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School of Graduate Studies

Department of Project Management

**Assessment of Operational Challenges and
Opportunities of Ethiopian Airlines during
COVID-19 Pandemic Period**

**In Partial Fulfillment of Masters in Project
Management**

Submitted by: Alpha Girma

Advisors' Name: Muluadam Alemu (Dr.)

July, 2021

Addis Ababa, Ethiopia

**Assessment of Operational Challenges and
Opportunities of Ethiopian Airlines During
COVID-19 Pandemic Period**

By

Alpha Girma Tigro

Masters Theses

Submitted to School of Business and Economics

St. Mary's University of Addis Ababa

In Partial Fulfillment of Masters in Project

Management

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Department of Project Management

Thesis Approval Sheet

This is to certify that the thesis prepared by Alpha Girma, entitled "Assessment of Operational Challenges and Opportunities of Ethiopian Airlines During COVID-19 Pandemic Period" is submitted in partial fulfillment of the requirements for the degree of Masters of Arts in Project Management complies with the regulations of the university and meets the accepted standard with respect to the originality and quality.

Approved by Board of Examiners

1. Submitted by

Name:-Alpha Girma Tigro (Eng') Signature_____Date July, 2021

2. Advisor

Name:-Muluadam Alemu (Dr.) Signature_____Date_____

3. Chairman Dept' of Graduate Committee

Name:-_____Signature_____Date_____

4. Chairman Faculty of Graduate Committee

Name:-_____Signature_____Date_____

5. Dean of Graduate School

Name:-_____Signature_____Date_____

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I, Alpha Girma Tigro, hereby declare that this master's thesis entitled "Assessment of Operational Challenges and Opportunities of Ethiopian Airlines during COVID-19 Pandemic Period" is my original work and has never been presented in any other institution before. To the best of my knowledge and belief, I also declare that any information used has been duly acknowledged.

Name: Alpha Girma

Signature: _____

Date: _____

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This is to certify that Alpha Girma has carried out her research work on the topic entitled “Assessment of Operational Challenges and Opportunities of Ethiopian Airlines During COVID-19 Pandemic Period” is her original work and suitable for the award of Masters of Arts Degree in Project Management.

Adivor: Muluadam Alemu (Ph.D)



July, 2021

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ACRONYMS

AFRAA: African Airlines Association

AGOA: Africa Civil Aviation Commission

AIDS: Acquire Immune Deficiency Syndrome

COVID: Corona Virus Disease

EPHI: Ethiopian Public Health Institute

ET: Ethiopian Airlines

ECCA: Ethiopian Civil Aviation Authority

GDP: Growth Domestic Product

HERQA: Higher Education Relevance and Quality Agency

HIV: Human Immune Virus

MRO: Maintenance Repair Overhaul

ICAO: International Civil Aviation Organization

IATA: International Air Transport Association

IMF: International Monetary Fund

SARS: Severe Acute Respiratory Syndrome

TWA: Trans World Airline

WHO: World health Organization

ABSTRACT

The aviation industry is one of the industries that are capital intensive and surrounded by many types of risks one of them being related with health and transport related risks specially the unforeseen pandemics and their effect; since Aviation industry is mobility based industry it has a high effect on spreading of diseases and pandemics via passengers from one place/continent to the other part of the world. The major risks that are related with health facts are transition of deadly pandemics. The objective of this paper is to investigate the management techniques and practice implemented by African Aviation Industry focusing on Ethiopian Airlines as a case study point during COVID-19 pandemic outbreak seasons of the years 2019/2020. The study is conducted using qualitative approach using descriptive research design of assessment by using primary and secondary data that are obtained through structured questionnaire and semi structured interview questions as primary data and previously conducted researches, books, journals, organizational publications and reports as source of secondary data. Interviews were conducted with management staffs that works on different sectors of the organization to triangulate and supplement data obtained from both sources of data.

The results reveal that Ethiopian Airlines (ET) uses various project integration management methods, risk management methods, health and safety measures and has made, physical changes to the aircrafts it operates on as well as to the working environment its employees work and at its service providing station because of the adjustments the airline has made they were able to fetch benefit out of the pandemic season.

Based on such findings the conclusion drawn is African Aviation industries needs to create a related business groups to support their airline in case of pandemics like COVID-19

Key Words: COVID-19, African Aviation Industry, Ethiopian Airlines, Project Management Methods

CHAPTER ONE

INTRODUCTION

This chapter discusses the Assessment of Operational Challenges and Opportunities of Ethiopian Airlines during COVID-19 Pandemic Period; it introduces the study focus company Ethiopian Airlines which is the subject of this research. Likewise, it also encompasses the problem statement, research questions and objectives arising there from, the significance of this study, scope and delimitation of this study as well as the limitations faced are incorporated in this chapter.

1.1 Background of the Study

In every industry, organizations encounter various risks including strategic, financial, and operational as well as risks of unusual events like pandemics and epidemics. When the first case of a 55years old male resident of Wuhan city, Hubei Province, China, was reported to test positive for Corona Virus/COVID-19 on November 17, 2019; (South China Morning Post, 2019) no one thought we will all be wearing face masks at all times and places, touching, hugging and handshakes with loved once will be missed dearly for this long (over a year and half till this research conduct date); running to our radio/TVs early in the morning to hear how many people are infected how many life's are lost and how may were lucky to survive from these deadly pandemic will be a trained.

Standing on this very day one and half years later after the first case announcement COVID-19 has become a major talk of the glob a game changer in the social, financial, economic, political, even the life style of the residents of the glob irrespective of their race, social and economic status, what religion they follow, what life style they have and at which end of the continent they reside.

The pandemic has brought terror to countries and they were rushing to announce lock downs and curfews on schools, work places, restrictions on mobility of people; everything happen so fast so quickly living immediate and unplanned decisions, people who were out of their homes and countries were obliged to stay where they are even those who were on transit were ordered to remain where they are because the pandemic was viral in its nature and speed of its transmission was beyond imagination and to some extent dramatic.

According to African Development Bank report of November 2020 the border closures, the economic slowdown and the fear to travel due to the epidemiological situation- slightly relieved by the measures taken have resulted in enormous financial woes and in worse cases scenarios in bankruptcies accompanied by mass furlough becoming the new norm in the aviation and tourism sectors. Up on the above stated source the aviation industry was one of the places where the impact of COVID-19 was observed on since this business was seizing following curfews and restrictions on mobility of human beings and cargo items from one country to the other.

The airline industry is an industry where high levels of risk exists with traditionally low levels of profit and high overhead costs along with volatile input costs combine with an additional demand of high security concerns, currency exchange rate fluctuations along with low profit rate that increases risk (Abbey,2007)

International Air Transport Association (IATA) in its 2019 report states that African Aviation industry supports 55.8 billion USD in economic activity and 6.2 million jobs in the continent. In the 1920th Commercial passenger aviation was introduced to Africa by European operators Air France, Imperial Airways and Dutch Lufthansa. Ethiopian Airlines or simply “Ethiopian” hereafter referred as ET being established in 21st December 1945 is the second oldest, trusted and reputable airline under African sky for the past 76years, it is sole property of the Federal Democratic republic of Ethiopian government; since the day it took its first flight to Cairo, Egypt, Via Asmara on April 8,1946 (Akilil G/Egzabiher, 2020) for the past three consecutive years Ethiopian Airlines has been named best airlines in Africa among many more wards the Airline has won in the year 2019/20, although the airline has face a few hick-ups here and there, it is also well known for being one of the safest growing airline in the Glob (Ethiopian Airlines Factsheet, 2019)

Ethiopian airlines is 100% property of the government of the Federal Democratic Republic of Ethiopia; as per its 2017G.C amendment of its establishment regulation (Regulation No. 406/2017), the authorized capital of the airline is one hundred billion birr (100,000,000,000.00) out of which its paid up capital is thirty one billion two hundred sixteen million six hundred thirty two thousand six hundred ninety two birr (31,216,632,692.00) which is paid both in cash and kind (Ethiopian Airlines, 2015/2016).

In the year 2019 fiscal year the airline has reported revenue of 4.2billion USD which was equivalent to 155billion Ethiopian birr (News Business Ethiopia, 2017)

ET is member of IATA (International Air Transport Association) since 1959 and member of AFRAA (African Airlines Association) since 1968 and ET has joined Star Alliance (the alliance of Airlines worldwide) on December 2011. Currently ET Serves a network of 127 international and more than 23 domestic passenger flight destinations and 58 cargo destinations as of April 2019, which make it to be the 4th largest airline in the world by the number of countries served and Africa's Largest airline in terms of passenger carried, destination served, fleet size and revenue generated (African Logistics Magazine, June 22, 2020). ET has more than 16,000 Employees and four Hubs (Lome-Tokoin international Airport, Malawi international Airport, Democratic Republic of Congo (DRC) and Addis Ababa Ethiopian hub being its Main hub (Ethiopian Airlines Factsheet, 2019).

In addition to its major passenger transport service, Ethiopian airlines also runs related business units like maintenance and repair operating unit (MRO) that repairs and maintains aircrafts of its own and other airlines as well, the Aviation academy being other wing of the company produces capable pilots, technicians and cabin crew members, Cargo and logistics is the unit that transports freight and mails, Ethiopian Enterprise has merged with Ethiopian airlines that creates the Ethiopian Airports, Catering Unit provides foods that are to be served during flights, Sky light hotel is also one part of Ethiopian Airlines that provides hotel and hospitality services.

Logistics update Africa magazine on March, 2020 states that air transport and foreign tourists arriving by air currently support 5.7 percent of Ethiopian GDP which is valued as 4.2billion dollars and about 1.1million jobs related to it and the aviation sector sets to grow 226% by 2037G.c.focusing on from transporting 7.2million passengers in 2017 to 23.5 million passengers a year by 2037G.c. Pandemics like COVID-19 that may have impact on the African Aviation industry and Ethiopia Airlines in which they may face consequences and it is a concern for African countries considering the expected support of this sector to the economy.

Ethiopian Airlines is currently operating to more than 125 passenger and cargo destinations with more than 100 aircrafts although there is intense competition from

airlines of middle east and some African airlines(Ethiopian Airlines,2016), the exposure of the airline to many kinds of forecasted and unforeseen risk like pandemics is huge and this study is meant to identify the risks and opportunities that COVID-19 has brought to African Aviation industry taking Ethiopian airlines as focus point since there are no researches done on this area yet and the researcher finds it as a knowledge gap to be filled.

1.2 Statement of the Problem

Unlike natural disaster and war, pandemics did not affect the physical infrastructure of transpiration; rather it directly affected the human aspect of the transpiration system (Hendrickson, 2021). COVID-19 pandemic has demonstrated the importance of understanding the connection between the transportation system (air transport system in this case) and its users; since COVID-19 pandemic has illustrated the need for preparation for future in case similar disruptions appear. The issue of COVID-19 pandemics being new study point in general and its impact on the aviation industry is still untouched specially studies that are conducted focusing on African Aviation Industry are untapped and to the researchers knowledge there is no researches done on Ethiopian airlines on the Opportunities and challenges that this virus has placed on the management system and I have seen the need for this issue to be addressed and take it as a research problem to address the Existing practice, the challenges and opportunities that Ethiopian Airlines has faced following the outbreak of COVID-19.

Practically worldwide air transport could be small in its coverage as compared to other means of transportations but it has important contribution to the economy of a country for this Ethiopian Airlines' contribution of 4.2 billion dollars to Ethiopian GDP is a good example (Logistics Update Africa Magazine, 2020) COVID-19 could place its impact on Ethiopian Airlines and indirectly on the GDP of Ethiopia in the period of 2020 and may be years to come.

After the out brake of the COVID-19 Pandemic world airline industry has been hit by a downsizing of 90% of passenger kilometers and 30% collapse in economic activity and trade affected freight from the year 2019 according to IATA report of April 2020. Almost all airlines were facing difficulties of canceling and delaying flight schedules since most

cities were announcing lockdowns and curfews as a means of prevention of the spread and transmission of this deadly pandemic (IATA, 2020)

Ethiopia as a country announced the discovery of a 48 years old Japanese guy who has been infected by COVID-19 on March 13th, 2020 who was in the country for a business trip in Addis Ababa who came to the country Via Bole Ethiopian international airport. Long before the announce meant of this first case the Ethiopian Civil Aviation Authority has started taking strict measures concerning how to give the usual air transport service in accordance to the trend quality in collaboration with Ethiopian Public health Institution (EPHI) COVID-19 prevention and treatment protocol/guideline which was then printed as “National Comprehensive COVID-19 Management Handbook” on April, 2020 using traveler follow up and contact tracing procedure.

The African aviation environment presents a unique set of challenges that are unique to its environment that principally include high costs, poor aircraft utilization and sparse demand (Stephan Heinz, et al., 2017). A whole range of problems persist in Africa that includes high costs, poor safety, government interference, corruption, low productivity and old aircrafts, low internet connection are among the many reasons has been given for the low performance of African Aviation Industry (Stephan Heinz, et al., 2017).

The potential of the African aviation market has never been in doubt since the continent has over 1.216 billion population meaning nearly 1/7 of the world population resides in Africa (Worldometer,2020) but the continent’s carriers have so far struggled to tap this opportunity on top of that worldwide pandemics like COVID-19 places a lot of burden on the aviation industry following the huge management and job implementation shifts that are required for their airline organizations and for the safety of the general public.

The purpose of this study is to assessment the Operational Challenges and Opportunities of Ethiopian Airlines during COVID-19 Pandemic Period. ET has made a positive net economic value contribution to Ethiopian national economy by contributing 260,087,000USD net profit in the year 2018/19 through facilitating trade, investment and tourism in line with its vision of becoming fast growing airline with excellent air transport service that is safe, market driven and customer focused passenger and cargo transport provider with best Aviation training, Flight Catering, Maintenance Repair and

Overhaul (MRO), Ground Services and domestic and regional services by 2025, (Ethiopian Factsheet,2019) but what challenges and opportunities this airline face in the year 2020 because of COVID-19 is the researchers focus point to discover. ET is taken as a case study focal point since it is number one airline out of the top 10 airlines in Africa and it is also one of the oldest and relatively the safest airline in the continent (SKYTRAS World Airline Awards, 2020/21) in addition to the proximity of the airline to the researchers residing country.

Because of COVID-19 pandemic will the management system be affected in any way? With what sort of planning, implementation, monitoring and evaluation methods will Ethiopian pass-through this pandemic? Will there be any silver lining among this thunder that strikes the globe with COVID-19? These are the mare curiosity that brought the idea of these theses research.

1.3 Research Questions

It is realized that maximization of success factors and minimization of failure factors will ensure the airline industry to achieve its vision and goals.

This study will be seeking to asses

1. The existing practice of Ethiopian Airlines against COVID-19 pandemic management?
2. The challenges that COVID-19 has brought on the management system of Ethiopian Airlines?
3. What New Opportunities did the COVID-19 pandemic brought to Ethiopian Airlines?

1.4 Objectives of the Study

1.4.1. General Objectives

- To examine the challenges and Opportunities that Ethiopian Airline Group has faced because of COVID-19, during the years of 2019/2020.

