012). The importance of having competent leaders in an organisation is to transform the organisation's fortunes positively and managed it to survive in a knowledge economy and environment (Drucker 2002).

On the other hand, strategic leadership requires an effective way of planning before strategic decisions can be implemented. Johnson et al. (2008) states: decision making, critical analysis and implementation are the main factors of strategic planning. Strategic planning includes making decisions at a corporate level which determines how the company operates and competes in the market (Wheelen et al. 2017). The importance of strategic planning accesses the micro and macro environmental of the company and the market/location in which it operates (Perreault & McCarthy 2001).

The objective of the study is to find strategic ways to improve the development and performance of the Sub-Saharan Africa aviation industry. The expectation from this study is to propose a plan

that will enable the industry meets its perceived potential and compete competitively. In this regard the balance scorecard framework by Kaplan & Norton (1992) is adopted, the framework can assess an organisation or 'an industry's performance. The concept also provides decision makers with a framework of difference indicators that provides different perspectives for assessing an organisation's current performance and future objectives concurrently. Figure 2. Below shows the various perspectives of the framework and how these perspectives when applied and analysed gives decision makers a holistic understanding of the organisation's performance and the needed indications in designing a strategy. Internally, the framework subjects' companies to a rigorous assessment whereby all decisionmakers and stakeholder involvements are assessed for future strategy.

The goal is to maximize organisational performance by assessing the strengths and weaknesses of the perspectives of the organisation's performance, which examines performance more internally without considering the external environment of the organisation. The internal measure of the organisation's performance stems from the business perspectives and process thus financial, innovation & learning perspective, internal business and customer processes that show the greatest impact on organizational performance and growth. The balance scorecard enhances the chances of an organisation's management of succeeding in implementing strategies for growth, this reversibly also puts the competence of leaders to test by monitoring their strategy and implementation plans, its outcomes and performance as against their targeted timelines.

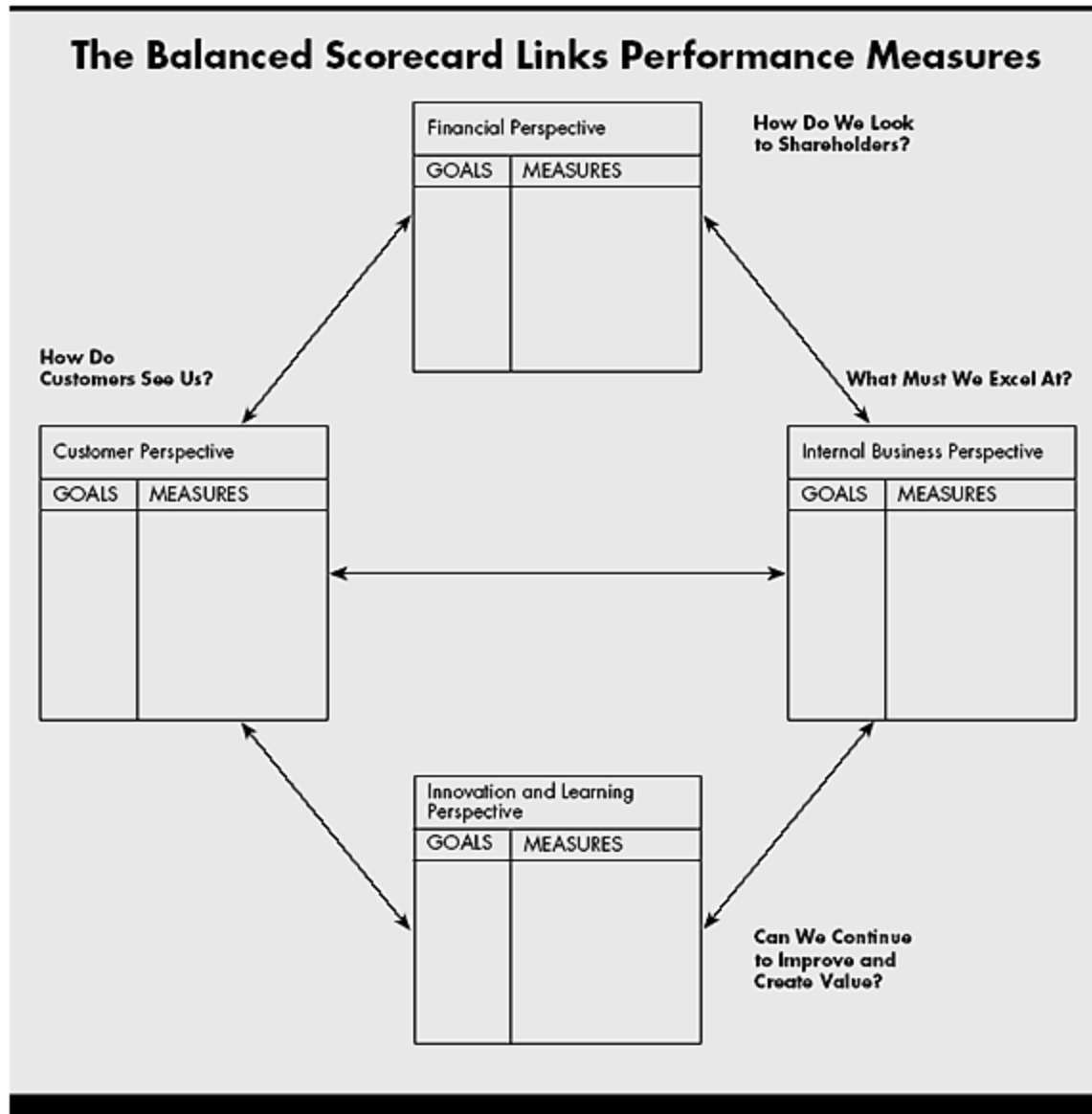


Figure 4. Balanced Score card (Kaplan & Norton 1992)

ECI's Balanced Business Scorecard			
Financial Perspective		Customer Perspective	
GOALS	MEASURES	GOALS	MEASURES
Survive	Cash flow	New products	Percent of sales from new products
Succeed	Quarterly sales growth and operating income by division		Percent of sales from proprietary products
Prosper	Increased market share and ROE	Responsive supply	On-time delivery (defined by customer)
		Preferred supplier	Share of key accounts' purchases
			Ranking by key accounts
		Customer partnership	Number of cooperative engineering efforts
Internal Business Perspective		Innovation and Learning Perspective	
GOALS	MEASURES	GOALS	MEASURES
Technology capability	Manufacturing geometry vs. competition	Technology leadership	Time to develop next generation
Manufacturing excellence	Cycle time Unit cost Yield	Manufacturing learning	Process time to maturity
Design productivity	Silicon efficiency Engineering efficiency	Product focus	Percent of products that equal 80% sales
New product introduction	Actual introduction schedule vs. plan	Time to market	New product introduction vs. competition

Figure 4.1. Balanced Score card (Kaplan & Norton 1992)

2.6 Porter's five forces

Porter's model analyses an industry's environment and how competitive it is or can be. One objective of the framework is that, it assess the possible profitability of an industry, the competitive factors and the potential influencers that ensures profitability (Afonina 2015). The model analyses an industry's environment especially the aspects of planning and implementing strategies. The aviation industry is very wide and has an extensive network of stakeholders, partners or companies that work in synchronization for industry. The primary stakeholders of the industry are airports, airlines, governments, manufacturers, and investors. Each of these primary stakeholders also has what is called secondary stakeholders that work directly with them. To mention a few, these secondary stakeholders include security, catering, fuel, maintenance services, ground handling companies etc. To ensure a growing and vibrant aviation industry major players need to assess the performance of its extensive environment which will include secondary stakeholders and Porter's framework will be a good tool for such a strategic assessment.

Porter's five forces prescribes that an organisation's planning and strategy must rely on the evaluation results of the industry structures and how dynamic it behaves (Brujil 2018). According to Porter (1979), the aim of strategy implementers such as leaders or managers is to implement and manage strategies that give an organisation the edge over existing and potential competitive entries. Technological innovations coupled with strategic thinking and implementation shapes an industry's future where long term value co-creation remains in the center of its strategic plan. Porter's five force framework influences the need to identify market forces relative to a business's model's internal and external behaviour, it allows the organisation to evaluate conditions from an outside-in perspective (Johnson et al 2008). The framework is based on industrial organizational approach where there is a presumption that the attractiveness of an industry, depends on the operations, performance and behaviour of the organisations within that network and the existing market structures that influences them (Raible 2013; Slater & Olson 2002).

A market structure has direct influence on organisational behaviour, the success of the market depends on competitive strategy (Brujil 2018). Due to the dynamic behaviour of the global economy, the Porter's framework recognizes four new factors that influences or need to be factored in assessing and strategising for an industry, these are innovativeness levels of competitors, trends of digitization, total customer solution and bonding and the exposure to change management.

- Threats of new entrants:** New entrants bring fresh capacity to an industry (Porter 1985). Since the deregulation of the SSA aviation industry, it has welcomed some notable global industry players that continue to dominate the market. Consequently, new entrants can pose a threat to established players in the market which directly affects competitive advantage (Brujil 2018). A need is for organisations to analyse barriers and probable opposing responses from competitors when entering a new market (Brujil 2018). As expected in every industry, new entrants would want to overcome barriers with an expectation of having a positive marginal return on their investments.

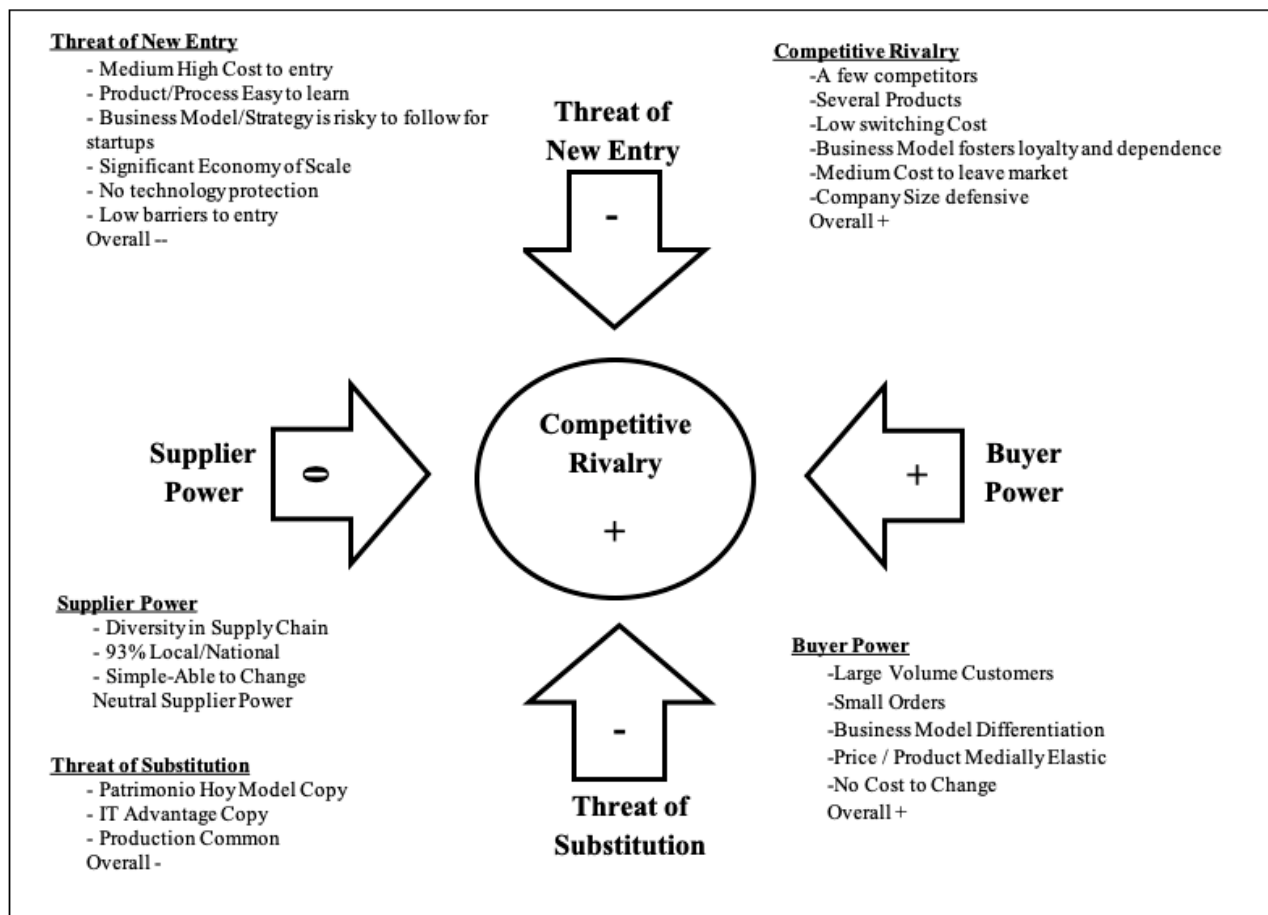


Figure 5. Porter's framework (1979)

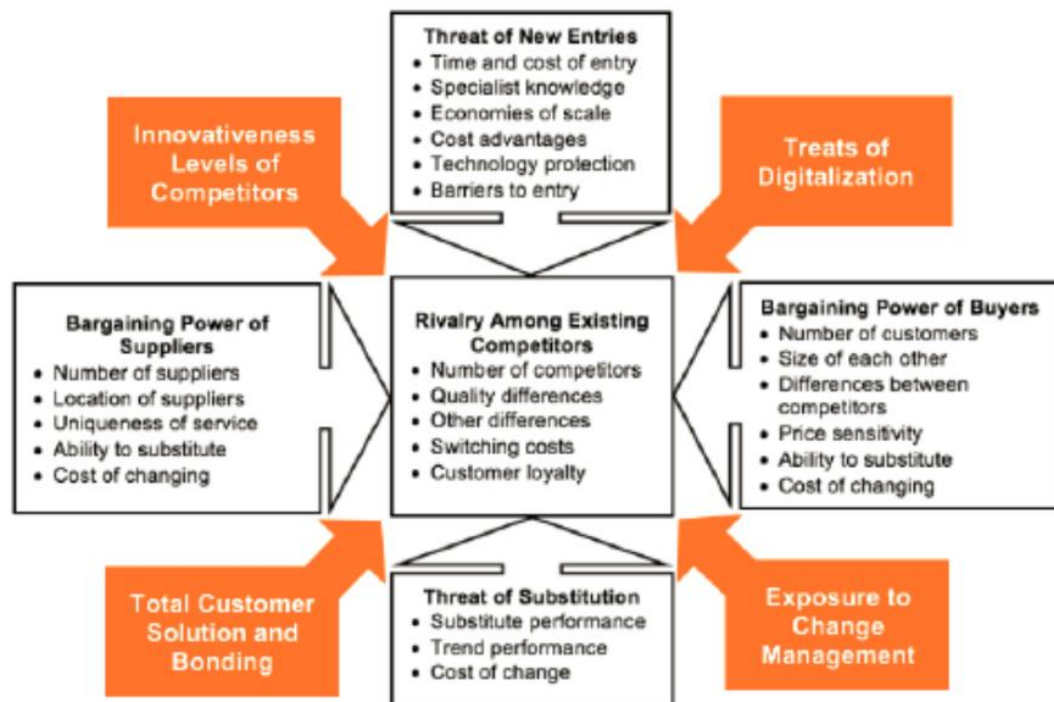
- Rivalry among existing competitors:** The SSA industry need not create an atmosphere of rivalry but rather collaborate to grow the industry strategically. The danger of rivalry can result in the reduction in profitability and growth. In the aviation

industry rivalry or competition is modernised into alliances, rather than rivalry among individual companies. Per the population and potential of the SSA aviation industry should major players grow their airline business and tourism models Africa, the industry one of the biggest and most successful probably the largest airline alliance in terms of passenger volumes and global connectivity.

