

Why Ethiopian Airlines Becomes Successful and What are the Lessons for other Public  
Companies?

Selamawit G/egziabher

A Thesis Submitted to the Department of Economics

Presented in Partial Fulfillment of the Requirements for the Degree of Master of Science  
in Economics (Economic Policy Analysis)

Addis Ababa University

Addis Ababa, Ethiopia

June 2012

**Addis Ababa University**  
**School of Graduate Studies**

This is to certify that the thesis prepared by Selamawit G/egziabher, entitled: *Why Ethiopian Airlines Becomes Successful and What are the Lessons for other Public Companies?* and submitted in partial fulfillment of the requirements for the Degree of Master of Science (Economic Policy Analysis) complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Signed by the Examining Committee:

Examiner\_\_\_\_\_Signituer\_\_\_\_\_Date\_\_\_\_\_

Examiner\_\_\_\_\_Signituer\_\_\_\_\_Date\_\_\_\_\_

Advisor\_\_\_\_\_Signituer\_\_\_\_\_Date\_\_\_\_\_

\_\_\_\_\_

Chair of Department or Graduate Program Coordinator



## ***ABSTRACT***

Why Ethiopian Airlines Becomes successful and what are the Lessons for Other Public Companies?

Selamawit G/egziabher

Addis Ababa University, 2012

This research has been done to solve the relatively poor performance problem of different public companies and enhance economic growth of Ethiopian economy through public sector capacity building. Accordingly, this study examined the success of Ethiopian Airlines, its determinant factors as well as lessons that can be taken by other public companies from its experience. In doing that, descriptive as well as econometric analysis based on performance indicators and endogenous growth model are respectively used.

The results of descriptive analysis indicate that Ethiopian Airlines is a successful enterprise. This is mainly because the airline is a profitable, with a culture of continuous improvement, paramount productivity growth, higher market share etc. In this regard, several factors have contributed for the success of the airline: its working standard, overall system, dedication of workforce, safety trend, best practice, current and recurrent trainings, formation history, state art technology, autonomous management, its market strategy, visionary leadership style etc. Similarly, the results of econometric analysis reveal that the major determinants for the growth/success of Ethiopian Airlines are physical capital accumulation and human capital creation. Therefore, it is the combination of the earlier qualitative determinants with both physical and human capital that has played a significant role for its success. Finally, based on the findings, government and different public enterprises can take the aforementioned success leading factors as a lesson. Provided that different public enterprises have different character of their own that they should apply everything based on the type of their business.

## **Acknowledgements**

First of all, I would like to thank God and St. Marry. Then, I would like to really thank and appreciate my advisor Dr. Tadele Ferede for his remarkable comments, suggestions and over all advice without which this thesis would not be completed in this form. I also like to thank Dr. Alemayhu Geda who has played a vital role in doing this research and even in shaping me how to do a good research. My great thanks also go to the two staff members of Ethiopian Airlines Mr. Henok and Mr. Antenhe, for giving me their valuable assistance in providing the necessary data to do the thesis.

I am also very grateful to all people who directly and indirectly helped me in doing this thesis; especially I am very grateful to my husband Mr. Nebyu Alemkere, who always gives me his encouragement and invaluable moral support. I would also like to appreciate Mr. Berhan Fiseha, for his help in arranging to meet strategic peoples in collecting my data.

I am also thankful to all staff members of Ethiopian Airlines specially Wegayehu, Yaynabeba (Fifi), Biniyam, Rediet, Ato Adamu, Ato Melke, and all public relation staff members, for their helpful support ever since I have started to do this thesis up to its final draft. Besides, I would like to be grateful to Ato Fekadu (Ministry of Transport), Tewodros (EDRI), Amin, Tewodros, Kassahun, Selomon and all economic association staff members.

Last but not least, my special gratitude goes to my family, especially to my mother, brothers and my beloved baby boy Henok, who all gave me their valuable love, care and moral support.

List of Figures .....	viii
List of Tables .....	ix
List of Appendices .....	x
Acronyms.....	xi

## TABLE OF CONTENTS

CHAPTER ONE: INTRODUCTION .....	1
1.1 Background of the Study .....	1
1.2. Statement of the Problem.....	3
1.3 Objective of the Study .....	4
1.4. Research Questions.....	4
1.5. Method of Analysis.....	5
1.6. Scope of the Study .....	5
1.7 Significance of the Study .....	6
1.8 Limitation of the Study .....	6
1.9 Organization of the Study .....	7
CHAPTER TWO: BACKGROUND OF ETHIOPIAN AIRLINES .....	8
2.1 Brief History of World, Africa and Ethiopia's Air Transportation.....	8
2.2 Historical Background of Ethiopian Airlines.....	10
2.2.1 The Pre- foundation and Beginning of Ethiopian Airlines .....	11
2.2.2 Destinations and Fleet.....	14
2.3 Ethiopian Airlines at Different Regimes.....	15
2.3.1 During the Emperor Regime .....	15
2.3.2 During the Derg Regime .....	16
2.3.3 The Transitional Government Period and EPDRF Period .....	17
2.4 Contribution of Ethiopian Airlines to Economic Growth of Ethiopia .....	18