1.4.2 Specific Objectives

- To assess the existing practice of Ethiopian Airlines COVID-19 pandemic management system.

- To investigate the challenges COVID-19 has brought on the management system of Ethiopian Airlines through the pandemic year 2019/2020
- To retrieve new opportunities gained and lessons learnt by ET following the COVID-19 pandemic.

1.5 Significance of the study

I believe this research can be an eye opener/bench mark for the Airline Management and other stock holders like ministry of health, ministry of transport and communications to learn from the outcomes of this research as an input so as to set a management strategy if “if” this kind of unforeseen pandemic ever happens again on how to tackle it and survive with a minimal damage.

For the researcher it is an accomplishment of a planned Goal to achieve a Masters Degree in the year 2021G.c with a contributing and original work of research with a possibility of publication and may be a gate opener opportunity to pursue the endless academic journey.

In addition this study can serve as reference and input for interested person who will like to take this study farther in similar or different dimension.

1.6 Delimitations of the Study

Geographically Africa aviation industry is the selected research area for this study in particular Ethiopian Aviation industry and Ethiopian Airlines are the case focus areas. The thematic area focuses on the Pros and Cons of COVID-19 that are placed on the African aviation industry in general and specifically on the management system and difficulties faced and lessons learned by Ethiopian Airlines during the disruption that COVID-19 brought to the sector.

For this research descriptive qualitative case-study-based research design is used. A Qualitative research method is a method, which collects and works with non-numerical data, is a method used to narrow down a vast field of research in to one easily researchable topic (Creswell 2013). It seeks to interpret the meaning and provide an in-depth understanding of particular situation or problem (Mohajan, 2018).

1.7 Ethical Considerations

The purpose of this study is explained to the participants of this study to comfort them through there replay. The researcher has declared that all participants will be voluntary

participants during the data collection and respondents' response on the questioner and interview conducted for this research is going to be very confidential, anonymous and the purpose of the data collection is for educational purpose only. The following ethical considerations of (Rajesh Kumar, 2012) are implemented as the pillars of the data collection system used

- **The right to Choose:-**everyone has the right to determine whether or not to participate in the research project.
- **The right to be informed:-**research participants have the right to be informed of all aspects of a research task. Knowing what is involved, how long it will take and what will be done with the data.
- **Right to Privacy:-** All stake holders have the right to privacy

1.8 Organization of the Paper

On Chapter One there is an introductory part that includes Back ground of the study, statement of Problem, research questions, objective of the study both General and specific Objectives), significance of the study and the scope of the study. Chapter Two incorporates the conceptual frame work of the study, theoretical, Empirical and Analytical framework of the study. Chapter Three is where the research design is explained; the population for the study and sampling techniques are discussed, the data types and source of this data are clarified and the methods that is anticipated to collect this data is stated farther more the data analysis methods are described and the suspected limitations and why they are forecasted to be a limitation are explained finally the organization of the paper is stated. Chapter four will include the results of the data collected with the scientifically method of filtering the data collected and analysis of data as well as the results found. Chapter five which is the final chapter of this research will have the conclusion of the study and the possible recommendations given.

In the Annex and appendix part the resources that are used to collect the primary and secondary data and relevant documents are attached.

CHAPTER TWO

LITERATURE REVIEW

This section reviews the extent literature on the challenges and opportunities that COVID-19 has brought to the world as well as to Ethiopian Aviation Industry using the current state of knowledge about this deadly virus and its disruption on the management system of airlines during epidemics or pandemic seasons.

2.1 Conceptual Literature Review

The purpose of this qualitative case study is focused on the concept of what Operational Challenges and Opportunities Ethiopian Airlines has faced during COVID-19 Pandemic Period in the past one year 2019/2020, what was the management style implemented during this period to keep the company in truck and save it from bankruptcy.

As a researcher I hypothesize/predict those airlines who implements better COVID-19 management system will suffer less during and after the pandemic season. According to PMBOK (Project management Body of Knowledge) any management system depending on its business has to implement one or more combination of the following management systems to stay successful in its functional area;

- **Project integration management**

Project plans are not prepared in an organized fashion yet a project schedule constitutes a plan. A formal change control process or system does not exist in the organization. Project integration management is to guarantee a successful adjustment of all elements of project in to one consistent method.

- **Project scope management**

Projects may not be officially sanctioned by management. Other projects begin when dictated by management. Project managers are assigned on an ad-hoc basis. As a result Project scope management is to insure that only the necessary work involved to successfully completing the project

- **Project time management**

Standardized templates may only be used to list specific tasks to be performed without

consideration of network logic or resource requirements. Schedule development may not be realistic as projects are unlikely to be completed when planned. Hence Project time management guarantees the successful completion of project on schedule.

- **Project cost management**

Project cost management provides managements with the opportunity that the approved budget is enough for the completion of the project.

- **Project quality management**

Project quality management is to make sure that the need for customers is met by the project as well as the quality requirements.

- **Project human resource management**

Project human resource management guarantees that people, who are the part of the project, perform in the most efficient way.

- **Project communication management**

Project communication management Insure that flowing process of information of the project, generation, gathering, distribution, storage and allocation are made in accordance to organizations rules and culture.

- **Project risk management**

Project risk management is used to identify, analyze risk and to take alternative course of actions in this case study this part of project management is the focus of this study basically from point of pandemic management methods of Ethiopian Airlines.

- **Project procurement management**

Project procurement management is a tool to guarantee the effective purchase of goods and service beyond the organizations boundary.

- **Project stakeholder's management**

Managerial process used to identify stakeholders, communicate and engage them,

manage expectations and focus on satisfaction.

Since I found defining some basic terms and concepts that we are going to use repeatedly throughout this paper relevant let us go through them as follows.

2.1. 1 Risk and Disruption management

In business and organizational research, risk is generally defined in terms of negative variations from the expected outcome (Miller 1992). This means that only the incidents that have negative impacts on the outcome of the organization's operations are considered as a risk (Chen et al., 2013; Guertler & Spinler 2015). Disruption, means a risk that involves catastrophic consequences (Chen *et al.*2019; meena & Saemah 2014; Scholten *et al.*, 2014; Paul *et al.*, 2019b and c). Disruption risk can impact the sustainability of an organization.

Disruptions can have two perspectives in literatures, the first perspective focus on geographical location of the disruption as local disruption (this one affects a specific organization at a specific place and time like accidents of fire outbreak in the organization) and local plus global disruption (this one can be coursed by volcanic eruption or by an earth quake catastrophes that hits a particular country or place that involves many organizations) (Sawik, 2011; Paul *et al.*, 2016; Paul *et al.*, 2017). The second type of disruption can be from the perspective of the supply chains that are affected and in our case a disruption in the transportation and distribution disruption are discussed by (Chaghooshi & Moein 2014; Wilson 2007) here the airline industry plays a great role by transporting freight and mails from one place to the other in a fast and reliable manner yet pandemics like COVID-19 has disrupted the free movement of airlines following the restrictions and lockdown that countries has places following the out brake of COVID19 pandemic. The proper configuration of resource and infrastructure is also required, along with disruption orientation to ensure that firms can manage disruption efficiently (Ambulkar *et al.*, 2015).

2.1.2 Disruption in the Aviation and Airline industry

Similar to other industries the aviation and airline industry faces several disruptions. The potential disruptions associated with the aviation and airline industries arises from many sources both natural and manmade such as poor weather conditions, congestions at hub airports, mechanical and technical problems in the navigation system as well as aircrafts

can be some causes that prevents airlines from operating their flight on schedules and plans. Following this flight cancelation, departure and arrival delays can occur. To overcome company's vulnerability to disruptions, it is imperative to formulate, improve and implement strategies for managing disruption (Park *et al.*, 2016; Paul and Rahman 2018; paulet *al.*, 2018)

2.1.3 Definition of Pandemic

A pandemic is defined as “an epidemic (sudden outbreak) occurring worldwide or over a very wide area, crossing international boundaries and usually affecting a large number of people despite population immunity, virology or disease severity.” (Doshi P. Bulletin of WHO, 2011). One of the criteria considered for a disease to be defined as epidemic is the rate of its transmutability if the average number of people infected by a single infectious person ranges from 1.2 to 1.3 for the general population or if is 1.5 in children (Mercer et al., 2011).

Pandemic is not a new thing for mankind our world has suffered a lot of times from an outbreak of different pandemics during different time, existence of human kind has been challenged; both in the old and new era for this we can mention the following; the Black Death a pandemic that has Traveled from Asia and estimated to have wiped nearly half of the population of Europe has occurred from 1346-1353. This pandemic although extinct today it was caused by strain of bacterium (*Yersinia pestis*) which was spread by leas on infected rodents (Journal of Live Science, 2017). In the 16th century American plague which includes cluster of Eurasian diseases that was brought to America by exporters and it is believed to be the cause for the decline of the then civilizations of Inca and Aztec which is believed to have vanished 90% of the inhabitants of western hemisphere (Journal of Live Science, 2017). One of the global traveling pandemic known in the modern industrial age was a flu pandemic of 1889-1890 that has killed nearly One million people in just five weeks which has a character of influenza virus; one of the fascinating fact about this pandemic is the fact that it was fast transmitted around the globe although air transportation did not start at that time (Journal of Live Science, 2017). The Spanish flu infecting about 500 million people from the South Seas to the North Pole was a cause for the death of one third of the stated number of victims it was a case to remember during 1918 to 1920. HIV/AIDS as a pandemic and epidemic is still the researcher's

focus point although the HIV virus and AIDS has been known from the early 1980th a cure and a vaccine is a mystery till this very day for scientists although it has taken over 35million lives over the years.

The west African Ebola epidemic is a concern for most west African countries since 2014 till today because of Ebola more than 11 thousand lives were lost and it is a disease that science has not found a cure for. (Journal of Live Science, 2021)

On March 11 2020, the Director-General of the World Health Organization Dr. Tedros Adhanom declared COVID-19 as a global pandemic in response to the pandemic situation resulting from the outbreak of the Corona disease 2019 (COVID-19) Caused by the severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) (The Daily News, 2020).

2.1.4 What is CORONA Virus?

Corona Viruses are type of Viruses having many kind and some of them cause disease. The newly identified Corona virus, SARS-CoV-2 has caused a worldwide pandemic of respiratory illness, called COVID-19; in which COVID stands for Co=Corona VI=virus D= diseases.

COVID-19 was identified in December 2019, in China a province of Wuhan. Symptoms of COVID-19 include cough, fever or chills, shortens of breath or difficulty of breathing, muscle or body aches, sore throat, new loss of taste or smell, diarrhea, headache, new fatigue, nausea or vomiting and congestion or runny nose in some cases this disease becomes deadly.

As of now, researchers have known that COVID-19 is spread through droplets released in to the air when an infected person coughs or sneezes. The size of the droplets is large (ranging from 60 to 140nm) so they fall to the ground or on nearby surface in a few seconds. As a means of prevention social distancing is considered as number one, covering face with face shields and wearing mask as well as frequent hand washing is the other means of preventions. Till this very day there is no cure for this viral infection yet scientists are able to discover several prevention medications/ vaccines that are designed to several biological laboratories of different countries the once that has got the permit of WHO Strategic Advisory Group of Experts on Immunization (SAGE) are Pfizer-

BioNTech COVID -19 Vaccine, AstraZeneca, Moderna, including the recently allowed vaccine of Sinopharm and many more are also on the pipe line (WHO, 2021).

The fascinating fact of this pandemic is it was a fast travelling pandemic that has reached nearly every corner of the world despite countries economic condition, on which part of the continent they are found, what there health and sanitation system and strategy is. The other thing is as a global pandemic it as created a unique cooperation between nations to illuminate its spread as well as to find a cure or vaccine in the nearest time possible. As a researcher I have gone through many literatures and didn't find any pandemic whose vaccine was invented in such period of time considering the current Pfizer-BioNTech COVID -19 Vaccine as one of the many of course technological advancements are one factor not to forget that has helped to the early finding of the vaccine yet the struggle will not be over till a cure is found.

2.1.5 History of World Air Transportation

Flying easily in the air and across the horizon has been and still is a dream of mankind for a long period of time and the wonders and the thousands of tries bear fruit when Aulus Gellius, Archytas philosopher of the old Greek, a mathematician, astronomers, law and political strategist, was considered to have designed and built the first artificial device of the flight that is self-propelled, a model in the form of bird propelled by an steam boost (an engine with the steamer) used as the reactor with steam, about whom they say he flew effectively to about 200 m altitude. This machine, named by its inventor "The Dove", could be suspended on a wire to fly securely on a path of feed around 400 B.C (Relly, Ronald, 2017)

Bartholomew of Gusmão, Brazilian and Portuguese, was an experienced model aircraft engineer. In 1709 he demonstrated an aircraft model in front of the Portuguese court, but never managed to build a large-scale model. (Relly, Ronald, 2017)

The pilgrims of Rozier, Paris, France, made the first voyage of a man in a free balloon (Montgolfière), built by Joseph-Michel and Jacques-Étienne Montgolfier, covering a 9 km flight in only 25 min October 15, 1783. (Relly, Ronald, 2017)

On December 1, 1783 at Charlieère, the pilots of Jacques Charles and Nicolas-Louis Robert made the first flight conducted with the help of a hydrogen balloon. On September 19, 1784, at Caroline, an elongated boat (specially arranged after Jean

Baptiste Meusnier's proposals in the form of a dirigible balloon), he completed the first flight of more than 100 km, from Paris to Beuvry. (Relly, Ronald, 2017)

In 1655, Robert Hooke, an English mathematician, physicist and inventor, concluded that human flight was impossible without the assistance of an "artificial" engine. The Wrights built the aircraft in 1903 using giant spruce wood as their construction material. Wings were designed with a 1-in-20 camber. Since they could not find a suitable automobile engine for the task, they commissioned their employee Charlie Taylor to build a new design from scratch, effectively a crude gasoline engine SNASM (1899). A sprocket chain drive, borrowing from bicycle technology, powered the twin propellers, which were also made by hand. (Petrescu and Petrescu, 2011)

The first airplane capable of standing on its own as it was made by Brother Victor Tatin in 1874. The plane was an unmanned airplane powered by a compressed air engine. For that time, the machine was a real aviation jewel.



Figure 1:- First airplane able to lift itself under its own power was made by the French Victor Tatin in 1874. Source: (Petrescu and Petrescu, 2011)

In 1863, the term "aviation" was invented by Gabriel de La Landelle and the history of aviation can be divided into six periods. (Petrescu and Petrescu, 2011; 2012; 2013a; 2013b; 2013c; Aversa et al., 2016a; 2016b; 2016c; 2016d; 2016e; 2016f).

1. **The epoch of the precursors:** the 17th and 18th century were year of imagination on how and what a flying machine could be. Then from the end of the eighteenth century, this period saw the beginning of the conquest of the air with the development of

aerostation and numerous attempts of gliding.

2. **The pioneers of the heaviest air:** this period marks period of the first flights of motor vehicles capable of taking off on their own. Almost every flight was a first or record attempt: A little faster, a little farther, and a little higher. What went wrong and how it can be modified were all fantasy turning in to reality for Aviators who often are designers or adventurers.