- **The Bargaining power of suppliers:** As stated above the industry have several secondary stakeholders linked to the primary stakeholders who mostly acts as suppliers or contractors to them. Without the effectiveness and reliability of these the industry or companies will suffer losses or growth. In view of the current trend on climate change, the SSA aviation can invest heavily in sustainable aviation fuels (SAF). This will cut cost of operations and act as an enabler for growth of the industry by way of having the high bargaining power and secure profitable incomes streams for airlines in SSA.
- **The Bargaining power of Buyers:** Market situations where buyers poses certain powers and are able to switch between suppliers (Slater & Olson 2002). When sellers become powerful, sellers tend to find ways of making buyers pay higher prices for same service that is relative lower in other markets for what is offered (Brujil 2018). Naturally, buyers will always want to compete with industry forces such as suppliers to have reasonable prices for what is available on the market (Porter 1980), hence if there is an economic expansion for more suppliers exists in this case aviation industry stakeholders the cost of operations such as fuel costs, more home grown contractors, suppliers will lesson the burden on buyers in areas such as affordability. According to Brujil (2018), markets where there are many buyers and sellers results to buyer competitiveness; few buyers and sellers results in a mutual dependancy market situation and few suppliers with many buyers result in monopolistic market situation (Brujil 2018).
- **Threat of Substitute product and services:** This can have positive or negative impact on a market. The aviation industry in general in SSA is somehow dominated by foreign companies, thus is areas of competition, employment and price flatuations. Factors that may lead to the influence of threat of substitutes are cost switching between market offerings or produts in high demand (Hubbard & Beamish 2011). A critical evaluation of an industry's enviroment based on porter's forces will offer decicion makers an idea of what an oorganisation or industry lacks.

In a dynamic market such as the aviation industry, developing and implementing a plan for sustainable growth is imperative for future growth, whiles creating best opportunities for an effective market structure. A thorough assessment of an industry's market structure enables it to know where and how to compete, it drives towards developing purposes by way of new business modelling and innovatic strategies (Fisk 2016). Current business trends shows with the rapid growth of digitization, innovation and strategic leadership skills makes industries more competitive and not knowing what to expect. The influx of born globals, the negative impact of Covid-19 poses a great risk to organisations and their existence. The forefront organisations with technology, leadership and innovation will keep growing whiles those behind might suffer consequences and have their markets dominated by foreign organisations. The aviation industry had a huge negative impact on the industry due to covid 19 and 9/11, this was a wake up call to the industry and since then many technological innovations have been put in place to guard against uncertainties and losses.

The figure below incorporates the trending and demanding sectors of business that need to be improved and applied in strategic plans. Porter's five forces recognises this growing need and is re-adjusted to suit industry challenges.



Source: Porter, 1985, p.22 – Porter's Five Forces Readjusted to Industry Challenges (Agile Organization)

Figure 5.1. Porter's framework (Porter 1985)

Porter's framework drives growth in organisational and an industry in general. The inclusion of the other four forces, makes the framework become an effective tool for decision makers who seek industrial growth in this modern circular economy. It offers potential situations such as alliances, mergers and large industrial collaboration. The principles of people, profit and planet is well embedded in the framework, when organisations try to improve on their business models the concept of digitisation becomes more necessary. The aviation industry is heavily relied on technology and the occurrences brought by covid 19 means decision makers need to implement more innovative solutions to keep their organisation's competitive. This will require effective leaders that understand the concept change management and implement that productively.

3 METHODOLOGY

Chapter presents the research methods of the study. It is divided into three subchapters: Sub. 3.1 discusses the approach for the study and the methods to be applied. Sub 3.2 presents the data collection ways to be applied and sub 3.3 explains the analysis method used for the data.

3.1 Research approach

Research approach is explained as a methodology that defines the general approach for the selected research method (Silverman 2010) . Further, Silverman (2010) states that the chosen method must be selected based the tasked to be undertaken. Methods of research are categorised into two namely qualitative and quantitative, qualitative research is defined as a research method that provides an in-depth understanding from the analysis of words, records, and actions (Maykut & Morehouse 2002). Relatively, quantitative research is more focused on figures and their significance (Maykut & Morehouse 2002).

Qualitative methods also involve the interpretation and understanding of data through a mathematical approach, the approach and interpretation provides vivid expected results (Kovalainen 2008). Qualitative research provides an understanding to the meanings and the factors that underlines the research purpose, while providing answers to the Why, How and What question posed (Marchan-Piekkari, Giroud & Welch 2011). An inductive reasoning approach is applied during the data analysis process, the inductive content analysis methods is aimed at providing a logical approach and conclusion with regards to the results of the research (Sauce & Matzel 2017). Inductive reasoning process prepares, organizes, and reports data in a sequential and systematic manner that provides a logical approach and conclusion to qualitative data (Sauce & Matzel 2017).

The approach, process and analyses methods adopted for the study is in relation to the qualitative research procedures proposed by Bryman and Bell (2007).

The process involved is shown in the figure below.

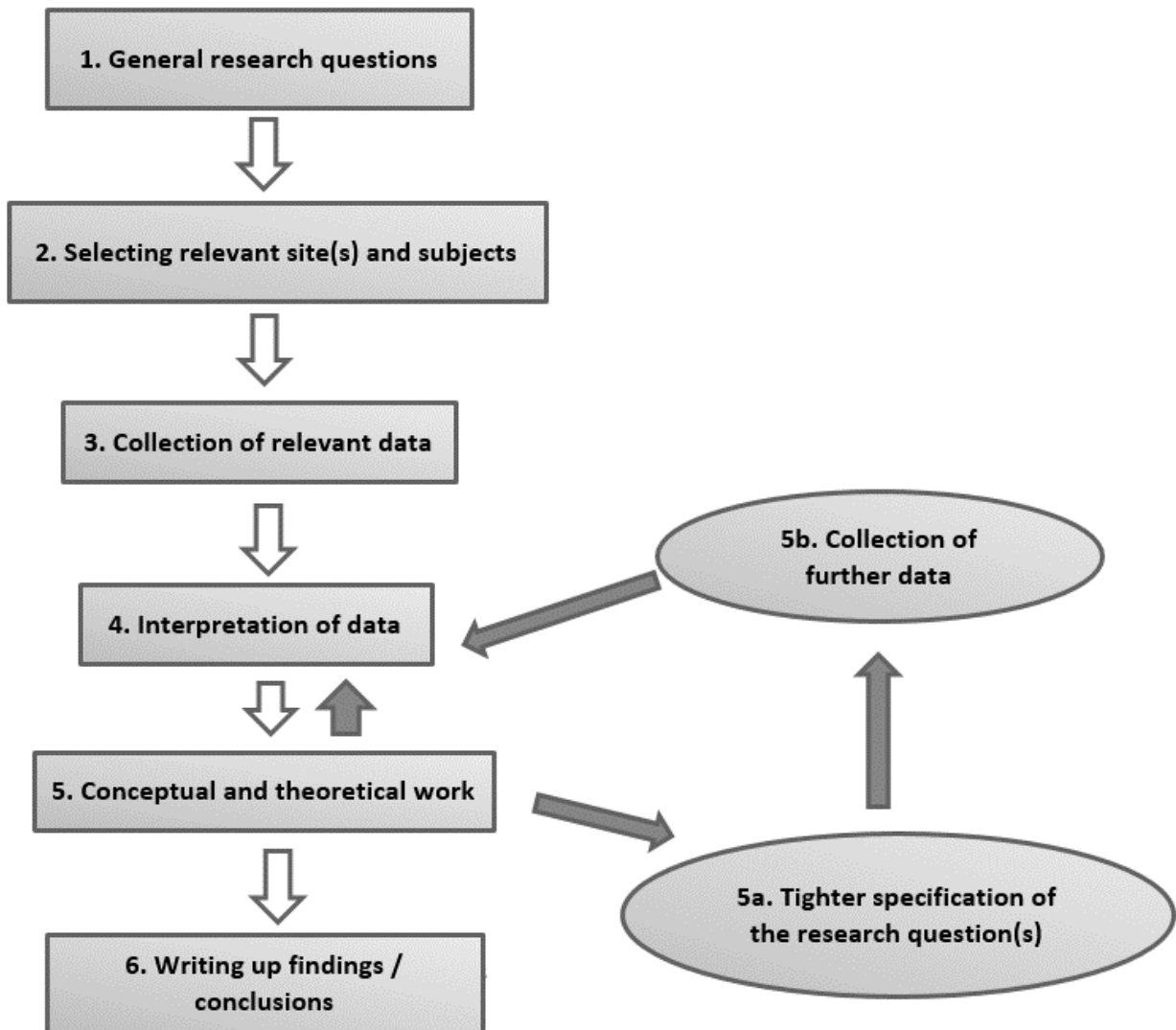


Figure 6. Main steps of qualitative research (Bryman & Bell 2011)

3.2 Data collection

Collection of data will be conducted via two main processes, thus primary and secondary data. Primary data will be collected via interviews from target audiences, while secondary data is collected through desk research methods from journals, books, and already existing relevant materials (Moore 2013).

Primary data will be gathered via interviews from resourced persons from selected stakeholders of the aviation industry. Secondary data will be collected from reliable sources including books, journals, and other reliable digital materials. A semi-structured questionnaire interview is selected as the effective primary data collection process, this is to derive adequate empirical data for specific problems identified in relation to the research objectives. The process of conducting an interview involves verbal data acquisition from a target audience, it is interactive in nature and guided by with a set of rules between parties (Hennink et al 2020, 117; Yin 2014,239). The interview style adopted is to get diverse information from key decision makers in the industry such as airports, airlines, government representatives, regulators etc. Questions are open minded designed; questions are formed in an open-minded manner that affords interviewees the opportunity to express themselves freely by also sharing their own experience, opinions, knowledge, and perceptions on a broader scale without being restricted to a particular type of question or topic(Hennink et al. 2020. 116-117, 329).

The semi-structured interview questionnaire will include 5-15 open ended questions which will be categorised into themes relative to existing and potential issues of the Sub-Saharan Africa aviation industry. The respondents are carefully selected based on their dominance and experience in the aviation industry. Interview respondents are selected to ensure the results reflect quite a wide range of issues in the aviation industry. Company A and B are in the airline industry and a leading firm in Sub-Saharan Africa; Company C is in Airport management, company C receives quite a number of passengers and a leading destination for most tourists in the east African region; Company D is a management company that oversees the proper functioning and growth of the aviation industry, company D is more into policy and regulation implementation sector that oversees the activities of almost all primary and secondary stakeholders in the aviation sector. The table below illustrates this into details.

Company	Year Founded	Respondent/s	Sector
A - Flies to two domestic destinations and 24 international destinations	2002	Country manager	Airline management
B - Flies to 19 domestic destinations and 119 international destinations	1945	Country manager	Airline management
C - Has a capacity of 500,000 passengers per year. Destination to about 20 different airlines	1956	Corporate manager	Airport management
D - Represents government in the aviation industry, implements, monitors, and evaluates government policy	1956	Public affairs manager/International relations manager	Policy/Decision making unit

Table 1. Interviewees profile

3.3 Data Analysis

According to Creswell (2007, 17) data analysis involves the process of reducing data from a story format to a more inferring format. Bryman and Bell (2007) states that the process of qualitative data analysis is a sequence of two distinctive factors of concepts and theory that are highly linked in research data. The analysis process clarifies, describes, and connects the conceptual phenomenon of the data (Flick 2014, 21). Data analysis is an essential part of qualitative research methods and influences the outcome of the research conducted (Flick 2014, 3). The results from the collected and analysed primary data provides the empirical data for this study.

The data is analysed to achieve the objective of the study, as mentioned above this is done with the application of an inductive content analysis to enable the researcher to arrive at a logical conclusion that provides insights to a phenomenon without the aim of generalization. In the analysis process, data will be grouped into themes that relate logically with the objectives of the study, this method provides certain parameters which categorises collected data in order of importance and relevance through verification, reduction, display, and conclusion (Flick 2014).

The main components of data analysis according to Punch (2009) includes the reduction, display, drawing and conclusion of qualitative data. Data analysing is aimed at deriving relationships from social phenomena linked to patterns, sequences, and occurrences (Miles & Huberman 1984).

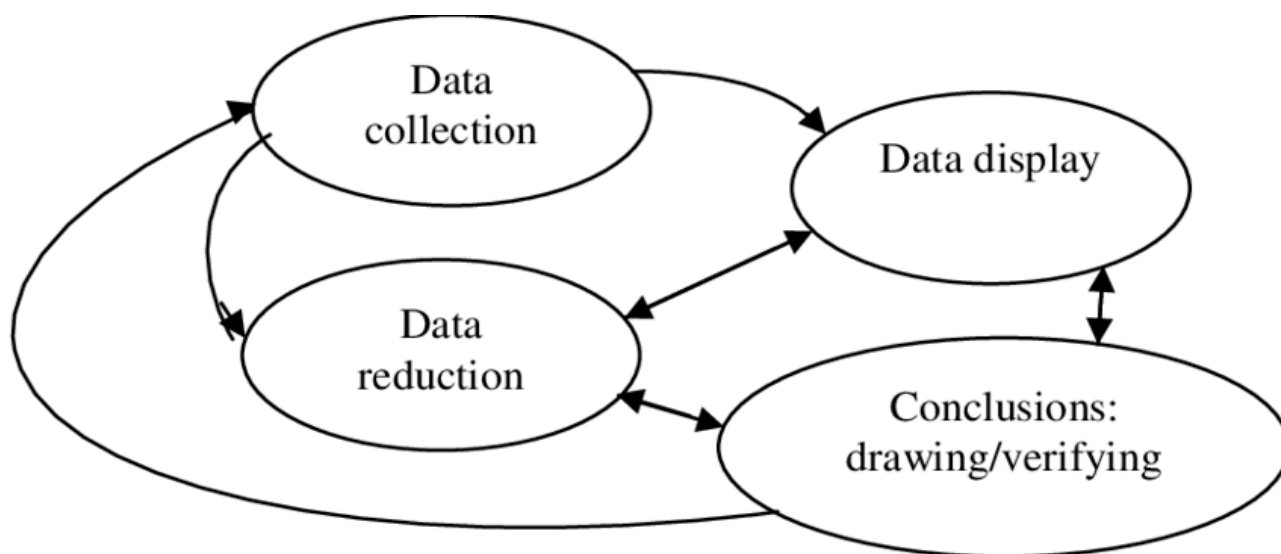


Figure 7. Interactive model of data analysis (Miles & Huberman's 1994, 12)

Content analysis is a methodological process of drawing logical and accurate inferences from collected data and its uses (Krippendorff 2004 18). Content analysis applies a data analysis method from data collected from research methods such as in-depth interviews, surveys, focus group and other data collection methods (Krippendorff 2013,4). Data analysis is an important research technique that has proven to be potentially effective in the analysis of data in a specific context (Krippendorff et al 1980). Content analysis enables researchers to make objective inferences whereby systematic identifying specified characteristics and attributes (Holsti 1969).

The application of content analysis in qualitative data enables data to be reduced remarkably, as asserted by Krippendorff et al (1980), who stated that content analysis is a powerful tool for data reduction in qualitative research. The benefits of content analysis are the systematic and replicable capability for compressing large number of texts into few categories according to the coding parameters.

To enhance and meet the objective of the study, data was analysed inductively. The process of analysing qualitative data inductively is implemented exactly as applied by (Cueto et al 2022), see figure 3.

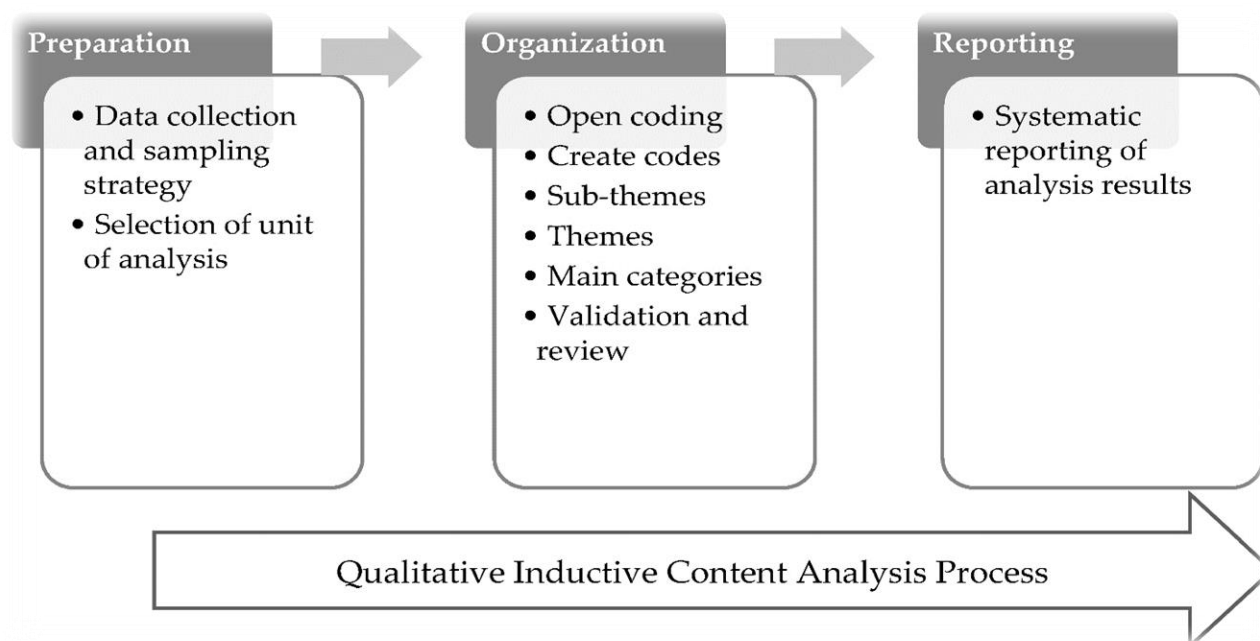


Figure 8. Content analysis (Cueto et al 2022).

This process applies sensitivity, the application of flexible research modalities and analysing qualitative data flexibly (Kyngäs 2020). Comparatively, the inductive content analysis method affords researchers the simple methodology of describing theoretical and empirical data in an objective, descriptive and systematic manner (Kyngäs 2020). The process categorises collected data into themes based on drawn parameters for easy coding where logical conclusions can be drawn from in a generalised way (Kyngäs 2020).

According to Krippendorff (1980), during content analysis the following six main questions need to be addressed:

- Data to be analysed?
- How are they defined?
- What Population are they drawn from?
- Context of data analysis?
- What the boundaries of analysis are?
- What is the target of the inferences?

4 RESULTS & FINDINGS

As discussed in the introductory chapters, the thesis is aimed at investigating the state of the African aviation industry and providing a road map that can aid in the development and competitiveness of the industry. The empirical issues are discussed in the following issues.

4.1 Lagging industry

Why is the Sub-Saharan Africa aviation industry lagging?

It is asserted that since the inception of the aviation industry in Africa and the liberalization of certain restrictions, problems associated with the industry still persist up to today. The problem of patronage and the lack of confidence in the home-grown airlines is a major contributing factor for its lagging status. *“Africans do not have full confidence in our services delivery based on safety and convenience most Africans prefer foreign airlines which does not help our industry because it affects our revenue targets” (Respondent A and B)*. During the 79th Annual general meeting and world transportation summit organised IATA, it was highlighted that high operating costs and rigorous visa requirements were obstacles faced by home grown airlines. *“This have been resulting in increased travel expenses and a deterrent for passengers to embark on travels within the African region” (Respondent B)*.

“Even though there has been some reduction in cost of fuel as per the projection made by IATA thus from \$135 to \$98, this maybe significant for African airlines but other high operating costs such as high taxes, fees, landing costs and other charges remains a matter of concern”.

(Respondent A and B). Operating costs are important to the growth of any industry and if costs are not mitigated effectively, the Aviation industry in Africa stands no chance of competing with other developed industries. According to *respondents A and B*, *“the average amount of passenger and taxes which are applied to tickets in Africa was two times as expensive compared to those in Europe, Middle East, and North America”*. The African Airline Association (AFRAA) in their recent report shed light on the adverse impact of additional charges on airlines profitability which retrogresses the growth of the overall growth of the aviation industry.

Respondent A and B also emphasised that, “even though air agreements like the Yamoussoukro Decision meant to liberalize African skies were implemented their effects were at a sluggish pace”.

The slow progress by decision makers in implementing adequate measures that will enhance air travel, reduce taxes and fees, improve infrastructure in Africa and open borders are some of the

main reasons why the industry remain lagging. *“Rapid transformation is needed across the aviation landscape of Africa” (Respondents A and B asserted)*. This empirical chapter answers the research questions posed in this research while revealing the past and present issues faced by the industry. **Respondent A** lamented over the air travel obstacles passengers and airlines have to go through visiting on point to the other in the same continent. For example, *“they explained that for a passenger to travel from Kigali to Algeria, they will go through turkey to get to their final destination” (Respondent A)*. This clearly impacts on costs for the passenger while giving business to foreign airlines. Practically, there are no direct flights connecting these African countries and others. *“There are rather growing protectionist policies that are pushing airlines out and blocked from certain markets, but which ironically allows access to foreign airlines such as Emirates and Qatar airlines” (Respondent A)*. This occurrence really corroborates with the notion of unpatriotic attitudes among African decision makers and the public. *“It is disheartening to note that currently African countries has more bilateral aviation agreements with others outside than within, and this trend slows the rapid acceleration for the growth of the industry”. (Respondents A)*.

African airlines are growing steadily, but the industry somehow keep making loses due to the inability to attract more travellers and the negative impacts its sluggish economies have on the industry. Revenues are unsustainable due weak economies, protectionist policies by some governments, high taxes, and poor infrastructure in many of the countries. Passengers such as tourists are attracted to landmarks and created attractions that drive traffic to such destinations. Decisions makers are not marketing the continent enough especially on the background where Africa has been blackmailed as being a dark continent with no proper social structure, security, and health risk destination. Relatively, *“to achieve any rapid growth the policy of open skies being championed by the African union and close patriotic collaboration need to be enforced by law to secure the future of the industry”(Respondent B)*. *“An open sky essentially will help in the modernisation of the industry by providing incentives to stakeholders, boost demand and supply and developed key destinations into aviation hubs”(Respondent B)*.

4.2 Issues of Visa Openness

The issues of travel borders and the difficulty for fellow Africans to acquire visas to visit other African countries are some of the bottlenecks facing the aviation industry. Rwanda is the topmost country that's relaxed visa conditions for all Africans. According to the African Visa Openness report in 2021, Rwanda and Tanzania came top for countries that promotes a

borderless regime for all visitors. *“Currently, 51% of African countries require fellow Africans to have a visa while most citizens from the western world are granted visa free access”*

(Respondent C). This relates to the unpatriotic aspect stated by one of the respondents, **Respondent C** further elaborated on the need for governments to come together and implement a policy that ensures Africans travel with a relaxed visa regime. “Let me note that there something of that sought agreed already but some countries later pulled out of the policy of free visa, visa on arrival and other policies to enhance travel and tourism for Africans”

(Respondent C). Governments must be committed enough to see the implementation of the Single African Air Transport Market (SAATM), so far 34 countries have signed up for the SAATM but only 10 out of these countries have implemented this agreed policy. SAATM aims to promote open skies in Africa which is critical to the growth of the aviation industry by cutting operating costs, boosting tourism, drive economies and creating indigenous growth for stakeholders. It is indicative to note that this policy is fully supported by IATA, a survey related to this by IATA suggest that if just 12 key African countries open their markets and increase connectivity an extra 155,000 jobs and US 1.3 billion in annual GDP would be created in these countries (IATA 2013). According to **respondent A and B**, an historic opportunity is being missed as about 8-10 countries have not signed on for the SAATM and even those who have signed on are reluctant to implement.

4.3 Security and Political Climate

Over the years Sub-Sahara Africa have been bedevilled with several insecurity activities that have affected the aviation industry. Comparatively, other regions like south America, Asia and Europe hardly experience this kind on unstable political climates. *“The aviation industry is a sensitive industry with security as a top priority in its operations, instances of coup de tats, unstable political unrest, and emergence of terrorist groups hinder the growth and leave a negative indelible mark on such destinations”*. **(Respondent B)**. Recent coups in Niger, Mali and Burkina Faso led to the closure of its air space, and as a result this grounds the country’s aviation industry to a halt.

According to the Chicago convention, signatories to the treaty are edged to uphold domestic and international civil aviation security standards, but it seems countries in Sub-Saharan Africa pay little or no attention to this aspect. Recently, there have been coups in Sub-Saharan Africa leading to disruptions in the overall security of the countries. *“This does not create positive impression especially for foreign tourist to want to visit or do business in the sub region, lets*

also not forget that international business, tourism and .diplomatic collaborations are all dependent on the aviation industry” (Respondent A and B). Africa already lacks the necessary infrastructure; issues of political unrest make it worse for the industry to ever develop to a stage where it can be competitive enough (Respondent B). “Notable security threats aside recent coups have been insurgent groups operating in Somalia and some parts of Western Africa, these insurgent groups link its operations to terrorist organisations internationally (Respondent B). Another issue of security concern has been the problem of Airport breaches due to corruption, lack of compliance and the ineffective enforcement of laws.

The occasions of 9/11 still serve as a deterrent for aviation travels hence the affiliation to any terrorist group in Africa certainly creates a lasting obstacle in boosting passenger inflows and in even infrastructural investments to the sub region”(Respondent B). “It is scary but notable to note that these insurgent groups such as Boko Haram, Al Shabab etc have made attempts in the past to attack airports, aircrafts and other security installations but have fortunately not been successful“. (Respondent B).

Recently IATA has launched a collaborative Aviation Safety Improvement Program (CASIP). The aim of this program is to minimize the rate of accident and serious incidents across Africa. An improved aviation security stands to play a major role in the overall economic development and competitiveness of the industry, a safe efficient and reliable air connectivity will be a major driving contribution to the UN’s Sustainable Development Goals (IATA 2023). According to the CASIP stakeholders, they intend to make it clear to governments across the continent that aviation must be prioritized as an integral part of national development strategies (IATA 2023). “Improving safety performance is a priority for Africa, and we don’t need to reinvent the wheel to deliver the needed results. Comparatively, collaborative safety teams in Latin America have demonstrated that safety improves when government and industry work together to implement global standards. By working together, the partners will pool resources to have a greater impact on areas where risk can be reduced, leading to measurable improvements in safety”... says Walsh (IATA 2023).