3. **The First World War:** This war was not like any other wars before it despite the struggle to win the battle the emergence of a new weapon on the battlefield called air planes was something else to gain power that Sims like wisdom. There is an abrupt shift to mass production, with some aircraft models even being built to more than a thousand; the pilots become "professionals", even if the perfume of adventure has not completely disappeared. As pros out of the cons of the end of the First World War surplus number of pilots and aircraft enabled the launch of commercial air transport in the form of mail delivery followed by Aviation develops and the creation of an air force in many countries flourish. Military aviation drives builders to break new records.

Advances in civil aviation are a spin-off from military studies (Petrescu and Petrescu, 2011; 2012; 2013a; 2013b; 2013c; Aversa et al., 2016a; 2016b; 2016c; 2016d; 2016e; 2016f).

4. **The Second World War:** from the lessons learned from the First World War Aviation was widely used on the battlefield and this period can be considered as the climax of planes that has used a piston engine and a propeller as a propulsion means. The end of the war marked the birth of the jet engine and the radar that gave an extra mile on the technology of air transportation.

5. **The second half of the twentieth century:** following the end of World War II on the aviation industry has left surplus of aircraft and pilots which aggravated the beginning of the regular commercial air transport "all-weather" and motivated the airline industry to practice the flight without visibility.

6. **Era of Jet:** Military aeronautics drives the development of the reactor and sets out to conquer the supersonic flight. Civilian spin-offs allow the development of the first four-jet airliners and air transport is open to all, at least in developed countries (Crickmore, 1997; Donald, 2003; Goodall, 2003; Graham, 2002; Jenkins, 2001; Landis

and Jenkins, 2005).

2.1.6 History of African Aviation Industry

The African aviation environment presents a unique set of challenges that are unique to its environment that principally include high costs, poor aircraft utilization and sparse demand. The potential of the African aviation market has never been in doubt, but the continent's carriers have so far struggled to tap this opportunity. Considering that the role of secondary airports and low cost terminals on the continent is almost non-existent; although there are 40 cities in Africa with populations of more than one million people and the Yamoussoukro agreement will likely be the catalyst for widespread connectivity, like that seen in the US and Europe after deregulation. African aviation has focused on the challenges posed by the African operating environment (Abeyratne, 1998, Chingosho, 2009, Samula, 2009).

| AirTransport (Passenger Kilometers) | | | Economy(GDP) | | | Population | | |
|-------------------------------------|--------------|------------|--------------|--------------|------------|--------------|--------------|------------|
| Country | Contribution | Cumulative | Country | Contribution | Cumulative | Country | Contribution | Cumulative |
| South Africa | 27% | 27% | South Africa | 23% | 23% | Nigeria | 15% | 15% |
| Egypt | 15% | 42% | Nigeria | 14% | 37% | Ethiopia | 8% | 23% |
| Ethiopia | 10% | 52% | Algeria | 11% | 48% | Egypt | 8% | 31% |
| Kenya | 8% | 60% | Morocco | 8% | 56% | Congo, DR | 7% | 38% |
| Mauritius | 6% | 66% | Angola | 6% | 62% | South Africa | 5% | 43% |

Table 1: Concentrations of air transport, economies and populations within Africa

Source: (Stephan et al., 2017)

In Africa, there is clearly a partial alignment between size of population, economy and air traffic. In general, countries with large populations and economies or small but rapidly growing populations and economies, represent an opportunity for the development of

strong domestic and international networks (Chingosho, 2009).

The operating environments in which airlines find themselves are far from homogeneous. The diversity of policies, geographies and economies across the world imply a need for a set of bespoke strategies, which can be represented in broad templates or business models designed to respond to the challenges presented by specific operating environments.

Africa accounts for just 2% of the world's air transport traffic in terms of passenger kilometers flown, despite this, the continent has the highest accident rate, with African carriers representing 23% of the western built jet hull losses in 2010, which is a manifestation of the ongoing issues (IATA, 2010). This has contributed in forcing many passengers to switch to international carriers as Ethiopian Airlines CEO stated that 80% of the African traffic is flown by non-African carriers (Dunn, 2012), while in Nigeria the situation is considerably worse as 98% of its traffic is carried by non- African carriers (Thomas, 2013).

African carriers face higher costs than their counterparts in other parts of the world. Fuel for example needs to be transported over long distances as a quarter of countries on the continent are land-locked - a problem exacerbated by poor infrastructure. The fleet size of most of the African carriers lack sufficient scale to negotiate favorable rates with fuel suppliers, while the practice of fuel hedging is not endorsed leaving African airlines exposed to volatile price fluctuations. Distribution is another constraint akin to Africa as low internet and credit card penetration rates force airlines to incentivize travel agents (Chingosho, 2009, p. 32) states that commission payable to travel agents is typically about 7% of the ticket price. Furthermore, African service providers such as airports and navigational service providers are typically government-owned monopolies and consequently are all higher in Africa than the rest of the world – landing a 200 ton aircraft for example in Johannesburg and Nairobi is around \$2,500 and \$1,500 respectively, while London Heathrow is considerably less at \$500 (IATA, 2010).

African carriers have some of the oldest fleet in the world with 80% of all aircraft registering over an age of 10 years or older; this in-turn triggers higher associated maintenance costs, increased fuel consumption, poor reliability and increased down time whole range of problems persist in Africa that include: high costs; poor safety;

government interference; corruption; low productivity and overstaffing; old aircraft; sparse demand over long sectors; low load factors; strong travel agent networks that operate in a cash economy; last minute booking profiles; low internet penetration; skills shortage; and difficulty in obtaining Air Operating Certificates (AOCs). Over the last decade, 37 airlines have launched in Africa and 37 have failed (Kamara, 2012). With their unique Africa background, multicultural and multi lingual, the biggest asset for African companies is in the people they have and hire in the market they operate.

2.1.7 History of Ethiopian Aviation

History of aviation in Ethiopia goes back to 1929, which was as early as 26 years after the right brothers made their first flight attempt; the first aircraft to touch the land of Ethiopia, near Addis Ababa was Potez-25 airplane being flown by the French pilot Andre Milet. Ethiopia purchases five sweater airplanes in 1930 for postal, government and security purpose. Ethiopian Civil Aviation Authority (ECAA) is established to provide the air navigation services for safety and security in the national aviation zone using communication navigation surveillance instruments, voice control communication system for this it uses surveillance radars, among the many function of ECAA licensing aviation personnel, inspecting and licensing regulating aerodromes, providing air traffic navigation, aeronautical communication and information services are among many.

2.1.8 History of Ethiopian Airlines (Ethiopian/ET)

At the other end of the aviation industry are the airports. Their revenues come from charges on airlines and passengers, as well as activities such as retail and parking which are also linked to the number of passengers, sparse demand, specifically on intra-African routes (Kamara, 2012).

In 1930 Gaston Vidal, a French instructor, established the first pilot training and aircraft maintenance school in Jijiga producing the first Ethiopian pilots Mishka Babichef and Asfaw Ali and certify them to be the first Ethiopian Pilots later on W/ro Mulumebet Emrru become the first Ethiopian female Pilot. Until Italian Occupation Ethiopia has twenty airplanes (Ethiopian civil Aviation, 2020)

December 30th, 1945 was the year that Ethiopian airlines were found by Emperor Haile Selassie I with assistance from Trans World Airline (TWA). Its first flight was between Addis Ababa and Cairo via Asmara using Douglas C-47 aircraft that has started on April

8th, 1946 and was a weekly flight schedule, during that time ET owns only Five Douglas DC-3 aircrafts. For the First 25years until 1971Gc; ET was dependent on American pilots and Technicians. Currently ET has over 16,000 employees according to (Ethiopian short Fact sheet Dec, 2017), having over125 passenger international destinations, 58 cargo destination and 20domestic destinations. Ethiopian is well known for its Aviation academy for the quality of its maintenance base which is US-Federal Aviation Administration (FAA) certified, it also offers training for pilots, Technicians, cabin crew, marketing & Sales as well as Management & Finance staff. ET has B737-700/800NG simulator in its pilot training school which gives a quality to the trainees learning quality.ET in 2019 has registered revenue of 4.2billion USD with a net income of 1.05billion USD and a profit of 6.8billion USD according to (New Business Ethiopia magazine, 2020)

Ethiopian is currently the first largest airline in Africa by the number of passenger served and destinations, the 4th largest airline in the World by number of countries served.

Although Ethiopian is 100% owned by Ethiopian government, the government doesn't interfere in the airline management system and it is allowed to operate independently. On January 2019 Ethiopian has opened state of the art passenger terminal and its Skylight hotel With a mission of "bringing Africa together and closer to the world" Ethiopian has expanded much needed air connectivity within Africa and with the rest of the world (Ethiopian Airlines annual Report, 2019).

Ethiopian has been an aviation technology leader in Africa and has introduced many new aircraft and systems to the continent (Ethiopian Airlines annual Report, 2015/2016).

2.2 Theoretical Literature Review

Through the year 2020, COVID-19 has turned into a fully blown pandemic, which possess a global risk to our health and global economies. As of February 9th, 2021, there are 105.8million confirmed cases and more than 2.3 million fatalities that were related to COVID-19. The long term effects of COVID-19 are still unforeseeable, but the impact in the year 2020 is remarkable; these pandemic is estimated to have causes the largest global recession since the worldwide economic down turn in the 1930s' called "the Great Depression" where millions of people falling in to extreme poverty (Summer *et al.*, 2020).

Travel restrictions measures were implemented by various countries, impacting both domestic travel and international travel (New York Times, 2020).

Across all industries, the aviation sector is probably among the hardest hit (Suau-Sanchez *et al.*, 2020). The unprecedented decrease in passenger demand together with country-wise flight band, led to a halt of most airlines; many companies had to cease almost all their operations and grounded entire fleets (Sun *et al.*, 2020a), Many airports have closed their runways in order to free up space for aircraft parking (Adrienne *et al.*, 2020) or just shutting down indefinitely, most companies in the aviation sector are working with minimum staffing on strict rotations (Lacus *et al.*, 2020).

The aviation industry has proven resilient to major setbacks in the past including oil crises, financial crises, wars and earlier diseases (Gudmundsson *et al.*, 2020, Tanriverdi *et al.*, 2020) and will hopefully find ways to overcome COVID-19 one way or another.

Aviation sector is not only a victim of pandemics like COVID-19, but it also plays a key role in the spread of disease, enabling the turning a local epidemic in to global pandemic (Budd *et al.*, 2009; Chinazzi *et al.*, 2020, Yang *et al.*, 2020), as it was observed already for several earlier diseases such as, Ebola (Pigott *et al.*, 2014), SARA/MERS (Poletto *et al.*, 2016, Wong *et al.*, 2015) most of which were contained before turning in to full pandemic.

The corona virus pandemic has had an unprecedented impact on air transport in the Africa and the rest of the world. Although the first case of COVID-19 in Africa was first announced in Egypt on Feb14th, 2019on the first wave, most African States imposed entry or flight bans and other travel restrictions, bringing passenger flights almost to a standstill. However, many airports serving major cities stayed open for limited scheduled, humanitarian, repatriation, and cargo flights, and for aircraft parking Addis Ababa Bole international airport is one of the well-known station during this pandemic year to work as hub to store and distribute COVID protection kits, medications, Ventilators and other related materials sent to African Countries from donors.

Some airline companies like Ethiopian to compensate the drop in passenger flights has adjust to the situation by occasionally carrying cargo in passenger compartments by removing the seats and creating more open spaces in the aircraft to make it comfortable for cargo. As the industry looks for ways to cut costs since the incomes that was

supposed to come through transport service has dropped, Airlines were forced to announce job cuts and/or reduced work patterns, wage reductions and hiring freezes.

In addition, airlines and airports apply strict health and sanitary measures that entail higher costs both for the industry and passengers; For example international passengers whose destiny was Ethiopia were forced to stay in 14days Quarantine centers that are delighted for this purpose taken from their from all the Ethiopian international airports departure straight to this centers).

The IATA forecasts that airlines would lose about 66 % of their passengers and see total revenues drop by US\$419 (€357) billion in 2020. (IATA report June2020)

The final impact of the crisis on air transport will depend on factors such as its duration and magnitude, the level of consumer confidence, and the stringency of the containment measures.

2.3 Empirical Literature review

Aviation is a strategically important sector that employs almost five million people across the EU: pilots, cabin crew, airport operators, on-site airport enterprises, aircraft manufacturers and air navigation service providers. The sector accounts for €300 billion, or 2.1 % of EU gross domestic product. It plays a pivotal role in tourism and enables trade over long distances.

Airport experience and screening

The airport process have been largely affected by COVID-19: Social distancing rules combined with screening requirements, have led to changes in passenger processing (De Neufville and Neufville,1995, Tuchen *et al.*, 2010), In recent decades, airports have developed towards multiple service business organization and understanding passenger experience at the airports has become the crucial factor for airport management; it was recently shown that passengers expectation come with a concept of minimum tolerable service performance (Bezerra and Gomes, 2020), as an example passengers at Taiyuan International Airport, a waiting time increase by 20 minutes was unacceptable (Chang *et al.*,2008). Improving or maintaining passenger experience and waiting times are tremendously important for the successful management of airports, here the COVID-19 pandemic causes drastic change to the passenger experience at airports, especially for

operations which affect the safety and passenger waiting times and also reduce shopping experience. In the presence of the virus, social distancing is agreed to be one of the main successful measures, yet, affecting the capacity and throughput of an airport significantly (Dabachine *et al.*, 2020)

Passenger Flights

Since passengers spend long periods of time in a closed aircraft cabin, there is a high (Perceiving) risk of transiting the disease inside an aircraft during a flight, evaluating the actual risk in a scientific way is hard since the number of variables in adequately-setup experiments, Examples can be aerosol movement, virus kinetics, passenger health groups, effectiveness of face masks etc...accordingly there is a lack of formal understanding how likely a transmission in aircraft cabin is during a flight (Bielecki *et al.*, 2021)

On March 11, 2020, the Director-General of the World Health Organization Dr. Tedros Adhanom declared COVID-19 a global pandemic (WHO, 2020) . As the virus starts to quickly spread around the world, governments took a variety of restrictive measures, including travel and flight bans, quarantines, lockdowns and shutdowns to enforce social distancing measures. This has had an unprecedented impact on air transport.

Although there are far fewer passengers and flights, airports and airlines still have high fixed costs, including for the maintenance of aircraft, airfields and terminals, and for the application of strict sanitary measures.

IATA expects that the pandemic will push the airline industry's total revenues down by US\$419 (€357) billion in 2020, a 50 % decline compared to 2019. Unlike previous crises, the current one is expected to have a much longer-term impact on the sector. IATA does not expect the world's airlines to recover to 2019 levels before 2024; long-haul travel will be the slowest to pick up.

Despite the sharp decline in passenger volumes, many airports serving major cities have stayed open for limited scheduled, humanitarian, repatriation and cargo flights, and for aircraft parking.

Aircraft manufacturers and their suppliers are equally affected as airlines push back aircraft deliveries or cancel orders. In addition, fewer aircraft in operation means a lower income from after sales services. The current crisis could lead to a smaller, more

consolidated sector in the future. According to their estimates, full-service network carriers could be more affected by the crisis, since the recovery in international markets would be slower.

IATA expects leisure travel to recover faster once restrictions and bans start to be removed from many countries, although reduced disposable incomes, fear and health concerns could be major issues confronting the leisure traveler.

Cargo Flights

Compared with the passenger market, the air cargo sector has suffered less. The sector has been able to continue operations and has been the main source of revenue for many airlines.

According to IATA, air cargo demand fell worldwide by 27.7 % in April 2020, before rising slightly to a 13.5 % drop in July 2020 compared with 2019.

Longer-term prospects for the sector are uncertain, as a prolonged global recession may weaken demand for air cargo

Whilst all-cargo flights have continued operating at similar levels to previous years, they have been unable to compensate for the loss of cargo capacity on passenger aircraft that normally carry about half of all air freight. Therefore airlines have been forced to look for ways to carry cargo also in passenger compartments, either by removing seats from cabins or by carrying cargo on seats.

The next big challenge faced by the air cargo sector is its critical role in transporting vaccines all over the world, vaccines being one of the most sensitive cargoes requiring specific logistics (e.g. a specific temperature). Besides, the potential volume of vaccines to be distributed around the globe is huge.

Airport slots

At the start of the pandemic, flights with very low load factors caused additional financial loss for air carriers as well as having a negative impact on the environment. A 'use it-or-lose-it' rule for slot allocation, with retroactive effect

Travel restrictions

Most Member States have introduced temporary internal border controls and measures restricting travelers during the pandemic and this has made controls at airports very difficult and caused a lot of frustration among passengers and airport staff.

Passenger rights

The pandemic has hit hard not only companies but also many air passengers, whose flights have been cancelled and/or who no longer wish or are no longer allowed to travel to certain countries or regions. Some airlines in Europe have prepared a Reimbursement for passengers who have missed tire flights because of lock downs.

Financial support

The aviation industry is seeking government aid through direct grants, loans at preferred conditions or with state guarantees, or subsidies all over the world. Although some stakeholders believe that financial support for airline companies supports competition environmental impact of aviation. The African Civil Aviation Commission (AGOA) plans to present a new legislative initiative in 2021 on sustainable aviation fuels.

2.4 Analytical Literature Review

The increased international connectivity and ongoing globalization allow travel time that are much shorter than the incubation period of infectious diseases (Budd et al., 2009). The increase in connectivity as well as the short travel times is beneficial for passengers, but bad news from epidemiological perspective since airborne diseases; as observed with Ebola (Pigott et al.,2014), SARS/MERS (Poletto et al., 2016), Seasonal influenza (Khan et al., 2009) and Malaria/Dengue fever (Semenza et al., 2014; Tatem et al., 2006)

The current COVID-19 pandemic is has impact on the aviation industry following the lockdowns because of this pandemic it was and is till the talk of the world to hear airlines announcing bankruptcy this research find it as a gap that there are no researches and reports done concerning the African Aviation industry specially focusing on Ethiopian Airlines. Therefore the analytical frame work of this study will be to assess the pros and cons of this COVID-19 pandemic on the business strategy and Management system of Ethiopian Airlines. To present the facts found for general public and the members of the airline to gain knowledge of what has happened and how to be prepared if a second phase of this pandemic heats the airline as well as to take preventative measures to reduce its impact. For this a data will be collected using a questioner and an interview using a qualitative descriptive survey design to find response from top and middle managers as well as ordinary employees of Ethiopian.

2.5 Research Gaps

The existing literature on disruption in the aviation industry has not considered the impacts of epidemics and pandemics on African Aviation industries. Instead most of the disruptive effect of public health crises of this sort has focused on humanitarian issues, such as how food, medication and other relief issues can be distributed efficiently (Ivanov 2020a; Paul & Chowdhury 2020a). Yet commercial firms like the airline industry have been affected by number of recent pandemics as well as COVID-19 pandemic (Air transport Action Group, 2020). The impacts of such disruption are severe because such crises have long lasting ripple effect and can impact operations at multiple levels simultaneously (Samson, 2020). However the specific impacts of this pandemic on African Aviation from the perspective of the pandemics effect on the management system is still unknown, because research in this area has not yet emerged. Therefore by investigating the impacts of COVID-19 pandemic on African Aviation industry taking the number one leading Airline in Africa “Ethiopian Airlines” can contribute to literature, it can indicate strategies implemented by ET to reduce impact of these pandemics and can serve as guide for managers who works in this sector across Africa.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

In this chapter a brief discussion of the strategy used in target respondents selection, the sample size required and used, the design of the questioner and interview questions formation as well as the selected method of data administration will be discussed.

3.1 Research Design and Approach

For this case study on the Assessment of Operational Challenges and Opportunities of Ethiopian Airlines during COVID-19 Pandemic Period ; Qualitative research method is used which is a method, that collects and works with non-numerical data, it is a method used to narrow down a vast field of research in to one easily researchable topic (Creswell 2013). It seeks to interpret the meaning and provide an in-depth understanding of particular situation or problem (Mohajan, 2018). Given that the current COVID-19 pandemic is a unique type of Aviation industry disruption, it is important to conduct an in-depth study to determine the challenges and opportunities of the pandemic and to consider how companies/ particularly African aviation firms can minimize its impact. Hence, I have used a case-study-based analysis as the most appropriate approach (Yin, 2013). The target population of the study will be selected using purposive sampling technique among top, middle and operational managers who are working in different departments of Ethiopian Airlines who has spent more than five years of service in this organization since the researcher believes that this managers are well aware and accustomed to the organizational culture of ET and are believed to be well knowledgably when it comes to pandemics management several earlier diseases such as, Ebola (Pigott *et al.*, 2014), SARA/MERS (Poletto *et al.*, 2016, Wong *et al.*, 2015) most of which were contained before turning in to full pandemic and they were in action within the past decade and the management methods implemented for the above mentioned pandemics has though the target respondents on how to perform their dally jobs while mitigating the risk the pandemics brought.

3.2 Population and sampling Techniques

Ethiopian Airlines Group has Seven diversified aviation strategic business units according to the new structure of Ethiopian Airlines Group published on July 21, 2017 these are;

- Ethiopian Airport Enterprise
- Ethiopian Passenger Airline
- Ethiopian Cargo Airline and Logistics Company
- Ethiopian Aviation Academy
- Ethiopian In-flight catering Services
- Ethiopian Maintenance Repair and Overhaul (MRO) Services
- Ethiopian Hotel(Sky light hotel) and Tourism Services

The sample size for this research will be focused on all seven strategic business groups of Ethiopian Airlines and the sample population size is expected to represent the target population through purposive sample selection technique (Kothari, 2004) the purpose used here is the respondents first needs to work in the managerial position, second they need to have more than five years of experience working in ET. Yamane (1967) has set a formula to determine the required sample size at 95% confidence level as follows

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n=Desired sample size

N= Total population size

e= Accepted error limit (0.05) on the basis of 95% level of confidence put in decimal form

$$n = \frac{180}{1 + 180(0.05)^2}$$

$$n = 124.14$$

$$n = 124$$

Although ET has more than 16,000 employees currently only 12,944 of them operates in Ethiopia the rest are functioning around the globe in different positions representing the airline; since the researcher chooses to Assessment of Operational Challenges and Opportunities of Ethiopian Airlines during COVID-19 Pandemic Period from the

management perspective the sample size is taken based on survey performed by (Ashenafi Tsegaye, 2020).

| Air operator name | Total number of Employees | Number of employees >5years of experience | Number of Managerial Staffs | Percentage of managerial staffs from total employees |
|--------------------|---------------------------|---|-----------------------------|--|
| Ethiopian Airlines | 12,944 | 4,455 | 180 | 28.76% |

Table 2: Recent Human resource information of Ethiopian Airlines in the year 2020

Source; (Ashenafi Tsegaye, 2020).

I have taken the above source as a base and has focused on 180 employees of ET that are currently working in different managerial positions that has an experience of above 5years working for this organization. Accordingly the research total population size N= 180 and the desired sample size n= 124 respondents after the calculation performed in the above formula. The researcher will use the desired sample size of 124 respondents from the Top Managers, middle managers and managers at operational level.

3.3 Data Type and Sources

Both primary and secondary data were sources of information for this research; as a Secondary source the researcher has gone through written documents that are found in different sources like books (Creswell JW (2013)), articles, journals (Relly Victoria et al., 2017), previously done research papers (Akilil G/Egzabiher, 2019, Abbey, D R. 2007), bulletins (Bulletin of WHO, 2011), organizational structure documents(Recent Human resource information of Ethiopian Airlines in the year, 2020, Annual Report of Ethiopian Airlines, 2016) and factsheets published by ET (Ethiopian Airlines Fact Sheet, 2019) and many more that are relevant for this study. In addition available and permitted organizational documents like schedule of projects and works, annual reports are reviewed accordingly to be used as data source. The Primary source of information were Questioners disseminated both in the form of hard copy as well as in Google form that can be filled on line via email and Telegram applications and the refined results as well as the anticipated interviews conducted to support the questioner in collaboration with visual observation and inspection of the working environment of Ethiopian airlines

through places where I got permission for visit has provide relevant information to this study.

3.4 Methods of Data Collection

The diagram below shows the step by Step procedures that the researcher has taken through this case study work.

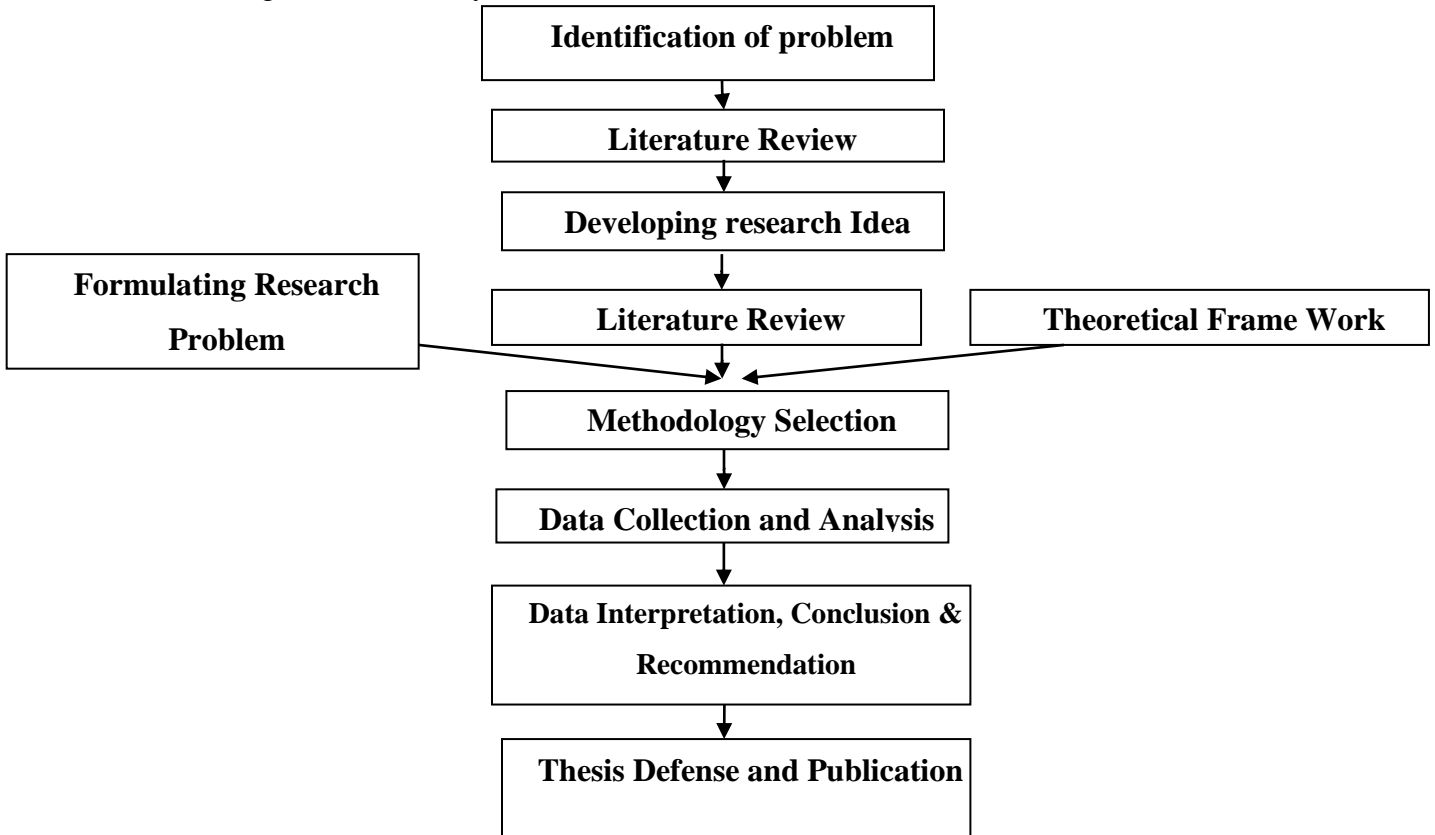


Figure 2:- Used research study design

In addition to the above diagram to support secondary data primary data were collected using structured questionnaire survey and interview was conducted to triangulate the first hand data collected. The questionnaire prepared has three parts; in the first part it includes Questions that inquire respondents personal data on the second part Assessment questions on the existing Project management Practices in relation to COVID-19 influence on ET are asked and in the third to identify the challenges and opportunities that COVID-19 has brought to ET (Ethiopian airlines) are assessed.

3.5 Data Analysis Methods

Primary Data was collected using questionnaire using two methods one was converting the questionnaire to Google drive format and sending it via email and Telegram address of respondents so that their direct response on the questions asked will reach to researchers email account in the form of excel and it was then easily feed to SPSS for further analysis yet number of respondents were below expected so a hard copied questionnaire was additionally distributed to reach out to missed respondents via the first method and doing so since there was a face to face conduct of data collection in the second method it has also give me an opportunity to interview purposively selected respondents and data was feed on Microsoft excel to clean it and make it ready for further, pretest, validation, coding, summarizing and analysis using statistical package of SPSS statistics Version 20; the benefit of using this software is it makes things easy to determine the frequency distribution during questionnaire analysis and finding selection. The analysis of secondary data collected was administered according to (Morgan et al., 2007) frequency analysis which is a tally or count of the number of times each score on a single variable occurs whose result can be represented using percentage (%) form or by describing the number of respondents response to specific variable and it can be presented using table, graphs, histograms, bar charts and pie charts. Following finding of the analysis Conclusions was derived based on the P. value and the coefficient of determination and suggested recommendations are given.