4.4 Major obstacles of the industry

What are the main obstacles facing the Aviation industry?

As acknowledged in previous chapters, the problems facing the aviation industry in Africa is multifaceted. In this chapter the interviewee sought to find out the major obstacles hindering the development and competitiveness of the industry. According to **respondents C and D**, they

emphasized that the first obstacle hindering growth is the willingness of stakeholders especially governments. *“We sincerely think most governments in Africa do not pay much attention to the development of their aviation sector. Without commitment it will be almost impossible to achieve a competitive industry, using Ethiopia as an example shows that if governments are committed to develop their industry is possible”*

To corroborate the above comments by the respondents, countries such as Ghana and Nigeria were thriving in the aviation industry with their national airlines performing well. But at a point they declined due to lack of government commitment, corruption, and incompetence. Ghana airways for instance since its decline, have struggled to be revived despite certain efforts by previous governments. These efforts have been inadequate as compared to the efforts being put in other sectors such as political activities.

4.5 Finance and Infrastructure

The African continent is made of developing economies hence financing is a huge problem for most countries to fund a capital-intensive industry like aviation. *There are 54 countries in Africa, but the number of home-grown airlines is far less compared to the number of countries. This will be due to not only finance but other obstacles such as infrastructure, insecurity, and lack of government support.”(Respondent C). “Presently financial impediment is still a major issue as some major thriving airlines continue to report losses pre-covid and post covid, notably are Kenya and South African Airways. Aside struggling airlines one major obstacle is the nature of infrastructure such as airports and relative ancillary aspects, security installations and transport services meant to facilitate air travel for passengers” (Respondent C and D).* Aside the mentioned obstacles above African lags behind in terms of soft infrastructure such as competent human resource persons, technology software’s and proper investments in aviation security.

The issue of finance also affects the regions costs of aviation fuel. Consistent increase in Jet fuel directly affects the prospects and portfolio of the airline industry.

4.6 Safety and Sustainability

Safety issues are the most pressing challenge facing the aviation industry in Africa. Most accidents come from the inconsistent implementation and lack of enforcement by the responsible authorities. The inability of enforcing internationally accepted safety standards, unsupervised procedures and political interruptions are additional factors causing safety issues. Following the attacks of 9/11, several regions have improved their security apparatus at airports

especially to ensure security is at its maximum capacity as well as its cyber security programmes. *“To ensure safe aviation environment, technological logistics are needed to be relied on, unfortunately most airports in the sub-region lacks state of the art logistics and adequately trained personnel. Out of the 54 countries in Sub-Saharan Africa, less than half have recognised international standard airports with adequate security apparatus” (Respondent C and D).*

Sustainability is an impending issue facing the aviation industry. Though may not seem like an immediate obstacle for the industry, it is a potential obstacle in the medium to the long term. Innovatively IATA have developed a recommended practice per-passenger CO2 calculation methodology, this method considers everything from airline fuel measurement protocols, passengers vs. cargo CO2 allocation, cabin class factors and much more (IATA 2023). This methodology is supposed to be used with verified data from airline operations, thus the method is able to provide accurate data transparently for interested parties or decision makers who need to understand carbon print footprint from flying (IATA 2023). Globally, the industry is committed to a net zero project by 2050 and it is therefore necessary for the aviation industry to consider this aspect in its quest in developing the industry. This IATA method should be implemented whiles mitigating against emissions from aviation operations by the use of more advanced methods like sustainable aviation fuels (SAFs), innovation and technology. In the next chapter, the impact, and issues of technology on aviation operations is empirically discussed.

4.7 Technology and innovation

How can technology aid in the development and sustainability of the industry?

“Currently, there are several developmental relations between airlines, airports, and technological organisations for the general improvement of the Sub-Saharan aviation industry” **(Respondent D)**. It is an undisputed fact that technology is a major driver of change in the aviation industry, irrespective of the state of the industry new technologies are always sought for and adopted. Stakeholders such as airlines, MRO’s, governments, airports, and security constantly need technology adoption to drive its business growth and bridge the gap between cost of operations and profit.

According to a UN report on sustainable development agenda and Sustainable Development Goals, mobility and its pillars are essential to socio-economic growth (ICAO 2022). Mobility by air, water or road is dependable on speed, efficiencies, interconnectivity, and accessibility (ICAO 2022). *Within the Sub-Saharan region of the African continent, mobility by air is one of*

*the major problems facing the aviation industry previously and currently, innovation in technology and current technological methods used in developed economies could be a sure way of enhancing and solving the mobility crises (**Respondent D**). Aside financial constraints faced by developing economies which could be the major problem of not solving the mobility issues, is the lack of home-grown innovation from SSA countries. Innovation in technology is essential to developing air mobility and the aviation industry as a whole, artificial intelligence, unmanned aircraft, robotics, block chain, alternative fuels and electric aircraft are technologies that will be essential to the development of the aviation industry in SSA.*

The SSA aviation industry is projected to grow substantially in the near future and accessibility will be key to its development. The image below depicts the current airport or aerodrome accessibility globally, and continentally Africa's access remains the lowest comparatively. *To enable the continent, accommodate the forecasted growth, consistent improvements, and efficiencies for infrastructures such as airports and traffic management systems will need to be innovated and implemented (**Respondent D**).* With the emergence of sustainability and climate change issues, emerging technologies are redeveloping the aviation industry globally. SSA economies need to look for mutual partnerships to access modern technologies that will improve infrastructure and mobility within aviation industry (**Respondent D**). Emerging technologies are enabling the innovation of electric airplanes, alternative fuels, increasing safety, sustainability, and efficiency (ICAO 2023). Relatively, other technologies such as artificial intelligence and big data management is also capable of improving infrastructure development, mobility management and airspace utilization (ICAO 2023).

Airport Accessibility

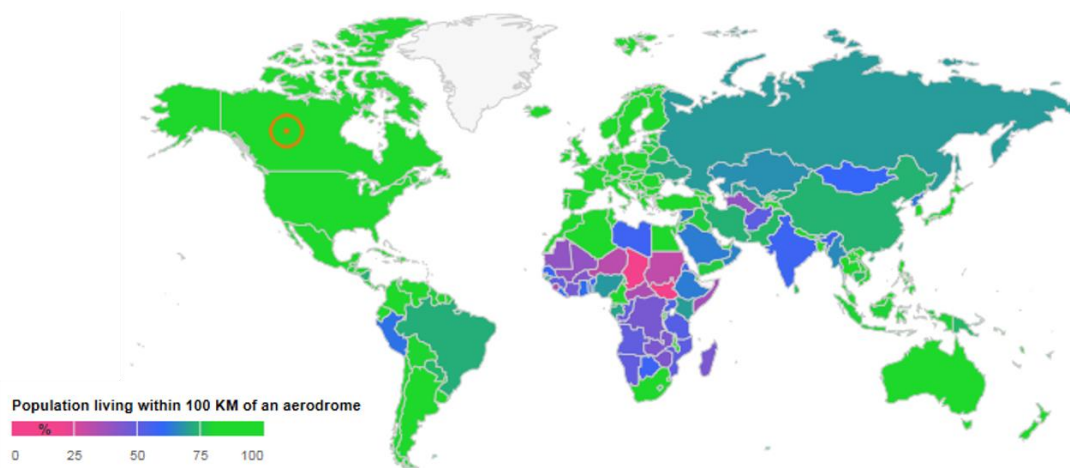


Figure 9. Global Airport Accessibility (ICAO 2023).

Developing and bridging the gap between airport accessibility and potential passengers is an initial and important step in reducing costs associated with the aviation industry. In the developed economies like Europe for instance, the impact of technology has made the passenger journey comfortable with use of the developed solutions that cuts the passengers travel time from home to the airports. Also, the provision of infrastructures such as roads, rail and other transportation systems makes it easier and reduces cost of accessing the airport. As stated above and from figure 8. It is evident that airport accessibility is extremely low in Africa comparatively, in most SSA countries airports are mainly accessible only by roads and that makes accessibility difficult. These countries usually have only one major international airport and have low technological solutions available to make air travel easier. The lack of technological solutions increases the passenger travel time and convenience, there is also lack of adequate solutions for people with mobility issues.

According to **respondent D**, *the emergence of new and redeveloped technologies is impacting on the wider transport sector and that is in sequence with the agenda of sustainable development by the 2030. This in essence means that more conscious efforts must be implemented in the SSA aviation industry to meet these set goals and compete competitively with other continental leading industries (Respondent D)*. The aviation industry is consistently experiencing change due to the impact of research and technology, technology is said to be one of the major drivers of the industry. According to **respondent D** MROs across the world, airlines, airports, and training institutions are driving for the development of the SSA aviation industry by applying technological solutions. This is a positive effort through foreign direct investments, but more effort and dedication are required from local stakeholders (**Respondent D**). With the existing cost of operations and its associated low profitability, it is important for stakeholders to adopt and invest in innovative technologies.

What are the main technologies that can drive growth for industry?

4.8 Big Data

For better process optimization, big data and analytics are crucial to the procedural development of air transport management. Stakeholders in the industry need to adopt technological methods in optimizing performance, big data is relevant and serves as a blueprint for any industry. Currently and for the future, big data remains to be very important airport

operators and airlines specifically. Proper data management can be used to track the passenger journey experience, choices, and usage trends.

Big data usage allows stakeholders to also track their customer touchpoints effectively and access what necessary inputs are needed to augment the performance better. The whole digital deployment allows companies to target their offerings strategically in order to achieve the desired results. Unfortunately, not all Airports in SSA have this process implemented hence the need to requisite data for in-depth analysis is missing. Big data enables companies used accurate data to also plan their marketing and communication strategies. The Aviation industry is consistently evolving due to the multiple factors that influence decisions such as destination, economic and personal trends such as spending habits. Companies ought to consistently monitor these trends so to meet the necessary demands and plan for future possible chances. Currently, airlines in developed and some countries in Africa take advantage of this technological input and customize their offerings accordingly.

Big data and analytics are supposed to be the main component on which most strategic decisions must base on, analytics is a strategic enabler airline especially on social media applications. Analytics is largely based on the data collected by a company hence the process of implementing and evaluating big data technology is crucial in a company's growth and competitiveness. The aviation industry in SSA possess massive opportunities for transformation hence the need for huge technological investment should remain a crucial objective for stakeholders. Figure 9. Below illustrates the various large amount of complex data that the air transport industry accumulates daily and how they can be integrated into proper business intelligence system where decision makers and partners alike can access for informed operations.

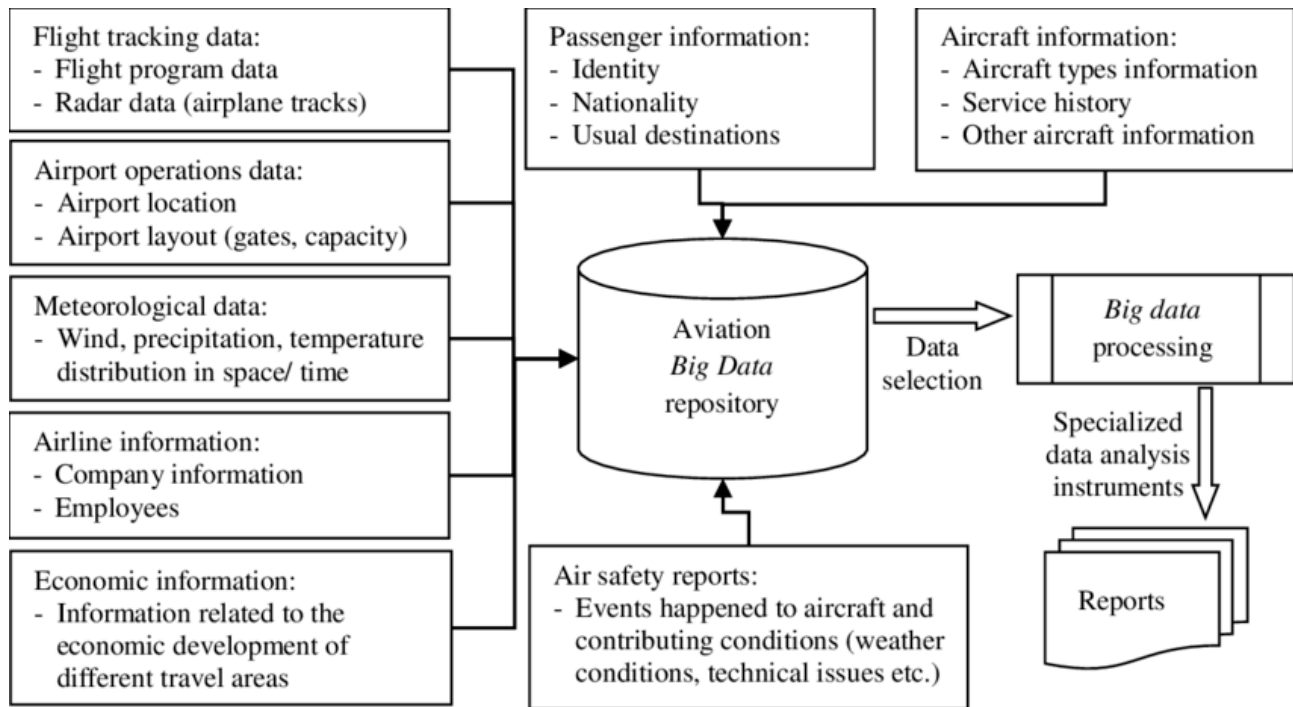


Figure 10. Aviation industry-data sources and processing (Andronie 2015)

4.9 Blockchain Technology

Blockchain technology relies on a consecutive chain of blocks that contains encrypted data about transactions and contracts of the user (Samunderu 2020). It operates by distributing stored information from a network database that can only be accessed only by a unique code. Block chain technology includes important data such as: the activity of buyers and information of sellers, transactional details (time and place of purchase), digital wallet on which transactions took place (Samunderu 2020). Stakeholders within the aviation industry are able to synchronize their operations with the implementation of blockchain technology, it will also afford the opportunity to track, monitor and evaluate operational issues all in one collected secured data.