3.6 Validity and Reliability Measures

The aim of preparing interview questions is to triangulate responses given on questionnaire with that of the responses given on interview so as to increase the reliability of responses given on both(Primary and secondary) phases of data collection in addition to that a sample questionnaire was disseminated to colleagues who works at ET and response was tested on SPSS Version20 for validation using theoretical and empirical frameworks like cronbatch-alpha through theoretical assessment of validity focused on how theoretical construct is translated in to respondent in an operational measure and reliability and my Theses advisor Dr. Muladam Alemu has also check and make necessary corrections on the questions incorporated in the questionnaire and interview

questions in relation to previously conducted researches and literatures of similar nature. Finally as I take my questionnaire to Ethiopian airlines to get the organizations permission to collect data they have taken one sample of the questionnaire and make their assessment on it and have asked me to make a few changes on some questions structure and to omit questions that they find are not viable according to their organizations confidentiality.

Table 3.5.1 Case Processing Summary

| | | N | % |
|-------|-----------------------|-----|-------|
| Cases | Valid | 94 | 88.7 |
| | Excluded ^a | 12 | 11.3 |
| | Total | 106 | 100.0 |

a. List wise deletion based on all variables in the procedure.

Table 3.5.2 Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .689 | 37 |

Source: Own Survey (2021)

The result of reliability test for the above mentioned all the question incorporated on the questionnaire part II and Questions on Part III a total of 37 questions were analyzed for Validity and reliability and the result 88.7% validity (Table 3.5.1) and a result of reliability become 0.698 (Table 3.5.2) which is almost 70% and closer to 1 than 0 so we can precede farther analysis considering the correlation between the items presented and alpha are reliable.

3.7 Ethical Considerations

In order to keep confidentiality of response of study respondents and any individual involving in this research data collection were not requested to write their personal names and address to assure their responses anonymity and the information they have provided will be used for educational purpose only and this is clearly stated in the introductory part of the questionnaire. Furthermore the research questions are designed in non-misleading

and unambiguous statements and the questionnaire was disseminated to volunteer respondents.

3.8 Limitation of the study

The pandemic of COVID-19 by itself is one limitation of this study since it prohibits the researchers mobility from one concerned office to the other in fear of being infected by the virus on top of that most interviews were conducted using phone and internet video calls which limits to fetches the true emotion of the respondent.

The other Limitation faced was the current political instability and the upcoming election in the country and the tension that is found in the target case study company Ethiopian Airlines was a challenge to fetch relevant information and access to the desired target groups of respondents.

This study is conducted to assess the management practices implemented by Ethiopian Airlines from the perspective of project scope and integration management other managerial activates like cost, time, quality, human resource management are not included.

I have suffered a lot and was supposed to take extra miles un-necessary to get the primary data from Ethiopian Airlines despite the necessary documents my school gave me the Human resource office of ET told me that I can only get there permission of data collection only if I am government school student or employee of Ethiopian Airlines; which doesn't make sense since all schools get permission of HERQA(Higher Education Relevance and Quality Agency) and legally the educational quality and degree they give have equal value under law and as a governmental organization they have the obligation to cooperate with researchers who will like to take their organization as a case study area as long as the research is used for educational purpose only and as long as it doesn't dim the good name of their company.

CHAPTER FOUR

DATA PRESENTATION, INTERPRETATION AND ANALYSIS

This section presents the primary findings of the study. These findings are presented in three sub-sections: the pros and cons of COVID-19 pandemic in African Airline industry in case of Ethiopian Airlines is analyzed based on the data collected via questionnaire and interviews that was then organized in a systematic format to make readers easily understand the findings of the data collected. Coded data are then critically inferred, using inferential basic statistics analysis method so that the results get in this case study could apply to other African Aviation industries and airlines and to make things simple and clear it is advisable if visual presentations are also included to make it easily understandable (Kombo and Tromp, 2006). The researcher analyzed the data in line with the General and specific objectives of this study listed here under respectively.

- To Examine the challenges that African Airline companies has faced because of COVID-19, during the years of 2019/2020.
- To assess the existing practice of Ethiopian Airlines COVID-19 pandemic management system.
- To investigate the challenges COVID-19 has brought on the management system of Ethiopian Airlines through the pandemic year 2020/21
- To retrieve new opportunities gained and lessons learnt by ET following the pandemic.

4.1 Response rate of respondents from each functional area of Ethiopian Airlines

As it was discussed in chapter three the expected number of respondents for this research was calculated using the formula that Yamane (1967) developed as $n = \frac{N}{1 + N(e)^2}$ and the number of expected respondents found were 124; as a researched I choose to take this number and divide it to the seven functional branches of Ethiopian airlines which give me the expected respondents from each group to be $(124/7=18)$ then accordingly I have managed to purposively select the respondents based on the expected working experience

I set to be >5years and has disseminated the questionnaire accordingly but as it can be seen from the table below the response rate at two of the functional areas (i.e. Ethiopian Cargo & Logistics and Ethiopian Hotel and Tourism Services) was below and near the marginal return response rate according to Mugenda and Mugenda (1999) that states a response rate of 50% is adequate for analysis and reporting so as a researcher I took the measure of adding 7 more questionnaires to each of the functional areas where response rates were high (i.e Ethiopian Aviation Academy and Ethiopian Airport Enterprise) so as to meet up the required number of respondents which were supposed to be 124 yet even after the adjustments made the response collected was only 106 which was about 75.5% because of time limitation I accepted the resulted and I have moved to the next step of the research which was organizing the data collected for farther analysis.

Table 4.1 Questionnaires disseminated and response rate

| Functional area | No. of questionnaires distributed | Frequency of Returned | Frequency of Un-returned | Response Rate (%) | Non-response rate (%) |
|--------------------------------------|-----------------------------------|-----------------------|--------------------------|-------------------|-----------------------|
| Ethiopian MRO Services | 18 | 15 | 3 | 83.33% | 16.67% |
| Ethiopian Aviation Academy | 18 | 18 | 0 | 100% | 0 |
| Ethiopian Passenger airline | 18 | 13 | 5 | 72.22% | 27.7% |
| Ethiopian Airport Enterprise | 18 | 17 | 1 | 96% | 4% |
| Ethiopian Cargo & Logistics | 18 | 8 | 10 | 44.44% | 55.56% |
| Ethiopian in-flight catering Service | 18 | 11 | 7 | 61.11% | 38.89% |
| Ethiopian Hotel and Tourism Services | 18 | 10 | 8 | 55.56% | 44.44% |
| Total | 124 | 106 | 34 | 75.71% | 24.29% |

Source: Own Survey (2021)

4.2 General Background of Respondents

This section tracks the respondents' general background information stating from their gender, educational background, and professional experience as well as for which group of the Ethiopian Airlines functional areas the respondent works for.

| Table 4.2 General Background of Respondents | | | | |
|--|--------------------------------------|-----------|---------|--------------------|
| General Background of Respondents | Description | Frequency | Percent | Cumulative Percent |
| Gender of Respondent | Male | 79 | 74.5 | 74.5 |
| | Female | 27 | 25.5 | 100.0 |
| | Total | 106 | 100.0 | |
| Educational Background of respondent | First degree | 79 | 74.5 | 74.5 |
| | Masters Degree | 22 | 20.7 | 95.2 |
| | other | 4 | 3.8 | 99.0 |
| | Diploma | 1 | .9 | 100.0 |
| | Total | 106 | 100.0 | |
| Years of Service served in ET | >5years | 66 | 62.3 | 62.3 |
| | >10years | 28 | 26.4 | 88.7 |
| | >15years | 2 | 1.9 | 90.6 |
| | >20years | 10 | 9.4 | 100.0 |
| | Total | 106 | 100.0 | |
| Position or Functional area of the respondent | Ethiopian MRO Services | 15 | 14.2 | 14.2 |
| | Ethiopian Aviation Academy | 25 | 23.6 | 37.7 |
| | Ethiopian Passenger airline | 13 | 12.3 | 50.0 |
| | Ethiopian Airport Enterprise | 24 | 22.6 | 72.6 |
| | Ethiopian Cargo & Logistics | 8 | 7.5 | 80.2 |
| | Ethiopian in-flight catering Service | 11 | 10.4 | 90.6 |
| | Ethiopian Hotel and Tourism Services | 10 | 9.4 | 100.0 |
| | Total | 106 | 100.0 | |

Source: Own Survey (2021)

From the Table 4.2 above we can see that the percentage of respondent is 74.5% male and 25.5% of the respondents are female employees of Ethiopian airlines (ET) who have above 5 years of experience and are currently working in different functional areas of the organization in multiple levels of managerial positions (i.e. as higher level managers, Middle level or Operational level managers) and from this information we can also state that the number of female managers in Ethiopian Airlines is almost in a proportion of 1:3. The percentage of respondent educational back ground shows that 74.5% have first degree, 20.8% of the respondents have masters degree, 3.8% of respondents have unstated educational back ground which can be a TVET(Technical and vocational education training) and 0.9% of them have diploma this distribution of the educational level also reveals that these respondents holds multiple levels of managerial positions (i.e. as higher level managers, Middle level or Operational level managers) and they are currently working in different functional areas of the organization and it shows that these organization entertains employees from different educational back ground.

We can see that the researcher has used a purposive sampling technique to select the years of service the respondents must have since pandemics like Ebola, SARS and COVID-19 happened in the past 5 years and there strategic management decisions are expected to be well developed through experience and lesson based from past. The frequency and percentage of respondent years of service are the focus of this table 4.2.3 and accordingly 62.3% of the respondents has worked more than 5 years at ET which accounts to 66 respondents out of 106 them, 26.4% of respondents has been at ET for more than 10 years which represents 28 respondents out of 106 them, 1.9% of the respondents has served ET for more than 15years although they only are 2 of the 10 respondents, the faith full hard working managers of ET that has served this organization accounts for 9.4% of respondents which accounts for 10respondents out of 106 from this distribution of the respondents service year and from the triangulation interviews held with some of the respondents reveals that working for Ethiopian airline in Ethiopia is a symbol of commitment and pride for most of my respondents some of them started working in this organization straight of school and wishes to retire in this organization with the pride and love they have for their Green and kaki color uniforms.

When we see percentage of respondent from each functional area of Ethiopian Airlines and 14.2% of the respondents were from MRO(Maintenance Repair Overhaul),23.6% of the respondents were from Ethiopian Aviation Academy, 12.3% of them were from Ethiopian Passenger airline, 12.3% of the respondents were from Ethiopian Passenger airline, Ethiopian Airports enterprise has contributed 22.6% of the respondents and Ethiopian in-flight catering Service provided 10.4% of the total response; the list number of respondent 7.5% of them were from Ethiopian Cargo and Logistics, and the second smallest response was recorded from Ethiopian Hotel and Tourism services this was because of the permeation limitation that branches of the organization has placed on the researcher despite the legal papers and documents necessary were present and the responses retrieved from this section were collected using telegram application via Google format form of the questionnaire by sending the questionnaire to the personal contact phone lines of selected respondent that collaborating staff members has helped me by taking this assignment as their own.

Over all from the above table 4.2 we understand two things; the first is all the functional areas of the airline were taken as part of this case study area, the response those respondents has given/returned in terms of number of frequency of return and percentage of return from different educational back ground are stated.

4.3 The Existing Project management Practices of Ethiopian Airlines in relation to COVID-19 impact reduction and measures taken

In this section the questionnaire developed has two major assessment questions each having six and seven evaluation questions respectively. Question one was asked to identify which project integration management methods are best practice by ET during this COVID-19 pandemic season (year 2019/2020G.c) and question two was asked to identify which risk management methods are best practice at ET during the season of COVID-19 and respondents were asked to choose from 5 alternative likert scale values of Always (5), Frequently(4), Seldom(3), Rarely(2), Never(1) based on their personal judgment and experience on the managerial position they have spent with ET.

Table 4.3 Case Processing Summary Existing Project management Practices of Ethiopian Airlines in relation to COVID-19

| | | N | % |
|-------|-----------------------|-----|-------|
| Cases | Valid | 104 | 98.1 |
| | Excluded ^a | 2 | 1.9 |
| | Total | 106 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

Source: Own Survey (2021)

To clarify the responses given by respondent of ET management system that were selected systematical using purposive sampling from all the functional areas of ET the response were feed to SPSS20 and the above questions were first tested for reliability.

Accordingly Cronbach's alpha result was tested which measure the correlation between the items presented and alpha value ranges between 0 and 1 if the alpha vale is closer to 1 the result get is the greater its reliability

$$\text{Alpha} = \frac{N \cdot P}{1 + p(N-1)}$$

Where;

N=Number of items on test

P= Average of the correlation between each pair of items on the test

Table 4.4 Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .698 | 6 |

Source: Own Survey (2021)

The result of reliability test for the above mentioned question (4.3) gave a result of 0.698 which is almost 70% and closer to 1 than 0 so we can precede farther analysis considering the correlation between the items presented and alpha are reliable.

Table 4.5 The Statistics Result on the Existing COVID-19 Management Practice of ET

| | | ET develops project charter for pandemics like COVID-19 | ET develops preliminary project scope management plan as the spread of COVID-19 was announced pandemic by WHO | ET has developed project management plan to mitigate risk of COVID-19 | ET has developed and manage project execution plan accordingly to reduce COVID-19 transmission | ET has a strong Monitoring and control project management team established focused on fighting COVID-19 | ET has prepared work integrated change method to control effect of COVID-19 on the airlines |
|---|----------------|---|---|---|--|---|---|
| | Mean | 4.1442 | 4.2308 | 4.2596 | 4.2500 | 4.3173 | 4.3846 |
| | Std. Deviation | .79340 | .75338 | .62310 | .69324 | .85064 | .65815 |
| N | Valid | 106 | 104 | 106 | 106 | 106 | 106 |
| | Missing | 0 | 2 | 0 | 0 | 0 | 0 |

Source: Own Survey (2021)

In the table 4.5 and 4.6 a descriptive analysis was done to identify the existing project management methods that are best practice by ET during this COVID-19 pandemic season (year 2019/2020G.c). the result shows average standard deviation value of $0.75 > 0.05$ which means that the results we gate from the data collected shows that COVID-19 has placed an impact on the management system and from the normal, since there were two missing values from the data collected 104 responses were analyzed and the mean statistical vales range between 4.14 and 4.38 whose average 4.25 is closer to the value of 4 which means that nearly all respondents believes that ET frequently implements project integration management that are focused on preliminary project scope management, developing project charter, project management plan, project execution plan, strong monitoring and controlling team are assigned and work integrated change methods are applied to minimize impact of COVID-19 on the airline.