Blockchain enables a secure digital ledger for stakeholders to transact various kinds of transactions, contracts and agreements, and project-related transactions that include data sharing. Blockchain has shown to be effective in other industries such as the manufacturing industry. One critical problem of the SSA industry is the managerial problems that have caused the collapse of previous national airlines, with the implementation of block chain technology decision makers are able to make better and effective decisions on the performance of the industry. In the aviation industry, blockchain technology is capable of securing operational ease for flight operations, providing MRO activities, maintenance records and the storage of flight

records for OEMs (Samunderu 2020). Other data information blockchain is able to provide in the industry is the secured data on hotel bookings, airport & airline operations, security, and immigration operations.

Technology has evolved so much and acts as the bedrock on which various industries operate with. Technology is sustainable and a cost saving way of transacting daily business, in a way such that technology cuts down several bureaucratic processes in business operations. Industries and companies are consistently evolving based on technology implementations even though it may cause disruptions for some companies, hence the need for consistent research and development activities is required. R&D provides the opportunity for product development, solution provision and optimise business operations, previously for example airline issues paper tickets and check in activities were solely carried out only at the airports. With the development of technology currently airline tickets and check ins have fully gone digital. SSA aviation industry stakeholders must focus on the development of new business models where technology and security are at the centre of its operations. Blockchain in the aviation industry is in its early stages but have been used widely in developed economies for consistent operational benefits (Samunderu 2020). Such benefits include:

- The shift from paper transactions to an e-ticket system, reduced passenger journey time and improvement in sustainability.
- Adequate provision of maintenance logs through blockchain technology for OEMs, service providers, brokers, airlines etc. This have removed bottlenecks of information sharing between stakeholders in the industry.
- Contributing to achieving a net zero aviation industry.
- Improved customer experience such as providing tailored customer solutions, awarding customer benefits such loyalty points and other rewards through the use of proper data management.
- Solving issues of identity management by way of biometrics and facial recognition technology, this has provided a secured, seamless process of the customer journey.
- Another benefit of technology has been the use of artificial technology through blockchain technology, the use of chatbots have become common for most developed aviation industries. But in SSA there is a limited number of this by stakeholders but there is a positive indication of the willingness.

One aspect SSA industry can take advantage of is to invest heavily in technology that will enable it to provide sustainable fuels that will help especially airlines cut operating cost and

make profits. With Africa's natural resources and conducive tropic environment, investing heavily in SAFs with the aid of technology is a possible venture and at the same time enable the industry to meet the UNs sustainable development goals, cut carbon emissions from jet fossil fuels and improve revenue generation for its few home-grown airlines.

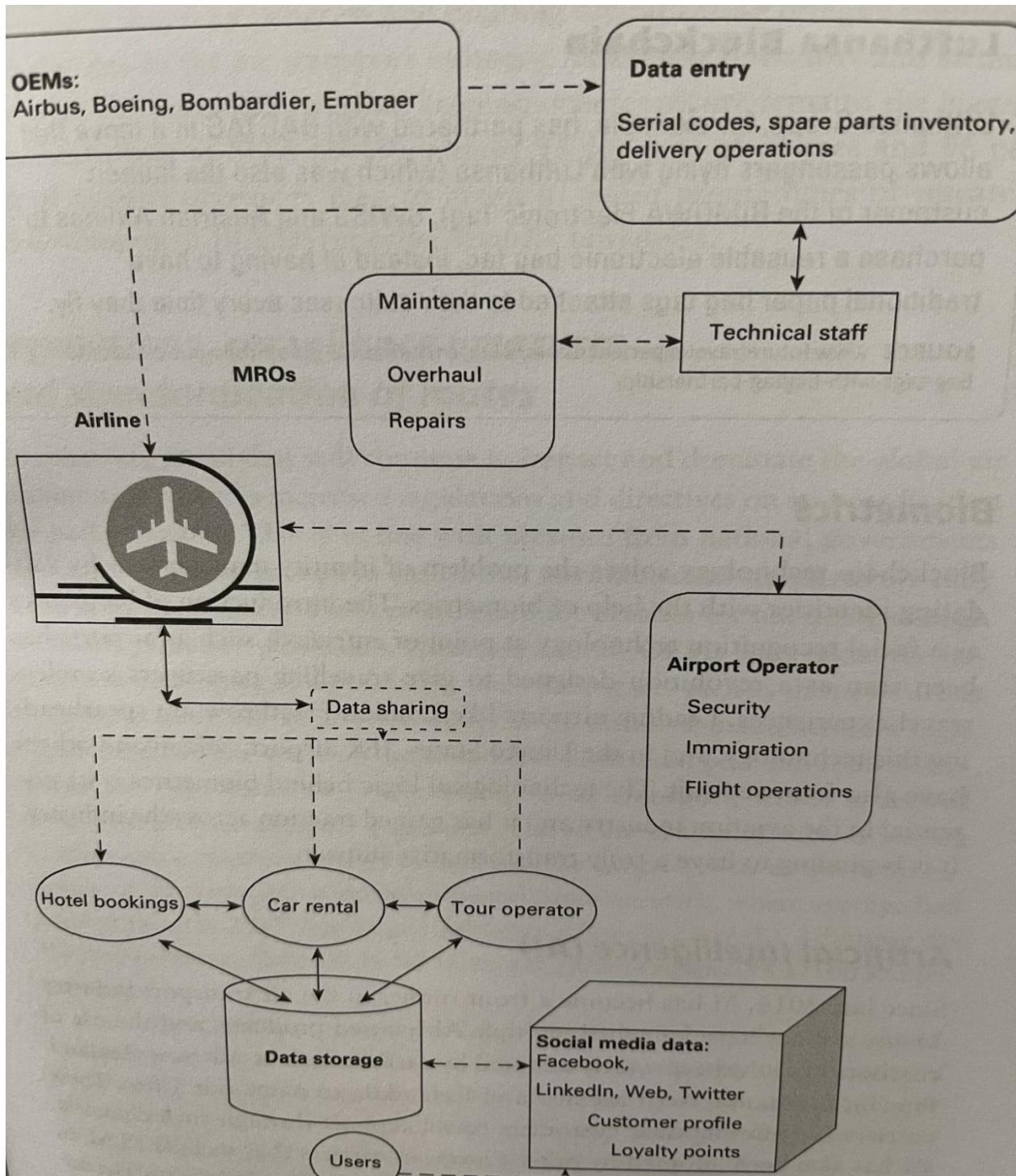


Figure 11. Illustration of Blockchain in aviation (Samunderu 2020)

The above figure 11. If implemented by the SSA industry will incorporate almost all stakeholders in the industry into a linked network where data can be accessed, evaluated, and analysed to make inform decisions for strategic decisions. According to Samunderu (2020) block chain technology can deliver enhanced benefits to all stakeholders in the aviation industry.

5 STRATEGIC DEVELOPMENT PLAN

This chapter is based on the findings of the research, recommendations, global trend, and the theoretical concept adopted for this study. Development is a process of recognizing what the existing problems are, what objectives are set to be achieved and how these objectives can be achieved. The Sub-Saharan aviation industry faces multiple obstacles in achieving a competitive status as stated in earlier chapters, key among these obstacles are financial, managerial expertise and infrastructure. To provide a detailed plan for industry analysis and development, this chapter focuses on major issues of the industry and other external factors that are capable of contributing to the development of the Sub-Saharan Africa aviation industry.

5.1 Future outlook of air transport

The global economic recession and the covid-19 pandemic have been two major instances that have impacted heavily and negatively on the air transport industry. Aside these two global issues, economic status of individual countries also impact on the industry. Irrespective of these, currently passenger demand for air travel continues to surge especially in Africa amidst the existing challenges. What is needed currently for Africa is to mitigate against the existing problems in order to speed up the positive surge in passenger and other relative factors. The emergence of Ultra-low-cost carrier (ULCC) in the US aviation industry is creating a competitive environment globally, ULCC is a business model that focuses on using low cost and efficient asset utilization (Daraban & Fourier 2008). This emergence has provided a hybrid of airline business models and according to Gillen (2006), the growth of ULCCs is most likely to have an impact on the air transport industry similar to that of LCCs. Gillen (2006) further states that just like LCCs, ULCCs will influence policy decisions and affect the competitive environment. This development is a blueprint or pathway for policy makers in the African aviation market to use as a guide in making proper future strategic decisions. The expectation of having ULCCs and LCCs can be a strategic objective in the short-, medium- and long-term policy, but for the purposes of rapid development of the industry it will be prudent to make this a short- or medium-term objective. Achieving such business models in SSA can be through liberalisations, investing in sustainable fuels and partnerships.

The business models of low-cost carriers are an effective way of encouraging and boosting passengers' numbers, currently there are about just five low-cost carriers in Africa namely fast jet in Tanzania, Fly 540 in Kenya, Jambo jet in Kenya, Kulula, FlySafair and Mango all in South Africa. All these airlines are domestic only perhaps due to liberation, security, and high

operating cost issues (CNN 2017). Dana air in Nigeria, for instance was shut down after an accident due to security and safety issues, it has been reinstated just over a year ago but operates domestically like the others (CNN 2017). Aviation growth in Africa is projected at 5.6 percent annually over a 20-year period, this provides potential opportunities for investors and governments to map up proper strategies in meeting the market demands and growth rate. Africa's passenger capacity will be in a region of 200million as compared to the global average estimate of 3.6 percent (IATA 2019). The future of the Air transport for developed economies looks much better as compared to that of Africa specifically, for instance while developed economies are concentrating much more on sustainability issues, Africa is still bedevilled with issues like liberalization, costs, and infrastructure. Tourism has been a key driver for growth of the aviation industry in developed economies, Africa needs to exploit the avenue of tourism which already has been a major contributor to some countries like South Africa, Kenya, and Rwanda's GDP.

5.2 Alliances

Relationship building in any industry has proven to be a key driver for industrial growth and sustainability. With the current dynamic trend in the aviation sector, thus being consistently dynamic due to the technological and climate demands the SSA industry could realize speedy development should it for strategic partnerships both domestically and internationally.

Organisations in the financial institutions, automobile, pharmaceutical industries etc have shown the way of the positives that can come from strategic partnerships.

Currently the major alliances in the aviation industry are one world, star alliance and sky team. Out of these 3 major alliances, only about three airlines (Ethiopian, Kenyan and South African airlines) are home grown from SSA. With a population of over a billion people this is woefully ineffective domestically. These strategic partnerships enhance an airline's performance and provide an opportunity for revenue generation. Strategically, these alliances provide a centralised customer relations platform where proper interactive and collaborative efforts are shared to provide value for customers from different locations (Samunderu 2020). It is notable to state that strategic partnerships have the potential to withstand the threats of economic turbulence and disruptive technologies. Collaboration among global firms balances the potential problems associated with diminishing dependence on a particular location (Agusdinata & de Klein 2002).

Using the theoretical framework of the study on strategic management and especially the model of Porter's readjusted theory, one of the surest ways of the SSA aviation industry to realize its potential growth is through partnerships or alliances. Most countries with no national carrier should access this avenue both domestically and internationally as a way of developing the industry. The lack of will and the non-realization of the potential of the industry to transform an economy is a major cause of the current state of affairs as evidently shown in chapter 4. Of this study. Certain countries like Ghana have over the years attempted to partner with other organisations for the development of a national airline but nothing has been realized yet since. Most routes in SSA are managed by foreign airlines and this is a major cause of revenue loss and economic growth for the destination countries. Out of the major airlines in Africa which covers about just five countries, the rest have its direct international routes to the country being managed by foreign airlines such as British airways, Air France, Qatar airways, Emirates, KLM etc to mention a few. This is extremely unacceptable, and the worse situation should a collaborative agreement or partnerships among countries. The international route of the African market is huge due to the diaspora population and the growing interest of foreign direct investments in the region. On domestic collaborations, it will be much more prudent for countries to embark on strategic deregulation partnerships among countries where most domestic flights direct could be developed among countries. Firstly, as shown in the results and findings of the study the issue of visa restrictions should be relaxed or scrapped to encourage air travel, when there is a demand for services it is believed airlines will increase its revenue generation and could cut cost of operations. Deregulation and partnerships will also improve the time of travel across the continent, encourage trade and economic growth.

Previous research has shown that airline alliances provide members with international route portfolios that are naturally difficult to reach or achieve due to marginal cost (Tugores-García 2012). The aim of this project is to provide results on the current issues facing the industry and find ways to aid its development faster to enable it industry competitive. Established benefits of alliances be it tactical or strategic are numerous and some major ones are code-sharing, larger network connectivity, economic importance, synergy with the best industry performers and knowledge sharing.

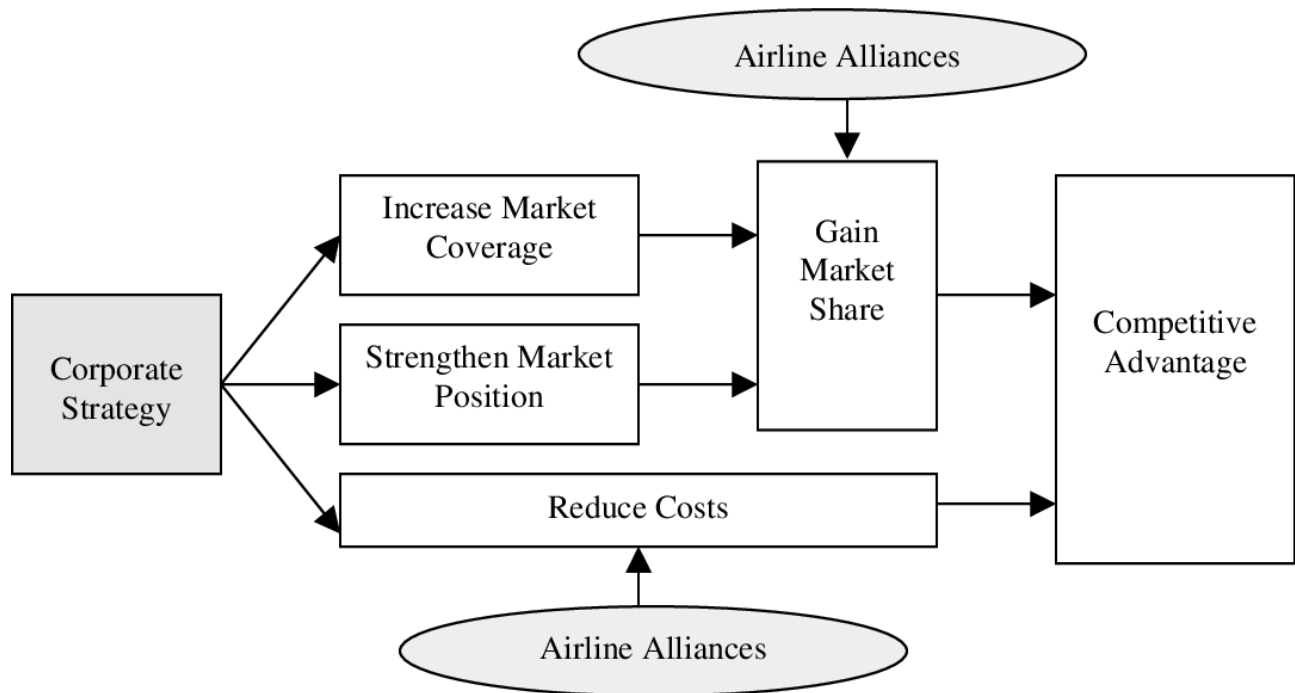


Figure 12. Airline alliances as strategic weapon (International Centre for Air Transportation (MIT) 1999).

According to ICAT (1999), the aviation industry is in a globalization state whereby most airlines are entering into alliances to have access to new markets. Alliances are strategic weapons implemented and aimed to achieve mutual strategic objectives, reducing operational costs, and increasing market share (ICAT 1999). Figure 12 above illustrates in a nutshell the benefits associated in airline alliances; this can benefits can be derived irrespective of the location of the where the partners are located. In Europe, there are partnerships formed outside the three major alliances that works perfectly either through strategic partnership or mergers & acquisitions. An example of such is KLM & Air France; Emirates & fly Dubai partnerships, both has proven to be very viable for both organisations. A conscious and collaborative strategy of airlines in Africa partnering each other will give first rights to existing and new routes within the continent.

5.3 Infrastructural development

With the aviation industry poised to expand in Sub-Saharan Africa, policy makers are obliged to find sustainable solutions in bridging the infrastructural gap. Realistically, the air transport infrastructure is not an isolated project but is linked to other transport means such as rail and road. Road especially is the most common means of transport connecting airports to the

general public; hence it is heavily relied upon as the main means of access to air transport. To expand and create more access routes rail needs to be further developed to enhance air transport connectivity.

During the empirical phase of this project one main issue raised by the respondents are the high cost of operation and taxes imposed on the aviation industry environment. Cost such as high airport facility fees, high air navigation and others directly affects the cost of travel in the region.

5.3.1 Airports

The development of the aviation industry is heavily relied on various connected infrastructures that when developed enhances the competitiveness of the industry and all stakeholders. According to the African Development Bank, economic contributions from air transportation could surpass that of the reliance on road transportation in economic development (AFDB 2020). About 3000 airports and airfields are located in SSA but not all or less than half meet ICAO standards. Previous and recent literature on airport infrastructure is much focused on environmental airport sustainability (Brundtland et al 1987; Elkington 1994; Setiawan and Sadewa 2018; Greer et al 2020). SSA current and future airport development should be centred mainly on developing sustainable airport infrastructure that meet ICAO standards and also meet sustainable development goals so to reduce and meet the projected zero emission target. Airports are the habitat of the aviation industry and play a critical role in the development or failure of the industry. Figure 13 below illustrates an airport's interconnected business overview, range of services it coordinates and other commercial activities. It is a complex infrastructure liaison with other stakeholders in the industry, therefore its infrastructure and other logistics need to be in at least a sustainable standard.

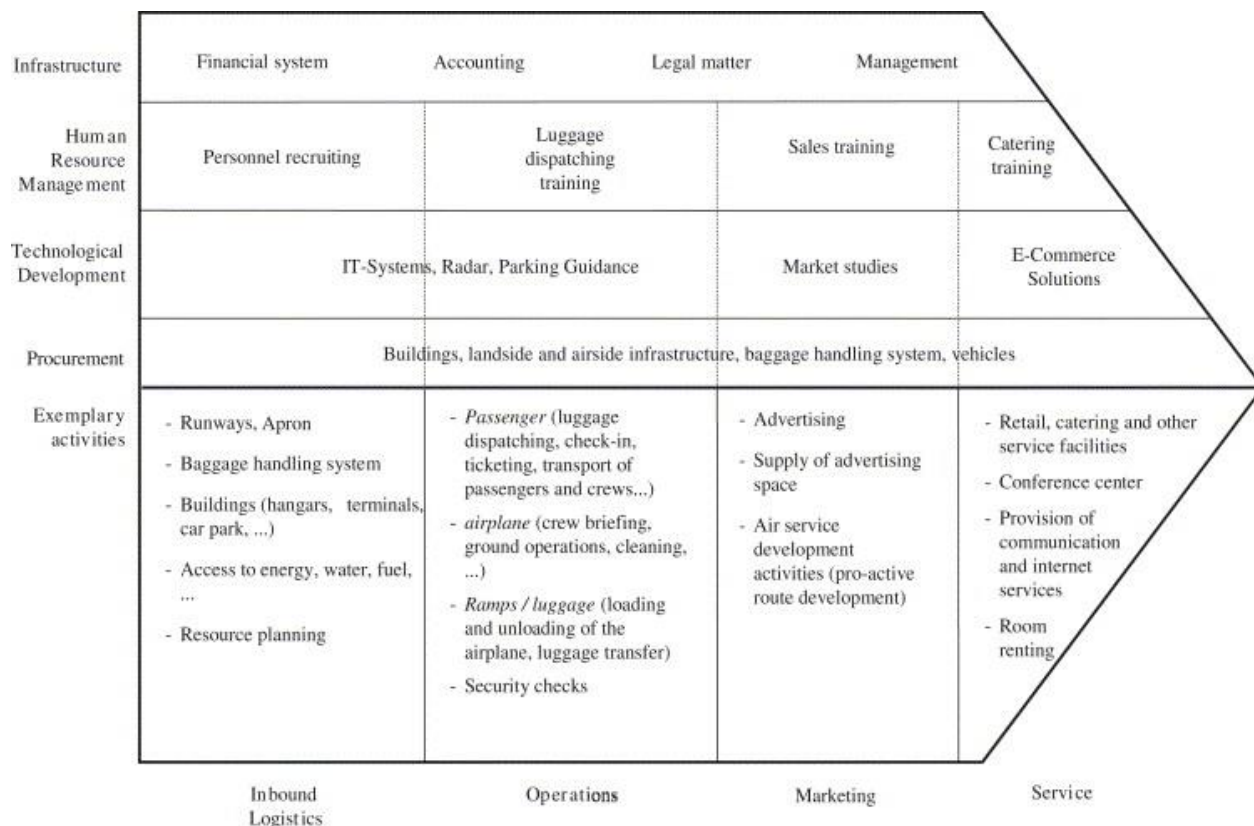


Figure 13. The value Chain of the Airport (Koch and Budde 2017).

Understanding the value chain of an airport is critical to the internationalization and model of the infrastructure. Internationalization is usually the main objective for constructing airports, while airfields are usually for domestic purposes. The functioning of an airport involves several companies that provide various commercial services such as catering, ground handling, security, etc. Currently, decision makers must understand the daily operations of the airport and all involved stakeholders in order to design, plan and implement sustainable solutions for the airport. From a strategic point most airports in SSA do not put the strategic objective of internationalizing airports before they are brought to light, for instance Kotoka international airport of Ghana built in the 1950's was not planned as an international airport, but its initial purpose was for an aerodrome use by the British air force before being transformed to an airport after independence. In essence this means that there was no strategic objective for the airport hence the required current standards including sustainability was not an initial input for the project.

Currently, there have been some improvement with new terminals and a facelift of the overall outlook of the airport, but the sustainable requirement is a modern-day airport is yet to be

accomplished. This has been the usual case for most airports in sub-Saharan African region. The way forward for the re-development of airports in SSA is to understand the value chain of airports from a strategic viewpoint before they are constructed. Strategic decisions on designing airports must be firstly considered using Porter's readjusted five forces which encompasses the external, current, and future influential factors of an industry.

On the issue of sustainable projects for the aviation sector, there are three priorities thus the transition to sustainable aviation fuels (SAFs), the need to develop sustainable airports and mitigate the emission effect on the climate. According to Arup (2023), for an airport to become sustainable there are five main factors that need to be considered strategically:

5.3.2 Achieving net zero emissions at Airports

Airport planning and managing need to invest in renewable energy sources to cut down on carbon emissions. Though most SSA airports largely depend on hydro energy, there is an opportunity to invest in solar and wind energy which are more probable cheaper and renewable sources of energy. It is strategically important for decision makers to firstly map and model proper energy use across airports and airfields. Other related possibilities are the sighting of energy generation facilities from other sources such as biomass and hydrogen. A typical example of such an airport is the Cochin International Airport that produces 100% of its energy from an installed solar facility on airport infrastructures and surrounding facilities (Arup 2023). At airports, surface access is a major emission source and thus prioritising public transportation means such as rail and road reduces related emissions. According to Arup (2023), surface access emissions caused about 33% of Heathrow airport's emissions. For SSA countries to achieve zero emissions at airports, there is a blueprint situation from the UK government and European Union's green deal proposals where strict targets for carbon reductions in waste management, embodied carbon and renewable energy procurement are being implemented (Arup 2023). Realistically, achieving net zero is possible but should be planned and implemented in an integrated manner (Arup 2023).

5.3.3 Designing airports to be physically sustainable

As stated, above airports are a complex ecosystem of services, supporting systems, and environments that relies and consumes a variety of energy and resources (Arup 2023). Airport cities are critical infrastructural developments that enhances economic, social, and logistical development (Appold & Kasarda 2013). The environmental impacts of airport city projects are significant such that its building operations are to be mitigated and aligned with other transport

modes that focused to go green. Data from a study on San Francisco International Airport showed that about 85% of carbon emissions were from aviation emissions and 15% from global greenhouse emissions (SFO 2020). Due to the projected expansion of the SSA industry there will be an eminent pressure on existing and intended new airports, therefore there should be a systematic method of evaluating and monitoring the environmental impacts of the design and construction of such projects. The construction, modernisation and expansion of airports must take a circular economy approach whereby material, and logistics intended for these projects are recyclable and do not harm the environment. To optimize proper airport operations, a systemic approach must be adopted to avoid improve recycling, reduction of waste, possibility of using an onsite waste conversion to energy and adhering to zero waste.

Airports are to be built and expanded without having any damage on nature and biodiversity (Arup 2023). Management of airports are to commit to go green policies that limits environmental impacts. Waste management at industries are a major concern in SSA especially in the area of recycling and reducing carbon emissions, a collective effort by way of legislation is needed to collaborate the management of waste resources across all industries. As part of a management strategy and to address biodiversity issues within the environs an airport, concepts such green roofing, proper liquid waste management and extended planting that conforms to aviation standard must be adopted (Arup 2023). Subsequently, huge investment in technology when adopted can also reduce the impact of carbon emissions, more smart ways must be applied in training and investing in human capital.

Arup (2020) also suggests that Airports have a realistic opportunity in leading the sustainable agenda of the aviation industry. The focus has somehow been on airline carbon emissions in the sky, but airports serving as hubs and link to other transport modes can drive a focus towards the sustainable agenda. Airports serves as a central point between passengers and airlines, hence a strategic alliance for an agenda for reducing carbon emissions, innovation & technology, finance, and investments is highly possible and achievable

For airport development purposes Greer et al (2020) have made suggestions for improving environmental sustainability at airports. See Figure 14 below...

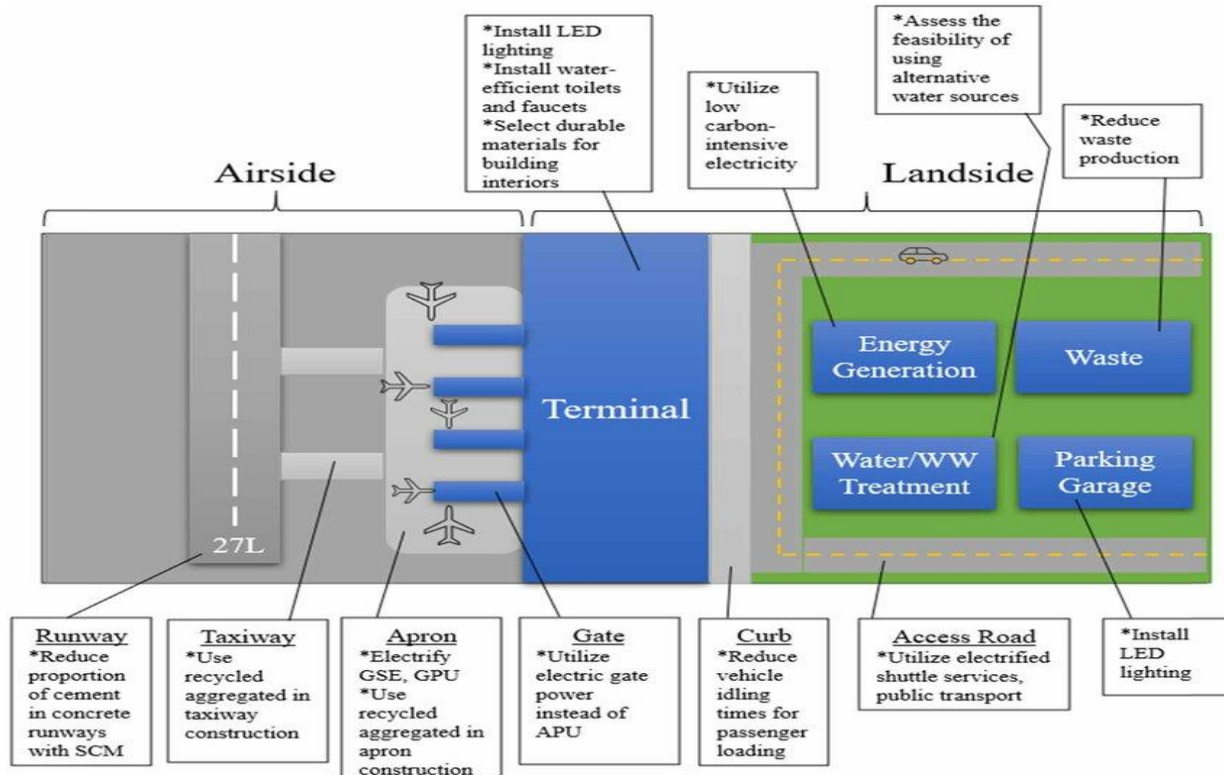


Figure 14. Suggested best practices for improving airport environmental sustainability (Greer et al 2020).