Table 4.6 Analysis Result on the Existing COVID-19 Management Practice of ET

| | | Valid | | | | | | lekert Scale | | | | |
|-------|---------|--------|------------|--------|--------|-------|-----------|--------------|--------------------|---|---|---|
| Total | Missing | always | frequently | Seldom | rarely | never | Frequency | Percent | Cumulative Percent | | | |
| 106 | - | 35 | 53 | 14 | 2 | 2 | 2 | 1.9 | 1.9 | ET develops project charter for pandemics like COVID-19 | ET develops preliminary project scope management plan as the spread of COVID-19 | ET has developed project management plan to mitigate risk of COVID-19 |
| 100.0 | - | 33.0 | 50.0 | 13.2 | 1.9 | 1.9 | 3.8 | 1.9 | 1.9 | | | |
| 106 | 2 | 104 | 38 | 56 | 8 | 2 | 8 | 7.5 | 1.9 | | | |
| 100.0 | 1.9 | 98.1 | 35.8 | 52.8 | 7.5 | 1.9 | 9.6 | 1.9 | 1.9 | | | |
| 106 | - | 37 | 57 | 12 | - | - | - | - | - | | | |
| 100.0 | - | 34.9 | 53.8 | 11.3 | - | - | - | - | - | | | |
| 106 | - | 38 | 58 | 9 | 1 | - | 1 | 0.9 | - | | | |
| 100.0 | - | 35.8 | 54.7 | 8.5 | 0.9 | - | 0.9 | 0.9 | - | | | |
| 106 | - | 56 | 34 | 11 | 5 | - | 5 | 4.7 | - | | | |
| 100.0 | - | 52.8 | 32.1 | 10.4 | 4.7 | - | 4.7 | 4.7 | - | | | |
| 106 | - | 50 | 44 | 12 | - | - | - | - | - | | | |
| 100.0 | - | 47.2 | 41.5 | 11.3 | - | - | - | - | - | | | |
| 106 | - | 100 | 52.8 | 11.3 | - | - | - | - | - | | | |
| 100.0 | - | 100 | 52.8 | 11.3 | - | - | - | - | - | | | |

Source: Own Survey (2021)

This study has tried to identify which risk management methods are best practices at ET during the season of COVID-19. For this purpose seven questions were asked and for this following frequency table was developed.

Table 4.7 Case Processing Summary the Existing Risk Management Practices of ET

| | | N | % |
|-------|-----------------------|-----|-------|
| Cases | Valid | 102 | 96.2 |
| | Excluded ^a | 4 | 3.8 |
| | Total | 106 | 100.0 |

a. List wise deletion based on all variables in the procedure.

Table 4.8 Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .799 | 7 |

Source: Own Survey (2021)

From the case processing summary table 4.6 we can see that from the 106 cases analyzed 4 were missing and the validity of the results as found to be 96.2%. The result of reliability test for the above mentioned question on table 4.7 gave a result of 0.799 which is above 70% and closer to 1 than 0 so we can proceed farther analysis considering the correlation between the items presented and alpha are reliable for this specific seven questions realized in this section.

Table 4.9 Statistical Analysis Result on the Existing Risk Management Practices of ET during COVID-19 Pandemic season of 2019/2020

| | | ET implements process risk management plans in all its administrative groups to fight COVID-19 spreading | Planning risk identification is part of the managerial practice to fight pandemics that could affect ET | There is a team designed for risk identification in ET | Qualitative risk related with COVID-19 are analyzed timely to take action | Quantitative risks related with COVID-19 are analyzed timely to take action | Timely risk response planning are being implemented to all levels of ET administrative groups | ET implements risk monitoring and control system at all its functional area |
|---|----------------|--|---|--|---|---|---|---|
| | Mean | 4.2549 | 4.1078 | 4.2451 | 3.9902 | 4.0588 | 4.1569 | 4.2157 |
| | Std. Deviation | .72694 | .80723 | .86099 | .82648 | .80621 | .79285 | .71237 |
| N | Valid | 106 | 104 | 106 | 104 | 104 | 106 | 106 |
| | Missing | 0 | 2 | 0 | 2 | 2 | 0 | 0 |

Source: Own Survey (2021)

Table 4.10 Analysis Result on the Existing Risk Management Practices of ET during COVID-19 Pandemic season of 2019/2020

| Total | Missing | Valid | | | | | | Never |
|-------|---------|--------|------------|--------|--------|--------------|---|-------|
| | | always | frequently | seldom | rarely | lebert Scale | | |
| 106 | - | 42 | 47 | 16 | 1 | | - | |
| 100.0 | - | 39.6 | 44.3 | 15.1 | .9 | | - | |
| | - | 100.0 | 60.4 | 16.0 | .9 | | - | |
| 106 | 2 | 37 | 43 | 22 | 2 | | - | |
| 100.0 | 1.9 | 34.9 | 40.6 | 20.8 | 1.9 | | - | |
| | | 100.0 | 64.4 | 23.1 | 1.9 | | - | |
| 106 | - | 50 | 36 | 15 | 5 | | - | |
| 100.0 | - | 47.2 | 34.0 | 14.2 | 4.7 | | - | |
| | - | 100.0 | 52.8 | 18.9 | 4.7 | | - | |
| 106 | 2 | 31 | 44 | 26 | 3 | | - | |
| 100.0 | 1.9 | 29.2 | 41.5 | 24.5 | 2.8 | | - | |
| | | 100.0 | 70.2 | 27.9 | 2.9 | | - | |
| 106 | 2 | 33 | 47 | 21 | 3 | | - | |
| 100.0 | 1.9 | 31.1 | 44.3 | 19.8 | 2.8 | | - | |
| | | 100.0 | 68.3 | 23.1 | 2.9 | | - | |
| 106 | - | 41 | 44 | 19 | 2 | | - | |
| 100.0 | - | 38.7 | 41.5 | 17.9 | 1.9 | | - | |
| | - | 100.0 | 61.3 | 19.8 | 1.9 | | - | |
| 106 | - | 37 | 56 | 11 | 2 | | - | |
| 100.0 | - | 34.9 | 52.8 | 10.4 | 1.9 | | - | |
| | - | 100.0 | 65.1 | 12.3 | 1.9 | | - | |

Source: Own Survey (2021)

The result in table 4.9 and table 4.10 shows that average standard deviation value $0.916 > 0.05$ which means that the results we gate from the data collected shows that COVID-19 has placed an impact on the management system and from the normal, since there were Four missing values from the data collected 102 responses were analyzed and the mean statistical vales range between 3.99 and 4.23 whose average value is 4.14 which is closer to the value of 4 which means that nearly all respondents believes that ET frequently implements project risk management that are focused on risk identification plan, process risk management plan, designates a team for risk identification, Qualitative and Quantitative risk plans are applied and implements timely risk response plan and risk monitoring and controlling are performed frequently to minimize impact of COVID-19 on the airline.

4.4 Challenges faced while implementing Safety, Prevention and risk management Practices in Ethiopian Airlines towards COVID-19

In this section the questionnaire developed has four major assessment questions each having five evaluation questions except the first one has eight questions to be ranked. Question one was asked to identify which project integration management methods are best practice by ET during this COVID-19 pandemic season (year 2019/2020G.c) and question two was asked to identify which risk management methods are best practice at ET during the season of COVID-19 and respondents were asked to choose from 5 alternative likert scale values of Strongly Agree (5), Agree(4), Neutral(3), Disagree(2), Strongly Disagree(1) based on their personal judgment and experience on the managerial position they have spent with ET.

4.11 Case Processing Summary on Challenges faced while implementing Safety, Prevention and risk management Practices in Ethiopian Airlines towards COVID-19

| | | N | % |
|-------|-----------------------|-----|-------|
| Cases | Valid | 102 | 96.2 |
| | Excluded ^a | 4 | 3.8 |
| | Total | 106 | 100.0 |

a. List wise deletion based on all variables in the procedure.

4.12 Reliability Statistics

| | |
|------------------|------------|
| Cronbach's Alpha | N of Items |
| .775 | 8 |

Source: Own Survey (2021)

From the case processing summary table 4.11 we can see that from the 106 cases analyzed 4 were missing and the validity of the results as found to be 96.2%. On table 4.12 the result of reliability test for the above mentioned question 4.4 gave a result of 0.775 which is above 70% and closer to 1 than 0 so we can precede farther analysis considering the correlation between the items presented and alpha are reliable for this specific Questions realized in this section.

| Table 4.13 Statistics result on the Challenges faced while implementing Safety, Prevention and risk management Practices in Ethiopian Airlines towards to COVID-19 | | | | | | | | |
|--|------------------------------------|---|---------------------|--|---------------------------------------|-------------------|-------------------------------------|--|
| | Temperature and symptoms screening | Use of mask and PPE(Personal Protective equipments) | Physical distancing | Cleaning and disinfecting infrastructure | COVID-19 testing and antibody testing | Immunity Passport | Measures to assist contact tracking | Measures related to pilots and crew members and their layover experience |
| Mean | 1.87 | 1.44 | 1.97 | 1.77 | 2.90 | 2.23 | 3.01 | 2.67 |
| Std. Deviation | 1.08 | 0.74 | 1.20 | 1.08 | 1.35 | 1.37 | 1.54 | 1.57 |
| N Valid | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 |
| Missing | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |

Source: Own Survey (2021)

The data in table 4.13 & 4.14 confirms that 52.9% of the respondents find temperature symptom screening as most important and only 1% of the respondents say that it is unnecessary to track COVID-19 infected workers at the work place of ET. So we can conclude that ET measure to use scan temperature at work place is found to be relevant among its workers. It also states that 68.6% of the respondents respond usage of mask and PPE are most important and only 2% of the respondents say that it is least important to prevent COVID19 transmission at the work place of ET. So we can conclude that ET measure to use mask and PPE at work place is found to be relevant among its workers.

On the other hand; only 50% of the respondents respond finds physical distance as most important measure to reduce transmission of COVID-19 and 4.9% of the respondents say that it is un-necessary to create physical distance to prevent COVID-19 transmission at the work place of ET. So we can conclude that ET measure to create physical distance at work place is found to be less important in comparison to other measures stated in the above tables among its workers. And also only 50% of the respondents respond finds physical distance as most important measure to reduce transmission of COVID-19 and 4.9% of the respondents say that it is un-necessary to create physical distance to prevent COVID-19 transmission at the work place of ET. So we can conclude that ET measure to disinfect the work place is found to be relevant among its workers.

On this case study majority of the respondents 26% of the respondents respond finds antibody testing as neither important nor unnecessary which measures the resistance developed by a person after being infected by the virus either showing symptom or without any symptoms knowing this result could help for the person to reduce transmission of COVID-19 to his/her family and colleagues yet and 15.7% of the respondents say that it is un-necessary.

Table 4.14 also confirms that only 45% of the respondents respond finds immunity passport as most important and the second largest number of respondent remain neutral with 21.6% while immunity passport like taking vaccine helps a person to develop immunity in case he/she gets exposed to the virus and the illness and damage the virus causes can be minimized greatly. Only 29.4% of the respondents respond finds Contact tracing with COVID-19 person to be un-necessary although the second largest response with 23.5% of the respondents find it important. The benefit of contact tracking is to minimize the spread of the virus by putting people who got infected by the virus in isolation for two weeks then if they are clean they can return back to their normal working and life routine.

Because of the high demand of the job to be mobile for pilots and cabin crew from place to place the exposure of them to COVID-19 is high. The data in table 4.14 confirms that 36.3% of the respondents respond finds measures related with pilots and crew members layover experience necessary and the second largest number of respondent's percentage

24.5% remain neutral when it comes to this measure and on a close percentage of 23.5% of the respondents finds it un-necessary.

Table 4.14 Analytical result on Challenges Faced while ET implements the new COVID-19 Protocols and response of employees

| Total | Missing | Valid | System | Total | un-necessary | least important | neutral | important | most important | Temperature and symptoms screening | | | Use of mask and PPE(Personal Protective equipments) | | | Physical distancing | | | Cleaning and disinfecting infrastructure | | | COVID-19 testing and antibody testing | | | Immunity Passport | | | Measures to assist contact tracking | | | | | | | | | |
|-------|---------|-------|--------|-------|--------------|-----------------|---------|-----------|----------------|------------------------------------|---------|--------------------|---|---------|--------------------|---------------------|---------|--------------------|--|---------|--------------------|---------------------------------------|---------|--------------------|-------------------|---------|--------------------|-------------------------------------|---------|--------------------|--|--|--|--|--|--|--|
| | | | | | | | | | | Frequency | Percent | Cumulative Percent | Frequency | Percent | Cumulative Percent | Frequency | Percent | Cumulative Percent | Frequency | Percent | Cumulative Percent | Frequency | Percent | Cumulative Percent | Frequency | Percent | Cumulative Percent | Frequency | Percent | Cumulative Percent | | | | | | | |
| 106 | 4 | 102 | | 102 | 1 | 9 | 20 | 18 | 54 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100.0 | 3.8 | 96.2 | | 96.2 | .9 | 8.5 | 18.9 | 17.0 | 50.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 106 | 4 | 102 | | 102 | | 2 | 9 | 21 | 70 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100.0 | 3.8 | 96.2 | | 96.2 | | 1.9 | 8.5 | 19.8 | 66.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 106 | 4 | 102 | | 102 | 5 | 8 | 17 | 21 | 51 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100.0 | 3.8 | 96.2 | | 96.2 | 4.7 | 7.5 | 16.0 | 19.8 | 48.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 106 | 4 | 102 | | 102 | 2 | 8 | 14 | 19 | 59 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100.0 | 3.8 | 96.2 | | 96.2 | 1.9 | 7.5 | 13.2 | 17.9 | 55.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 106 | 4 | 102 | | 102 | 16 | 19 | 27 | 19 | 21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100.0 | 3.8 | 96.2 | | 96.2 | 15.1 | 17.9 | 25.5 | 17.9 | 19.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 106 | 4 | 102 | | 102 | 11 | 7 | 22 | 16 | 46 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100.0 | 3.8 | 96.2 | | 96.2 | 10.4 | 6.6 | 20.8 | 15.1 | 43.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 106 | 4 | 102 | | 102 | 30 | 9 | 17 | 24 | 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100.0 | 3.8 | 96.2 | | 96.2 | 28.3 | 8.5 | 16.0 | 22.6 | 20.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | 100.0 | 70.6 | 61.8 | 45.1 | 21.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Source: Own Survey (2021)

4.5 Challenges On Managerial decisions give to prevent COVID-19 in Ethiopian Airlines

Respondents were asked to make a likert scale measure for each sub-questions asked by placing their response if they strongly agree=5, Mildly Agree=4, Neutral=3, Disagree=2 and if they strongly disagree=1

Table 4.15 Case Processing Summary on Challenges Faced while ET implements the new COVID-19 Protocols and response of its' employees

| | | N | % |
|-------|-----------------------|-----|-------|
| Cases | Valid | 106 | 100.0 |
| | Excluded ^a | 0 | 0.0 |
| | Total | 106 | 100.0 |

a. List wise deletion based on all variables in the procedure.

Table 4.16 Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .754 | 5 |

Source: Own Survey (2021)

From the case processing summary table 4.14 and table 4.15 we can see that all the 106 cases analyzed none were missing and the validity of the results as found to be 100%. On table 4.5.2 the result of reliability test for the above mentioned question gave a result of 0.754 which is above 70% and closer to 1 than 0 so we can precede farther analysis considering the correlation between the items presented and alpha are reliable for this specific Questions realized in this section.

Table 4.17 Statistical analysis on Challenges Faced while ET implements the new COVID-19 Protocols and response of its' employees

| | ET has placed sufficient finance to support COVID-19 Protocols | There are frameworks and guidelines designed by ET to prevent spread of COVID-19 | Adequate trainings are given on how to perform sanitation and cleaning service both in the aircrafts, terminals, aviation academy, cargo stations and offices of ET | There is enough quarantine space provided for COVID-19 suspected passengers and transit travelers | Cabin crews have taken adequate training on self and customer protecting protocols for COVID-19 |
|----------------|--|--|---|---|---|
| Mean | 3.99 | 4.26 | 4.05 | 3.8 | 3.31 |
| Std. Deviation | 0.637 | 0.68 | 0.855 | 0.877 | 0.319 |
| N | Valid | 106 | 106 | 106 | 106 |
| | Missing | 0 | 0 | 0 | 0 |

Source: Own Survey (2021)

The data in table 4.5.3 confirms that average standard deviation value $0.953 > 0.05$ which means that the results we gate from the data collected shows that COVID-19 has placed an impact on the management system and from the normal, since there were no missing values from the data collected 106 responses were analyzed and the mean statistical vales range between 3.31 and 4.26 whose average is 3.88 that is closer to the value of 4 which means that nearly all respondents believes that ET frequently implements COVID-19 Prevention methods that has a sufficient financial support from the organization, and ET has prepared guidelines and frame works how to spend the fund, adequate trainings are given to its employees how to keep both personal hygiene and how to cleans the aircrafts, terminals, aviation academy, cargo satiations etc... in addition to that the quarantine space prepared by the airline is moderately enough and relevant for passengers with the symptoms steal and the crew members of the airline has taken adequate training on self and customer protecting protocols to minimize impact of COVID-19 on the airline. From the result we can also see the Skewness and Kurtosis results are expected to be between -1 and 1 and all the results we get above in the table reveals that all the variables places are within this range meaning the symmetry of the data distribution is perfect distribution and measure of the curve is normal.

Table 4. 18 Descriptive Statistics on Challenges Faced while ET implements the new COVID-19 Protocols and response of its' employees

| Valid | | | | | ET has placed sufficient finance to support COVID-19 Protocols | There are frameworks and guidelines designed by ET to prevent spread of COVID-19 | Adequate trainings are given on how to perform sanitation and cleaning service both in the aircrafts, terminals, aviation academy, cargo stations and offices of ET | There is enough quarantine space provided for COVID-19 suspected passengers and transit travelers | Cabin crews have taken adequate training on self and customer protecting protocols for COVID-19 |
|-------|-------|----------------|-------|---------|--|--|---|---|---|
| | Total | Strongly Agree | Agree | Neutral | | | | | |
| 106 | 40 | 37 | 21 | 4 | 4 | | | | |
| 100.0 | 37.7 | 34.9 | 19.8 | 3.8 | 3.8 | Frequency | Percent | Cumulative Percent | |
| | 100.0 | 62.3 | 27.4 | 7.5 | 3.8 | Frequency | Percent | Cumulative Percent | |
| 106 | 41 | 53 | 11 | 1 | - | | | | |
| 100.0 | 38.7 | 50.0 | 10.4 | 0.9 | - | | | | |
| | 100.0 | 61.3 | 11.3 | 0.9 | - | Frequency | Percent | Cumulative Percent | |
| 106 | 37 | 40 | 27 | 1 | 1 | | | | |
| 100.0 | 34.9 | 37.7 | 25.5 | .9 | .9 | Frequency | Percent | Cumulative Percent | |
| | 100.0 | 65.1 | 27.4 | 1.9 | .9 | Frequency | Percent | Cumulative Percent | |
| 106 | 25 | 41 | 35 | 4 | 1 | | | | |
| 100.0 | 23.6 | 38.7 | 33.0 | 3.8 | .9 | Frequency | Percent | Cumulative Percent | |
| | 100.0 | 76.4 | 37.7 | 4.7 | .9 | Frequency | Percent | Cumulative Percent | |
| 106 | 25 | 20 | 42 | 1 | 18 | | | | |
| 100.0 | 23.6 | 18.9 | 39.6 | .9 | 17.0 | Frequency | Percent | Cumulative Percent | |
| | 100.0 | 76.4 | 57.5 | 17.9 | 17.0 | Frequency | Percent | Cumulative Percent | |

Source: Own Survey (2021)

4.6 Physical changes made in the Aircrafts, working environment and service sectors of ET to minimize transmission of COVID-19

Respondents were asked to make a likert scale measure for each sub-questions asked by placing their response if they strongly agree=5, Mildly Agree=4, Neutral=3, Disagree=2 and if they strongly disagree=1

Table 4.19 Case Processing Summary on Physical changes made in the Aircrafts, working environment and service sectors of ET to minimize transmission of COVID-19

| | | N | % |
|-------|-----------------------|-----|-------|
| Cases | Valid | 104 | 98.1 |
| | Excluded ^a | 2 | 1.9 |
| | Total | 106 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

Table 4.20 Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .710 | 5 |

Source: Own Survey (2021)

From the case processing summary table 4.6.1 we can see that all the 104 cases analyzed two were missing and the validity of the results was 100%. The result of reliability test on table 4.6.2 gave a result of 0.710 which is above 70% and closer to 1 than 0 so we can precede farther analysis considering the correlation between the items presented and alpha are reliable for this specific Questions realized in this section.

Table 4. 21 Descriptive Statistics on Physical changes made in the Aircrafts, working environment and service sectors of ET to minimize transmission of COVID-19

| | | Valid | | | | | | | | | | | | | | | | | |
|-------|---------|----------------|-------|---------|----------|-------------------|-----------|---------|--------------------|-----------|---------|--------------------|-----------|---------|--------------------|-----------|---------|--------------------|--|
| | | Strongly Agree | Agree | Neutral | Disagree | Strongly disagree | | | | | | | | | | | | | |
| Total | Missing | | | | | | Frequency | Percent | Cumulative Percent | Frequency | Percent | Cumulative Percent | Frequency | Percent | Cumulative Percent | Frequency | Percent | Cumulative Percent | |
| 106 | 105 | 22 | 46 | 26 | 9 | 2 | | | | | | | | | | | | | |
| 100. | 99.1 | 20.8 | 43.4 | 24.5 | 8.5 | 1.9 | | | | | | | | | | | | | |
| | | 100.0 | 79.0 | 35.2 | 10.5 | 1.9 | | | | | | | | | | | | | |
| 106 | 1 | 20 | 42 | 30 | 10 | 3 | | | | | | | | | | | | | |
| 100. | .9 | 18.9 | 39.6 | 28.3 | 9.4 | 2.8 | | | | | | | | | | | | | |
| | | 100.0 | 81.0 | 41.0 | 12.4 | 2.9 | | | | | | | | | | | | | |
| 106 | 2 | 21 | 27 | 35 | 17 | 4 | | | | | | | | | | | | | |
| 100. | 2 | 19.8 | 25.5 | 33.0 | 16.0 | 3.8 | | | | | | | | | | | | | |
| | | 100.0 | 79.8 | 53.8 | 20.2 | 3.8 | | | | | | | | | | | | | |
| 106 | 2 | 21 | 27 | 35 | 17 | 4 | | | | | | | | | | | | | |
| 100. | 1.9 | 19.8 | 25.5 | 33.0 | 16.0 | 3.8 | | | | | | | | | | | | | |
| | | 100.0 | 79.8 | 53.8 | 20.2 | 3.8 | | | | | | | | | | | | | |
| 106 | 1 | 69 | 30 | 3 | 3 | - | | | | | | | | | | | | | |
| 100. | .9 | 65.1 | 28.3 | 2.8 | 2.8 | - | | | | | | | | | | | | | |
| | | 100.0 | 34.3 | 5.7 | 2.9 | - | | | | | | | | | | | | | |

Source: Own Survey (2021)

Table 4.22 Statistical analysis on Physical changes made in the Aircrafts, working environment and service sectors of ET to minimize transmission of COVID-19

| | number of seating locations needs to be designated/reduced for crew and executive seats | passenger seats must be reduced to create social distancing | Air filtering systems needs to be installed in the aircrafts to filter the air in the aircraft during flights | Aircrafts with high cruising speed are the once to give service this days to reduce the flight time and the time passengers spend in the aircrafts | Self protective measures like wearing facemasks and using hand sanitizers needs to be strictly applied in terminals and in the aircrafts |
|----------------|---|---|---|--|--|
| Mean | 3.74 | 3.64 | 3.56 | 3.42 | 4.57 |
| Std. Deviation | 0.955 | 0.985 | 0.855 | 0.877 | 0.693 |
| N Valid | 104 | 104 | 104 | 104 | 104 |
| Missing | 2 | 2 | 2 | 2 | 2 |

Source: Own Survey (2021)

The data in table 4.18 and table 4.19 confirms that average standard deviation value $0.984 > 0.05$ which means that the results we gate from the data collected shows that COVID-19 has placed an impact on the management system and from the normal, since there were two missing values from the data collected 104 responses were analyzed and the mean statistical vales range between 3.42 and 4.57 whose average is 3.78 that is closer to the value of 4 which means that majority of respondents agree ETs’ physical changes made and the once suggested to be made in the questionnaire are relevant for minimization spread of COVID-19 like the number of seating locations needs to be designated for crew and executive seats, Passenger seats needs to be reduce to create social distancing, Special Air filtering system needs to be installed in the aircraft that can reduce the viral transmission during flight, Aircrafts with high cruising speed are preferred aircrafts to give service during this pandemic season to reduce passengers time spent in the aircraft and decrease their exposure to the pandemic, and the regulation of passengers to wear face masks and apply self-protective measures needs to have strict follow up and it’s a practice requires during flights.

4.7 Possible opportunities that COVID-19 brought to Ethiopian Airlines Group

Respondents were asked to make a likert scale measure for each sub-questions asked by placing their response if they strongly agree=5, Mildly Agree=4, Neutral=3, Disagree=2 and if they strongly disagree=1

Table 4.24 Case Processing Summary on Possible opportunities that COVID-19 brought to Ethiopian Airlines Group

| | | N | % |
|-------|-----------------------|-----|-------|
| Cases | Valid | 106 | 100.0 |
| | Excluded ^a | 0 | .0 |
| | Total | 106 | 100.0 |

a. List wise deletion based on all variables in the procedure.

Table 4.25 Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .755 | 5 |

From the case processing summary table 4.24 we can see that all the 106 cases analyzed and none were missing and the validity of the results was 100%. The result of reliability test on table 4.25 gave a result of 0.755 which is above 70% and closer to 1 than 0 so we can precede farther analysis considering the correlation between the items presented and alpha are reliable for this specific five Questions realized in this section.

Table 4.26 Statistics On Opportunities that COVID-19 has brought to Ethiopian Airlines during the pandemic seasons of 2019/2020

| | Because of the service it provided during the lockdown seasons to different destinations while other airlines prohibit there airlines from flying ET annual income has increased | Because of the strategically changes taken to temporarily change passenger aircrafts to cargo; the freight transporting capacity of ET has increased | ET has created new technologies to decrease physical contact at check points, cargo items receiving and dispatching | Number of customers who uses the SKY Light Hotel has increased since the hotel was one of the selected Quarantine staying places for passengers whose destiny was Ethiopia | Staff members of the airline got some additional health incentives because of the high exposure their job has concerning COVID-19 |
|----------------|--|--|---|--|---|
| Mean | 3.97 | 4.55 | 3.77 | 3.47 | 3.18 |
| Std. Deviation | 0.899 | 0.604 | 0.929 | 0.864 | 0.781 |
| N Valid | 106 | 106 | 106 | 106 | 106 |
| Missing | 0 | 0 | 0 | 0 | 0 |

Source: Own Survey (2021)

The data in table 4.24 confirms that average standard deviation value $0.895 > 0.05$ which means that the results we gate from the data collected shows that COVID-19 has placed an impact on the management system and from the normal, since there were two missing values from the data collected 104 responses were analyzed and the mean statistical vales range between 3.18 and 4.55 whose average is 3.79 that is closer to the value of 4 which means that majority of respondents agree COVID-19 is not just a mare monster that hunts their working environment and personal life yet it has brought a change with unexpected opportunities.

like an increase in the cargo and logistic department of the airline not forgetting the award Ethiopian cargo and Logistics Service wins “ Best Cargo Airline-Africa” award on October 30,2020 for the great contributions placed by transportation of medication and humanitarian relief, respondents of this study also agree that ET has started implementing new technologies at check points, baggage receiving and dispatching points, the number of customers has also increased for the Ethiopian Sky light hotel as a safe, luxurious self-isolation place for those who has the potential to stay in the hotel financially and respondents wants to have additional health incentives in relation to COVID-19 their working environment puts them in too.

Table 4. 27 Descriptive Statistics On Opportunities that COVID-19 has brought to Ethiopian Airlines during the pandemic seasons of 2019/2020

| Valid | Because of the service it provided during the lockdown seasons to different destinations while other airlines prohibit there airlines from flying ET annual income has increased | | | Because of the strategically changes taken to temporarily change passenger aircrafts to cargo; the fright transporting capacity of ET has increased | | | ET has created new technologies to decrease physical contact at check points, cargo items receiving and dispatching | | | Number of customers who uses the SKY Light Hotel has increased since the hotel was one of the selected Quarantine staying places for passengers whose destiny was Ethiopia | | | Staff members of the airline got some additional health incentives because of the high exposure their job has concerning COVID-19 | | | | | |
|-------|--|----------------|-------|---|----------|-------------------|---|---------|--------------------|--|---------|--------------------|---|---------|--------------------|-----------|---------|--------------------|
| | Total | Strongly Agree | Agree | Neutral | Disagree | Strongly disagree | Frequency | Percent | Cumulative Percent | Frequency | Percent | Cumulative Percent | Frequency | Percent | Cumulative Percent | Frequency | Percent | Cumulative Percent |
| 106 | 35 | 39 | 26 | 6 | - | - | | | | | | | | | | | | |
| 100. | 33.0 | 36.8 | 24.5 | 5.7 | - | - | | | | | | | | | | | | |
| | 100.0 | 67.0 | 30.2 | 5.7 | - | - | | | | | | | | | | | | |
| 106 | 64 | 36 | 6 | - | - | - | | | | | | | | | | | | |
| 100. | 60.4 | 34.0 | 5.7 | - | - | - | | | | | | | | | | | | |
| | 100.0 | 39.6 | 5.7 | - | - | - | | | | | | | | | | | | |
| 106 | 27 | 37 | 33 | 9 | - | - | | | | | | | | | | | | |
| 100. | 25.5 | 34.9 | 31.1 | 8.5 | - | - | | | | | | | | | | | | |
| | 100.0 | 74.5 | 39.6 | 8.5 | - | - | | | | | | | | | | | | |
| 106 | 17 | 25 | 55 | 9 | - | - | | | | | | | | | | | | |
| 100. | 16.0 | 23.6 | 51.9 | 8.5 | - | - | | | | | | | | | | | | |
| | 100.0 | 84.0 | 60.4 | 8.5 | - | - | | | | | | | | | | | | |
| 106 | 13 | 33 | 32 | 16 | 12 | 12 | | | | | | | | | | | | |
| 100. | 12.3 | 31.1 | 30.2 | 15.1 | 11.3 | 11.3 | | | | | | | | | | | | |
| | 100.0 | 87.7 | 56.6 | 26.4 | 11.3 | 11.3 | | | | | | | | | | | | |