5.4 Tourism

Sub-Saharan African countries can adopt tourism as the master plan in developing their economies and the aviation industry at large. Achieving growth for an economy demands robust and strategic policy implementation that influences investor interest, foreign direct investments, and strategic partnerships. The potential for economic growth and impact by way of tourism in SSA is huge and highly achievable due to the abundance of beautiful natural landscapes & resources, wildlife, beaches, and cultural and historic heritage (Signe 2018).

According to the United Nations World Tourism Organisation (UNWTO 2019), tourism remains one of the largest and lucrative industry globally and statistically, tourism contributes about 9 percent of the world's GDP. Tourism is said to be an important part of economic development and must be re-developed strategically to achieve its purpose. SSA countries have immense natural potential in driving tourism through strategic tourism marketing but collectively this have not been achieved in a way of being a main determinant in driving foreign investors and visitors. Countries such as Kenya, South Africa and Tanzania are the few countries which somehow

benefit from their tourism marketing strategy. The way forward as per the objective of this paper, theory and empirical happenings globally is to embrace **sustainable** and **smart tourism**.

5.4.1 Sustainable tourism

Sustainable tourism concept revolves around a balanced economic, cultural, and social developmental activities that do not endanger the environment. Previous literature defines sustainable tourism as a process of allowing achievable developments without necessarily harming the environment or depleting natural resources (Bajdor & Janusz 2013). To sustainably manage these resources for both tourism and environmental purposes, stakeholders must properly incorporate effective and modern practices in their daily management. Extensively, the International Ecotourism Society defines eco-tourism as the type of tourism that has a specific purpose that protects the environment and has the desire to balance life of local communities (IES 2013). An observation made in most SSA countries shows that most natural habitat that could be redeveloped and marketed as tourist sites have been left in deplorable state either because of financial issues or lack of managerial foresight. Aviation development somehow is reliant on tourism, as most tourism destinations are usually visited by people all over the globe with aid of transportation means such as aviation, rail, road etc.

Sustainable tourism should involve sustainable planning that is solely aimed at preserving the environment and it must involve a variety of research and analysis on which every tourism plan must be based on. According to (Angelevska-Najdeska & Rakicevik 2012), sustainable development should be based on four basic principles as follows:

Principle of environmental sustainability, which prescribes the development of a compactible strategy that ensures the maintenance of vital ecological processes, biological diversity and biological resources must be applicable.

Principle of sustainability, this strategy should provide a compactible cultural development that enhances human community that can also impact on the strengthening of identity.

Principle of social sustainability, this enables the development of compactible traditional values and norms of the community.

In recommending a strategic concept for SSA countries to implement and redeveloped its tourist sites towards a sustainable outcome, the paper presents a framework for achieving a sustainable tourism industry. Figure 15. below illustrates the factors and principles involved in transforming a

tourism industry to a more sustainable one. The framework enables stakeholders to set up their own strategy that is capable of leading efforts for a sustainable tourism future and being a driving force for the aviation industry. According to Wearing (2012) for tourism to be successful in the longterm, much depends on the proper management of the economic, environmental and social aspects which are also dimensions of sustainable development.

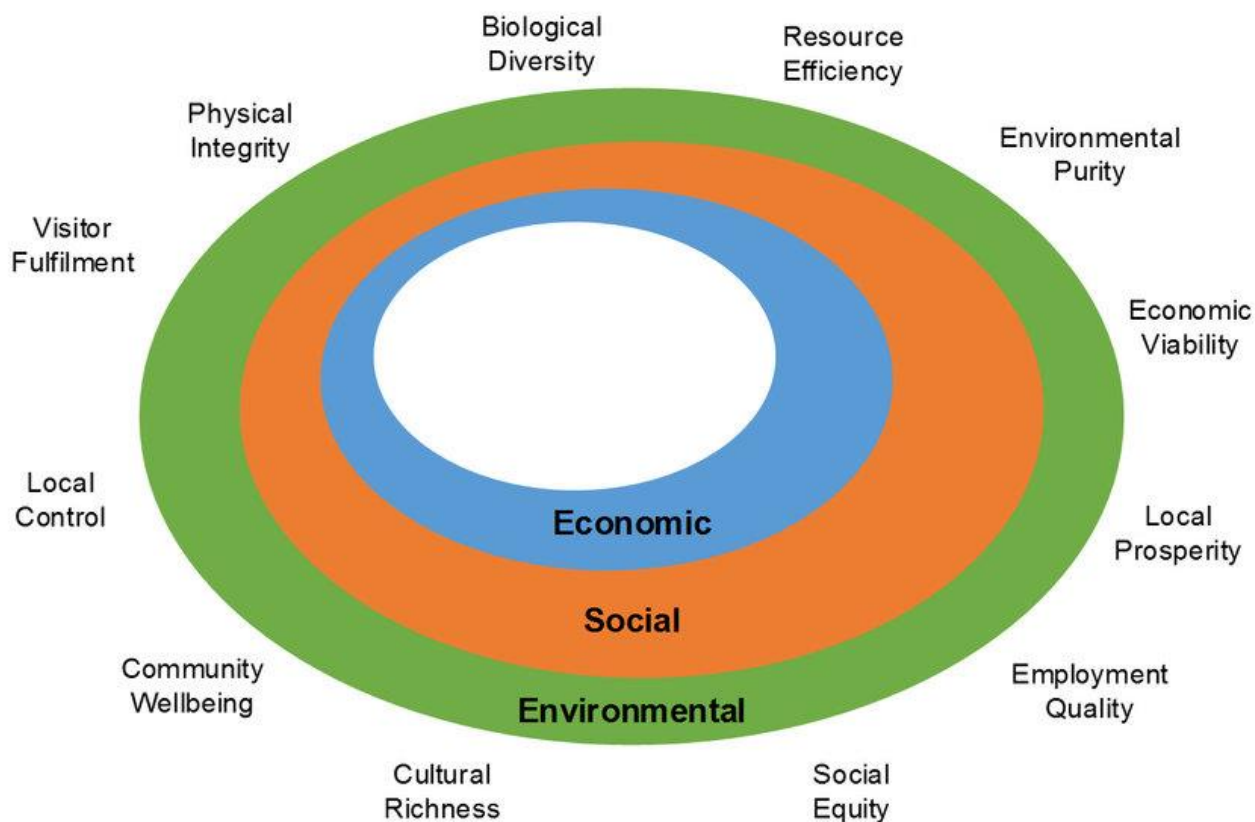


Figure 15: Framework for Sustainable Tourism (Janusz & Bajdor 2013).

The framework for sustainable tourism incorporates the economical aspect of development whereby the competitiveness of tourism and the economic viability of enterprises in any geographical region is planned, implemented, and achieved. One good aspect of economic capacity is providing guidance for local prosperity, thus locally maximizing profits from tourists that visits a destination. It must be strategically planned that the return from tourism also aims at providing an environment of social equity where opportunities are evenly distributed. Most

importantly within the framework. The strategic essence of the framework is to aid stakeholders plan strategies to help cities, locals and countries chart a pathway to sustainable tourism. In the above figure it provides the stages and actions needed for implementation towards sustainable tourism. Relative to the above framework Manning (2008) provides similar guidance or stages that prescribes the stages for achieving sustainable tourism, the actions/stages are from setting up a goal; implementation; development; identification and evaluation; analysis and basic data.

5.4.2 Smart Tourism

Smart Tourism is a concept that dynamically interconnects human experiences and technology. To develop a modern and competitive industry, SSA countries must aside embracing sustainable environment that focuses on environmental protection incorporate smart tourism that focuses on the use of technologies such as RFID, NFC, and the internet of things. Harrison et al. (2010) defines smart as the process of exploitation and operationalizing real-world data, time, integrating, sharing, modelling, and optimizing complex analytics to make well informed decision. Smart tourism has the capability to influence new business models for decision makers and by extension have positive influence on the airline industry. Involving technology in destination tourism and smart city planning have the tendency of influencing innovation for resource optimizations across all aspects of an economy. The empirical results of this paper discussed the importance of technology for the development of the SSA aviation industry and to achieve the desired results, a synergy with the aid of smart solutions between the aviation and tourism industry would yield developmental results. According to Hwang et al. (2015), governments of China and South Korea have instituted a strategy backed by adequate funding that is aimed at providing the required technological infrastructure for smart tourism.

With the state of untapped opportunities in most SSA countries, a strategic collaboration for funding and technological innovation could easily developed more tourist destinations into smart hubs. One important aspect of smart tourism is the integration of technology into existing infrastructure. A typical example smart tourism application is in Amsterdam where beacons are provided to enable tourist sign translates themselves into different languages and also in Brisbane where about 100 beacons are provided to communicate information to tourists via mobile apps within a certain radius (Gretzel et al 2015). Relative to the above development, a smart tourism hub known as Jeju Island that uses innovative technology for its content delivery to tourists is located in South Korea (Gretzel et al 2015).

Figure 16 below illustrates the components involved in implementing smart tourism strategy. According to Hunter et al. (2015), smart tourism is also a sequence of social phenomenon borne out of a combination of technological applications for a tourism experience. The smart experience aspect of the strategy below focuses on technology influenced tourism with personalised enhancements, real-time services and context awareness that is aimed at driving tourism traffic for mutual value creation (Buhalis & Amaranggana 2015). Secondly, the smart destination enables an environment where tourist tend to be active participants of the ecosystem, their activity also helps in creating experiences and data that contributes to the business information systems for proper

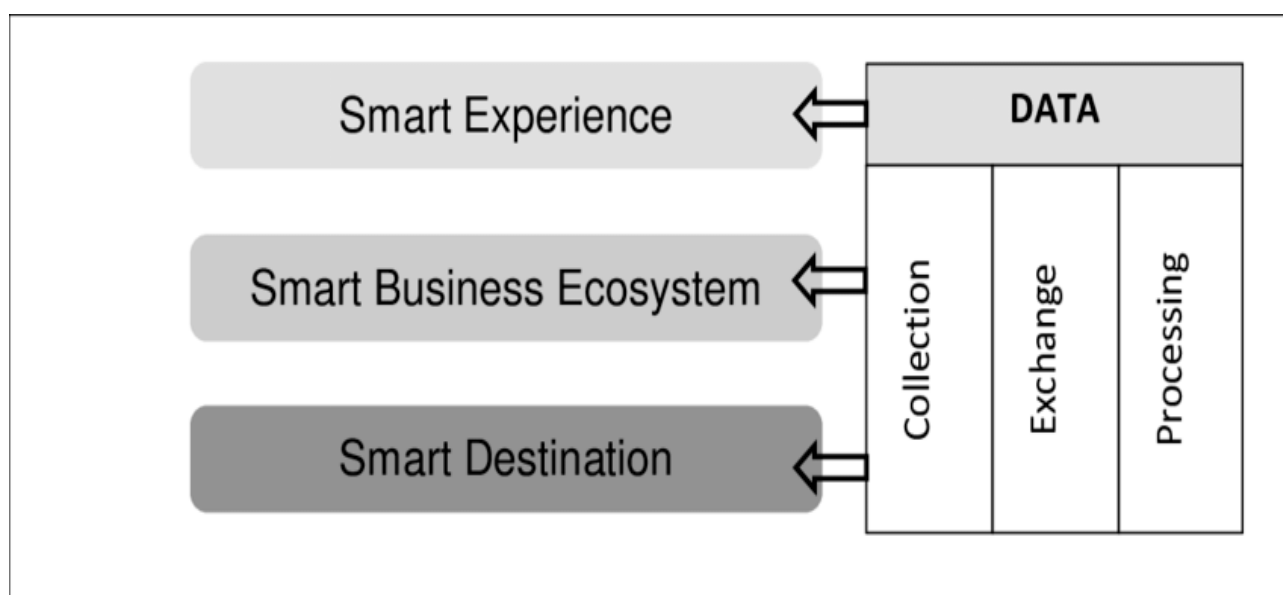


Figure 16. Components and layers of smart tourism strategy (Buhalis & Amaranggana 2015).

decision making processes. Attracting, participating and engagements by tourists are crucial components that aids in the development of any business either through word-of-mouth recommendation or destination marketing. Empirical data does not make mention of this smart tourism strategy; hence it is an opportunity for decision makers to take and implement such strategy. Smart business ecosystem strategizes for the co-creation of value for both tourists and stakeholders. It involves the dynamic synergy between stakeholders, digitizing business processes and ensuring organisational agility (Buhalis & Amaranggana 2014).

In addition to the above, smart business ecosystems encourages public-private partnerships that's making it a collaborative strategy for stakeholders in the tourism industry to involve that of those in the aviation industry to map out strategies for their collective growth. Such

collaborations, motivates especially governments to invest willingly in infrastructure and provide data security. The strategy is data driven and needs an integrated system with relative stakeholders to maximise its objective. With the participation of human engagement at every layer of the strategy, the concept will involve a wide range of technological innovations such as blockchain, artificial intelligence and NFC's etc for proper implementation. These technologies enable travellers or tourists with exciting on-site experience, quick sharable experiences, sustainable and secured processes that mutually benefit all stakeholders.

In conclusion, Anttiroiko et al (2014) states that smart tourism concept should involve alliances for risk management, knowledge sharing & circulation, value co-creation, creating value chains and networks that will provide a competitive environment of cost effectiveness and innovation for growth.