Source: Own Survey (2021)

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

The aviation industry currently supports African Countries GDP by \$80billion and it provides 6.8million jobs (IATA, 2020). Air transport is integral to growth of any modern economy by connecting people, enabling business, trade and tourism, it links vast culture and delivers humanitarian services where needed. Yet the aviation industry faces both natural and manmade obstacles and the current pandemic of COVID-19 has place its effect in the aviation industry; lock downs, cancelation of flight and fear it brought to the tourism industry has lay its shadow in the aviation industry and the revenue loss of Airlines in the year 2020 as compared to the year 2019 was \$8.6billion (International Civil Aviation Organization (ICAO), 2020). Ethiopian airlines being one of the leading airlines in Africa have faced both the damages and the opportunities that COVID-19 has brought. For this the findings of these case study research shows that Ethiopian Airlines has invested money that was basically related with COVID-19 prevention and treatment issues that the company faces as un-foreseen miscellaneous coasts that the organization has spent by providing self protective equipments like face masks and PPE, disinfecting and sanitizing coasts for the aircrafts as well as to cleanse the working environment of the organization, building ETs' own quarantine center and all the related coasted that are require for this purpose, both local and international flights were canceled and the benefits that were supposed to be generated from this act were lost, new technologies were supposed to be implemented to screen passengers and employees for temperature and symptoms of COVID-19 that has costs related to it and many more unmentioned "Cons" were found from the data collected both using questionnaire and conducted interviews. On the "Pros" side the airline has manage to use its passenger aircrafts as cargo by removing the seas and was playing the Lions role by distributing frights and medical equipments throughout the world for this we can mention one of the awards the airline has won Excellence for outstanding crisis Leadership 2020 Award by Global finance magazine on November 2020, ET has focused on using the resources at hand to

support its weekend group of the organization and the Ethiopian Maintenance Repair and Overhaul (MRO) Services has managed to work on the passenger aircrafts that required their seats to be removed to become temporary cargo aircrafts and they did that successfully and increased the capacity of Ethiopian Cargo Airline and Logistics Company by half ,MRO has also managed to repair aircrafts of ET and other airline aircrafts better than any other year since the situation has led many airlines to ground their aircrafts and bring them to Addis Ababa for repair and maintenance. Ethiopian Airport Enterprise on the other hand got the chance to use its runway as aircraft parking and has managed to generate income, like many international hotels in Addis Ababa Ethiopian Hotel (Sky light hotel) and Tourism Services did not lock its doors during this pandemic rather it managed to serve as a luxury self-isolation/ “Quarantine” place for passengers whose’ destiny was Addis Ababa and served its customers with safe and care filled service.

5.2 Conclusion

Recently Airports have developed towards multiple service business organization and understanding passenger experience at the airports has become the crucial factor for airport management, the new structure of Ethiopian Airlines Group created on 2017 have Seven diversified aviation strategic business units these are the key survival point that ET strategically managed to survive through these COVID-19 Pandemic season; by supporting the group that was most affected “ Ethiopian Passenger Airline and Ethiopian in-flight catering service” with the other business groups like Ethiopian MRO, Ethiopian Cargo and Logistics; other African Aviation industries should take this related business structure to support their airiness in cases of down times cause because of pandemics and other issues similar.

From the data collected we have seen that Ethiopian airlines implements project integration management methods frequently when it comes to pandemics management, and the organization also prepares project risk management plan, places training programs for its employees on how to uses COVID preventing methods and equipments and has made necessary physical changes to its aircrafts as well as to the organizations working environment by doing so these company was able to keep its employees on truck on a safe was and it was also was able to make some new benefits.

5.3 Recommendations

- ❖ From the data collected and the analysis performed we have found that Ethiopian Airlines has taken a good overall safety measures through its management system when it comes to placing funds, serving with care and preparing the necessary safety equipment that its employees and customers use in the airline compound and its service areas. It is highly appreciated and encouraged to continue to do so both for the company/ET and other African airlines to follow similar procedures.
- ❖ From the data results we have learned that it is necessary to place frequent and necessary training to be given to the staff members and they have also encourages there company to increase their health incentive since the environment they work with involves lots of volatile movement and contact with lots of customers in a day which increases their exposure to pandemics.
- ❖ Airlines if they could improve or maintaining passenger experience and waiting times are tremendously important for the successful management of airports.
- ❖ Recently Airports have developed towards multiple service business organization and understanding passenger experience at the airports has become the crucial factor for airport management, the new structure of Ethiopian Airlines Group created on 2017 have Seven diversified aviation strategic business units these are the key survival point that ET strategically managed to survive through these COVID-19 Pandemic season by supporting the group that was most affected “ Ethiopian Passenger Airline and Ethiopian in-flight catering service” with the other business groups like Ethiopian MRO, Ethiopian Cargo and Logistics. So other African Aviation industries should take this related business structure to support their airiness in cases of down times cause because of pandemics and other issues similar.
- ❖ From the result we have observed that disinfecting aircrafts and airline compounds got the highest acceptance and new systems needs to also be implemented for the purpose of disinfecting of passengers and employees of organization for instance a walk-through-gate with different sensors (Hossain *et al.*, 2020) and tunnel system similar to security X-ray machines placed at get can be used (Murthy, 2020).

5.4 Future research direction

This study significantly focused on the Pros and Cons of COVID-19 on African Aviation industries focusing on Ethiopian Airlines as a case study and takes the management perspective of the organization and it didn't include other perspectives of management like financial management, operational, commercial and marketing system of ET during the pandemic season, in the future interested researcher can conduct detail investigation on the above stated research points in relation to pandemics and their effect, other African countries researchers can also broaden this research taking their countries airline as a case study so that we could have a substantial information from different parts of the continent.

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The COVID-19 Pandemic and Transportation Engineering Chris Hendrickson, Ph.D., NAE, Dist.M.ASCE, Hamerslag University Professor of Engineering Emeritus, Carnegie Mellon Univ., 5000 Forbes Ave., Pittsburgh, PA 15213 (corresponding author). ORCID: <https://orcid.org/0000-0002-9812-3580>. Email:cth@cmu.edu

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APPENDICES



St. Mary's **ትድብ ግርያም**
University **የኢትዮጵያ**
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committed to excellence

School of Graduate Studies

Masters program in project management (Questionnaire)

Dear Sir/ Madam,

The purpose of this questionnaire is to collect data for the study entitled “**Pros and Cons of COVID-19 On African Aviation industry, The case of Ethiopian Airlines**” as partial fulfillment for the Master of Arts in Project Management response. Your genuine response for the questions asked on the upcoming pages will have great contribution for the success of this study. Any of the responses you have kindly given will be used for educational purpose and it is confidential and anonymous.

Thank you in advance for your kind cooperation.

If you have any inquires concerning this questionnaire of any ambiguities and unclear sentences please contact me via. 0911305848 on my personal phone number or e-mail address on: lealphagirma@gmail.com

General instruction:

- On Please do not write your name or address on this questionnaire
- Your participation in this study is fully voluntary
- Please tick “√” on the appropriate column for your response for the closed ended questions among the provided alternatives and please write your response on the space provided for open-ended questions.

Part I:- Back Ground information

1.1 Gender

Male

Female

1.2 Educational Back Ground

High school graduate Diploma First Degree Masters
Degree PHD Other

1.3 How many years of service have you given in these Organization

>5years >10years >15years >20years

1.4 Please define the functional area which defines your position within your organization

- | | | | |
|--------------------------|------------------------------|--------------------------|--------------------------------------|
| <input type="checkbox"/> | Ethiopian MRO Services | <input type="checkbox"/> | Ethiopian Cargo& Logistics |
| <input type="checkbox"/> | Ethiopian Aviation Academy | <input type="checkbox"/> | Ethiopian in-flight Catering Service |
| <input type="checkbox"/> | Ethiopian Passenger Airline | <input type="checkbox"/> | Ethiopian Hotel & Tourism Services |
| <input type="checkbox"/> | Ethiopian Airport Enterprise | | |

Part II:- Assessment questions on the Project management Practices in relation to COVID-19 influence on ET

1. The following questions are asked to identify which Project integration management methods are best practiced in ET(Ethiopian airlines) during COVID-19 pandemic season

(i.e the numbers are given to designate the act is practiced 5=always, 4=frequently but not always 3= it is practiced once in a while/seldom 2= it is rarely practiced 1= it is never practiced)

| No. | Item | Always (5) | frequently (4) | Seldom (3) | Rarely (2) | Never (1) |
|-----|--|---------------|-------------------|---------------|---------------|-----------|
| 1 | ET develops project charter for pandemics like COVID-19 | | | | | |
| 2 | ET develops preliminary project scope management as the spread of COVID-19 was announced pandemic by WHO | | | | | |
| 3 | ET has Developed project management plan to mitigate risk of COVID-19 | | | | | |
| 4 | ET has Developed and manage project execution plan accordingly to reduce COVID-19 transmission | | | | | |
| 5 | ET has a strong Monitor and control project management team established focused on fighting COVID-19 | | | | | |
| 6 | ET has prepared Work integrated change method to control effect of COVID-19 on the airlines | | | | | |

2. The following questions are asked to identify which Project risk Management methods are best practice at ET (Ethiopian airlines) during COVID-19 pandemic season

(i.e the numbers are given to designate the act is practiced 5=always, 4=frequently but not always 3= it is practiced once in a while/seldom 2= it is rarely practiced 1= it is never practiced)

| No. | Practiced acts | Always (5) | frequently (4) | Seldom (3) | Rarely (2) | Never (1) |
|------------|--|---------------|-------------------|---------------|---------------|--------------|
| 1 | ET implements Process risk management plans in all its administrative groups to fight COVID-19 spreading | | | | | |
| 2 | Planning Risk identification is part of the managerial practice to fight pandemics that could affect ET | | | | | |
| 3 | There is a team designated for Risk identification in ET | | | | | |
| 4 | Qualitative risk related with COVID-19 are analyzed timely to take action | | | | | |
| 5 | Quantitative risk related with COVID-19 are analyzed timely to take action | | | | | |
| 6 | Timely Risk response planning are being implemented at all levels of ET administrative groups | | | | | |
| 7 | ET implements Risk monitoring and control system at all its functional area | | | | | |

Part III:- The following questions are asked to identify which safety and risk management measures are being used in ET(Ethiopian airlines)

1. Please rank the following (1-5) based on how important you think they are to be considered best for COVID-19 risk minimization in Airports

(i.e Rank them from the most important=5 to the least important=1)

| No. | Necessary Practices to fight COVID-19 | Rank |
|-----|--|------|
| 1 | Temperature and symptom screening | |
| 2 | Use of masks and PPE(Personal Protective equipments) | |
| 3 | Physical distancing | |
| 4 | Cleaning and disinfecting infrastructure | |
| 5 | COVID-19 testing and antibody testing | |
| 6 | Immunity passports | |
| 7 | Measures to assist contact tracking | |
| 8 | Measures related to pilots and crew members and their layover experience | |

2. Listed below are statements that are related to the current COVID-19 prevention methods practiced by ET.

Please rate them as per your opinion to indicate if you 5=strongly agree, 4=mildly agree, 3=if you have neutral opinion, 2=disagree and 1=strongly disagree to the questions provided in column 2 by placing “√” on the space provided

| No. | Questions | Strongly agree (5) | Agree (4) | Neutral (3) | Disagree (2) | Strongly Disagree(1) |
|-----|---|--------------------|-----------|-------------|--------------|----------------------|
| 1 | ET has placed sufficient finance to support COVID-19 Protocols | | | | | |
| 2 | There are frameworks and guideline designed by ET to prevent spread of COVID-19 | | | | | |
| 3 | Adequate trainings are given on how to perform sanitation and cleaning service both in the aircrafts, terminals, aviation academy, cargo station and office of ET | | | | | |
| 4 | There is enough quarantine space provided for COVID-19 suspected passengers and transit travelers | | | | | |
| 5 | Cabin Crews have taken adequate training on self and customer protecting protocols for COVID-19 | | | | | |

3. In your Opinion which physical changes are mandatorily needs to be adapted to the aircrafts, offices and service sectors of ET to minimize risk of being infected by COVID-19

Please rate them as per your opinion to indicate if you 5=strongly agree, 4=mildly agree, 3=if you have neutral opinion, 2=disagree and 1=strongly disagree to the questions provided in column 2 by placing “√” on the space provided

| No. | Questions | Strongly agree (5) | Agree (3) | Neutral (3) | Disagree (2) | Strongly Disagree(1) |
|-----|---|--------------------|-----------|-------------|--------------|----------------------|
| 1 | Number of seating locations needs to be designated/reduced for crew and Executive seats | | | | | |
| 2 | Passenger seats must be reduced to create social distancing | | | | | |
| 3 | Air filtering systems needs to be installed in the aircrafts to filter the air in the aircraft during flights | | | | | |
| 4 | Air craft’s with high Cruising speeds are the once to give service this days to reduce the flight time and the time passengers spend in the aircrafts | | | | | |
| 5 | Self Protective measures like wearing face masks and using hand sanitizers needs to be strictly applied in terminals and the aircrafts | | | | | |

4. What sort of Possible opportunities did COVID-19 brought to ET

Please rate them as per your opinion to indicate if you 5=strongly agree, 4=mildly agree, 3=if you have neutral opinion, 2=disagree and 1=strongly disagree to the questions provided in column 2 by placing “√” on the space provided

| No. | Question | Strongly agree (5) | Agree (4) | Neutral (3) | Disagree (2) | Strongly Disagree(1) |
|-----|---|--------------------|-----------|-------------|--------------|----------------------|
| 1 | Because of the services it provided during the lockdown seasons to different destinations while other airlines prohibit there airlines from flying ET annual income has increased | | | | | |
| 2 | Because of the strategically changes taken to temporally to change passenger aircrafts to cargo fright transporting capacity of ET has increased | | | | | |
| 3 | ET has created new technologies to decrease physical contact at check points, cargo items receiving and dispatching | | | | | |
| 4 | Number of customers who uses the SKY Light hotel has increased since the hotel was one of the selected Quarantine staying places for passengers whose destiny was Ethiopia | | | | | |
| 5 | Staff members of the airline got some additional health incentives because of the high exposure their job has concerning COVID-19 | | | | | |



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committed to excellence

School of Graduate Studies

Masters program in project management

Semi-Structured Interview Questions for Management staffs of ET (Ethiopian Airlines)

1. What were the successful and unsuccessful new practices of project management performed during the COVID-19 pandemic seasons of 2019/2020G.c?
2. What were the implications of the new ways of working at individual, Project, Program, Portfolio and organization level?
3. What new leadership approaches did ET management implement to reduce impact of the pandemic?
4. How COVID-19 did socio-economically impacted Ethiopian Aviation industry?
5. How did Ethiopian Airline management system is affected by COVID-19?
6. How long do you think will take Ethiopian Airlines to returning to its normal service system?
7. Does ET have safety directive and Guidance to operators to keep themselves and customers safe from the pandemic of COVID-19?