6 DISCUSSION AND CONCLUSION

This final chapter recaps and presents a summary of the research project and discusses the results and recommendations for future research. This chapter concludes with the limitations of the research and other related issues during process of the research.

6.1 Summary of the research

The research project and topic were formulated based on the background and empirical state of the Sub-Saharan aviation industry. Based on the aforementioned reason the research is aimed at investigating the problem identified and finding possible recommendations for the development and competitiveness of the aviation industry. The research took a generalized approach of accessing the problems facing the aviation industry as against the current state of other industries such as that of the Europe. With a population of over a billion people and about 54 countries, the number of airlines owned in SSA, routes covered, and their low global visibility does not make the industry competitive.

The research begun with an introduction and background chapters which introduced the problem identified for the research project and reference to previous research that established same. Subsequently, the research objective and questions were formed in manner of achieving the expected results of the project. The literature review of this thesis was strategically selected and reviewed in line with the objective of the study. To developed an industry with multiple stakeholders, it is progressive to situate the issues of the industry to literature that aims to strategically develop businesses and access the global environment of the issue identified. In so doing the literature review was based on sustainable business development concept by Rainy (2006) and Porter's re-adjusted framework that is aimed tackling industry challenges such as exposure to change management, customer solutions, digitization & innovation, and globalization. Relatively, another framework thus the balance score card by (Kaplan & Norton 1992) enhances the performance of decision makers and organisations as a whole in terms of assessment is adapted in the literature review of this thesis.

The main concepts in the literature review are based on a strategic management approach that aims to aid in the development of organisations irrespective of the industry, but in this thesis, it is more related to the problems and objective of the research. The SSA aviation industry problems are multifaceted, and base on the literature review and empirical results these issues range from infrastructural, financial, liberalisation, sustainability, technological and management issues. The empirical research data were collected based on an open-ended interview approach

that is capable on revealing other related issues that were not directly addressed by the research questions. The research questions or interview guide centred on themes such as technology, infrastructure, and liberalisation. The interview respondents were carefully selected to represent the main stakeholders of the industry, namely airlines, airports, and governments. Data gathered were critically analysed and reduced to avoid repetition in its presentation as most of the results pointed to similar multifaceted issues. Using the content analysis approach, data was significantly reduced and summarised into themes that if tackled by stakeholder's would enable a faster acceleration of growth for the industry and automatically provide the platform for solutions to other relative issues raised such as the availability of pilot training schools, research & development centres for aviation technology.

To strategically approach the issues raised based on earlier chapters, with special mention to the empirical results and to meet the objective of the study. A development plan is provided in the form of recommendations and largely base on the empirical results gathered from interviews. The development plan chapter focuses on areas of strategic importance that if focused on will possibly contribute to the expected development of the industry. The development plan addresses and recommends concepts as strategic alliances, sustainable infrastructures, tourism as main areas that if proper attention is giving too, the SSA aviation industry will become competitive. In subsequent chapters, other areas that relates to the development plan will be discussed.

6.2 Key results and significance

Review of literature and analysis of the empirical data provided significant results of the study which are presented below:

The problems of the SSA industry are multifaced and needs a collective approach.

The collective decisions of the Yamoussoukro declaration are not being fully implemented.

Lack of commitment needed skills and dedication of decision makers esp. governments.

The inappropriate collaboration of governments and foreign organisations instead of collaborating more with home grown stakeholders.

The lack of vision by decision makers to realize the importance of the aviation industry in driving economic growth.

Big data and block chain technology if invested in are main technological innovations that will aid in the development of the industry.

Relative to the above, if data proper management is not taken seriously the issue of visa openness such as that of the EU or Schengen states will be almost impossible to

achieve. Free border policy encourages travel and will impact positively on the cost of travel in SSA.

Negative reportage and perceptions of the African continent consistently affects the traffic of tourists to the continent, unfortunately responsible authorities are doing little or nothing of the issue. It is quite sad to note that, most people refer to Africa as a country and only relate to it as a place of war, hunger, and famine.

- ❖ Unfortunately, Africa faces a huge task of negative media perception painted to the larger public and there must be a conscious effort to fight against such. Notable countries taking this issue up are Ghana, Rwanda, and Kenya to mention a few.
- ❖ Total lack of investment in sustainable practices is one key issue facing and could be a lasting issue if conscious efforts is not made now. There is a possibility of SSA aviation industry investing in sustainable aviation fuels (SAFs) that could contribute to cost reduction but there is no collective strategic approach to this effect.
- ❖ Lack of peace, stability and collective security approach is one major problem hampering the growth of the industry. Lately, there have been a series of coup de tat's that affects the industry. To significantly prevent this SSA countries must a matter of policy have a collective political approach that to how it relates to foreign partners for mutual benefits.
- ❖ Lack of required strategic leadership remains a problem a huge problem in most SSA countries.
- ❖ Forming strategic alliance for mutual benefits is one sure way of developing the aviation industry.

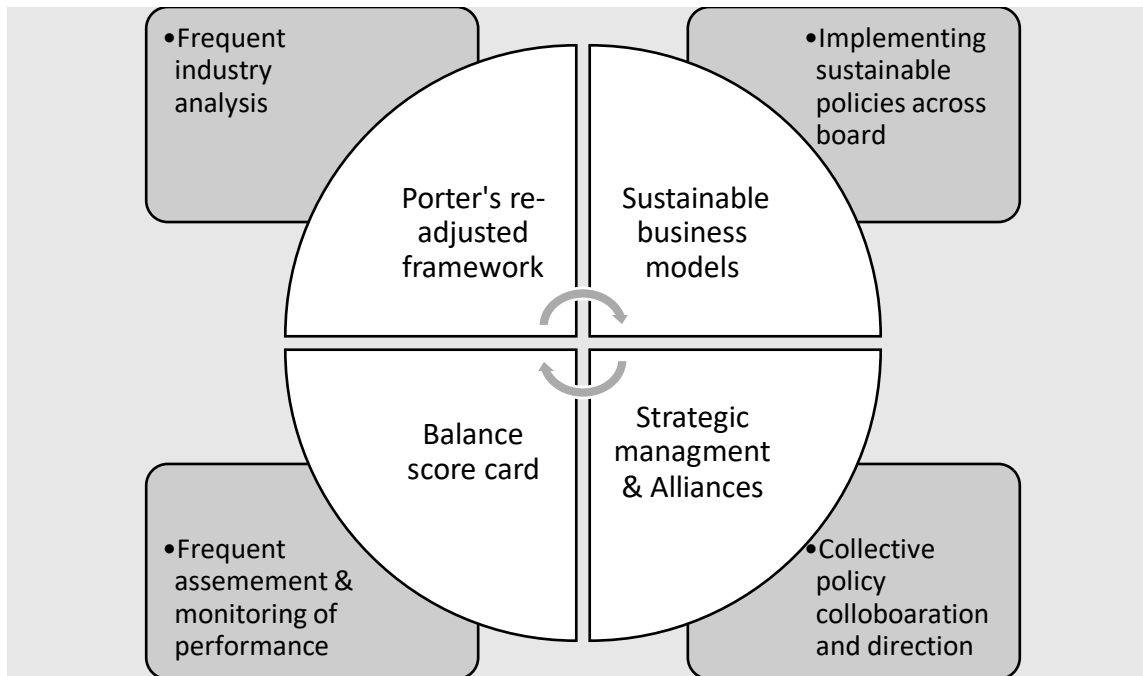


Figure 17. A proposed framework for the development of SSA aviation industry (Adapted from Poter 1985; Rainey 2006; Kaplan & Norton 1992 and Samunderu 2020).

The above framework is a combination of the literature adopted for the study, data from the empirical results and the development plan. As stated in earlier chapters, the problem of the SSA aviation industry is multifaceted hence it will need a combination of collective approach to tackle the issues identified. The above four-point approach has the potential of mitigating against the established issues faced by the industry in this research project.

6.3 Managerial implications

There is an evidential linkage from theory to the empirical results of this thesis that suggest that on the issues of sustainable and industrial development must is depended on the decisions makers or leaders of an organisation. An organisation's development and failure are heavily dependent on its leaders, decision makers and stakeholders at large. A critical look at the literature and frameworks lays emphasis on the strategic decision leaders must take to drive organisation growth (Rainey 2006). Leaders drive growth and decide the policy direction of an organisation, it is therefore implacable on leaders initiate change and supervise policies that enhances organisational transformation (Kaplan & Norton1992).

Kaplan and Norton (1992) ideate organisational performance in a framework termed the balance score card. This framework serves as a strategic guidance for management of

organisations to monitor and enhance the performance of their organisations. Relatively, Freeman (2015) states that every business has competition, and it is the effectiveness of the strategy that makes some organisations successful than others. Porter's readjusted theory also provides guidance for strategic thinking and planning for organisational leaders, the aviation industry is competitive and highly dependent on technology hence it is strategically important for leaders to map out strategies and monitoring policies that incorporates all the factors identified in the re-adjusted theory of Porter (1985), with special attention to these factors (Treats of digitization, exposure to change management, total customer solution & bonding, innovativeness level of competitors).

The study highlights the potential of the SSA aviation industry to develop, the issues being faced and what could be a plan for development. The key obstacles being finance, political & security, poor managerial skills, and are liberalization are multiple problems that need to tackled together. Even if there is a financial support available but with poor management for instance, the issues will still persist. During the interviews respondent were keen on other identified problems than the finance because it is of the firm believe that with strategic management and best practices enough income can be generated to solve issues likes infrastructure and even develop a hub for manufacturing other aviation logistics.

From the empirical results, it will be more prudent to have a collaborated efforts to solve the issues facing the industry, one problem of the SSA industry is the unavailability of strong institutions to supervise and bring all stakeholders in the industry together. A typical example is the African Airlines Association (AFRAA) which has a mandate of promoting the growth of airlines, do not unfortunately have all home-grown airlines as part of the association. On the issue of technology managers must invest in technical trainings and intellectual ability of staff though there are usually foreign organisations handling this aspect of firms, there should be proper HR planning whereby trainings are consistently done in this aspect. Findings shows that the technological handlers in the industry's firms in charge of software for airlines at the airports are developed and manage by foreigners.

The MRO sector of the industry is also mainly managed by foreigners, the author is by no means suggesting foreign investments is negative, but should firms have a proper HR planning the MRO sector will be a main revenue generating stream. Findings shows Africa's MRO value is the lowest globally therefore it remains an aspect for revenue generation. One way of equipping firms to have adequate expertise in running their MROs is knowledge sharing and

strategic alliances or collaboration. Most at times this have been the case for most SSA countries, over 90% of its natural resources have been managed by foreign firms. To cut cost and generate adequate revenue decision maker must invest in technical trainings.

On airline development aspect, governments especially must map out a strategy that will grow the airline industry with an example of LCC's. One identified major problem is the route of air travel within the continent, the time it takes to travel from one country to the other due to lack of LCC's and the issue of visa openness or liberalization. It will be strategically prudent for governments to form alliances and establish low cost carriers that has the capability of travelling to domestic destinations. An example of such a collaboration is SAS airline that is owned by Sweden and Denmark, SAS serves routes such as Finland, Norway, Denmark, Latvia etc. With over 54 countries and a population of over a billion, having a strategy of establishing low-cost airlines will definitely be a viable business. In the development plan and empirical results, it is recognized that Africa has numerous natural attractive tourist sites that will attract the public should destination market be taken seriously.

Considering, the individual economic capability of countries in SSA, there is no doubt that all 54 countries cannot have an airline on its own, but most countries could going resources together in establishing low-cost carriers as a strategic direction towards developing the aviation industry. On matters of sustainability, it is established that Africa emit the lowest carbon emission generally, but for future purposes and embarking on a green journey it is imperative on decision makers to consider the environment at a every point of implementing new strategies. Relatively, current practices that uses traditional methods of delivering services especially at airports should endeavour to move to technological processes. As the saying goes "*when there is a will, there is a way*" the collaborative patriotic efforts as mentioned in the interview data is what is fundamentally missing and is one of the reasons why motivated this research to be conducted. In concluding, governments especially must endeavour to establish R & D centres that will focus on the development of industries such as the aviation that has the potential of contributing heavily to the economic development of SSA.

6.4 Limitations, suggestions, and assessment of research

The research has been successfully conducted and there were not any major limitations to except the mode of interview. The interview was conducted via video call and the apportioning of date and time for interviews was quite difficult and this affected the projected time of completion of this project. Another limitation was the lack of funds as the author would have

preferred to conduct interviews physically and perhaps conduct observational research at major stakeholder locations such as airports and related hubs. In spite of the above, the expected results of the thesis was achieved and the whole process was successful.

Further studies into the state of the aviation industry are recommended, especially with a quantitative research approach that has the capability of providing realistic quantitative data that can be used as an assessment on the income and performance of key stakeholders such as airlines and airports. Extensive research at firm level is also recommended, this is investigate the efforts and performance of companies enhances the performance of the industry.

Overall, the research has been a learning experience has it brought to light important theories in strategic business development, important topics in the aviation industry and provided a level for future advance learning in this regard. There have also been new perspectives that have been learnt such as smart tourism and how it can be developed, technological innovations such big data and blockchain applications in the aviation industry and a much deeper insight into stakeholder operations. The objective, purpose and results of this research is not to generalize but to develop an in-depth exploration into the topic and for further research (Creswell 2011).

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APPENDIX 1 – INTERVIEW GUIDE

1. Main research question

Why is the Aviation industry of Sub-Saharan Africa lagging?

- What are the major issues?
- What is the current effect on the Yamoussoukoro declaration?
- How can decision makers mitigate against these?

Sub-research question

2. What are the main obstacles facing the aviation industry?

- How do you assess these issues?
- What proposal would you give to help the situation?
- What have been done so far in tackling these?

Sub-research question

3. How can technology aid in the development and sustainability of the industry?

- What are the current impact of technology on the industry?
- What technology innovations are improving performance in the industry?
- How do you implement such technologies?
- Why are stakeholders not fully embracing technological practices?

Closing questions:

- What are your general assessment of the industry?
- How can the industry achieve rapid development?
- How can stakeholders finance the industry?
- What recommendations would you give with regards to this research project?