2.4.1 The Airline and Transport Sector.....	18
2.4.2 Tourism Sector.....	20
2.4.3 Employment.....	21
2.4.4 Other Sectors.....	22
CHAPTER THREE: LITERATURE REVIEW .....	23
3.1 Theoretical Literature.....	23
3.1.1 Theoretical Background of Endogenous Growth Theory .....	23
3.2 Empirical Literature.....	31
3.2.1 Empirical Findings on the Determinants of Long run Growth. ....	31
3.2.2 Empirical Findings on the Success Determinants of Different Airways .....	33
3.2.3 Critical Evaluation of the Empirical Findings .....	36
CHAPTER FOUR: METHODOLOGY OF THE STUDY .....	38
4.1 Data Type and Source.....	38
4.2. Measuring Standards for Success of a Company Business (Part I) .....	40
4.3 Econometric Model Specification (Part II).....	43
4.3.1 Data Type, Source and Variable Definition.....	45
4.3.2 Estimation Procedure .....	46
CHAPTER FIVE: DESCRIPTIVE AND ECONOMETRIC ANALYSIS.....	55
5.1 Introduction.....	55
5.2 Overall Performance of Ethiopian Airlines .....	56
5.2.1 Management and Organizational Structure of Ethiopian Airlines .....	56
5.2.3 Strategic Plan of Ethiopian Airlines.....	60
5.2.3 Operational Level and Financial Performance of Ethiopian Airlines .....	63
5.2.4 Productivity.....	72
5.2.5 Ethiopian Airlines Route/Destination Details.....	74
5.2.6 Ticketing Offices and Sales Agent of Ethiopian Airlines .....	74

5.2.7 Ethiopian Airlines Fleet Details .....	75
5.2.8 Internal and External Relation of Ethiopian Airlines .....	77
5.2.9 Data Analysis .....	80
5.2.10 Major Challenges of Ethiopian Airlines .....	84
5.3 Evaluation of Ethiopian Airlines Overall Performance .....	85
5.3.1 Is Ethiopian Airlines Successful? .....	85
5.3.2 Determinant Factors for the Success of Ethiopian Airlines .....	86
Part II: Econometric Analysis .....	90
5.4 Empirical Results and Interpretation.....	90
5.4.1 Unit Root Test.....	90
5.4.2 Co-Integration Test .....	91
5.4.3 Vector Error Correction Model.....	94
5.5 What Lessons Can Other Public Companies Learn From the Experience of Ethiopian Airlines?.....	97
CHAPTER SIX: CONCLUSION AND IMPLICATIONS .....	100
6.1 Conclusion .....	100
6.2 Implications .....	101
REFERENCE.....	103
APPENDICES <sup>27</sup> .....	114



## **List of Figures**

Figure 5.1 Ethiopian Airlines Summarized Organizational Chart of 2010/11-----	60
Figure 5.2: Trends of Available Seat Kilometer, Revenue Passenger Kilometer, Available Tone Kilometer (1946/47-2010/11) -----	65
Figure 5.3: Load Factor Trend of Ethiopian Airlines (1957/58-2010/11)-----	66
Figure 5.4: Operating Revenue Trend from 1980/81-2010/11 in Millions-----	67
Figure 5.5: Revenue by Business Segment in % (Percentage) 2009/10-----	68
Figure 5.6: Ethiopian Airlines Revenue by Geographical Segment 2010/11-----	68
Figure 5.7: Expense Trend of Ethiopian Airlines 1980/81-2010/11-----	69
Figure 5.8: Components of Ethiopian Airlines Expenditure 2009/10-----	70
Figure 5.9: Profit Trend of Ethiopian Airlines 1981/81-2010/11 -----	71
Figure 5.10: Trend of Passenger numbers of Ethiopian Airlines (1946/47-2010/11)-----	72

## List of Tables

Table 5.1 Achievement of Vision 2010 -----	62
Table 5.2 Productivity 2003/04 - 2009/10-----	73
Table 5.3: Growth of Productivity from 2003/04-2009/10-----	73
Table 5.4: International and Domestic Destination of Ethiopian Airlines 2010/11 -----	74
Table 5.5: Ethiopian Airlines Ticket Offices -----	75
Table 5.6: Ethiopian Airlines Sales Agent Offices -----	75
Table 5.7: Domestic and International Passenger Fleet Mix-----	76
Table 5.8: Domestic and International Cargo Fleet Mix 2009/10-----	77
Table 5.9: Code Share Agreements of Ethiopian Airlines in 2010-----	79
Table 5.10: Respondents Reply on Success of Ethiopian Airlines -----	81
Table 5.11: Respondents Reply on Success Measuring Criteria's -----	82
Table 5.12: Respondents Reply on Success Determinant Factors of Ethiopian Airlines-----	83
Table5.13: Augmented Dickey Fuller (ADF) test on level and First difference -----	91
Table 5.14: Co-integration test result of $\lambda$ trace & $\lambda$ max -----	92
Table5.15: Coefficients of the long run parameters -----	94
Table5.16: Results of error correction model with Log profit (LNPROFIT) as dependent variable-----	95
Table5.17: Parsimonious Error Correction Model-----	96

## **List of Appendices**

Appendix 1: Survey Questionnaire-----114

Appendix2: Diagnostic tests of the Econometric Analysis-----119

Appendix3: Tables-----124

## **List of Acronyms**

ADF: Augmented Dickey Fuller

AFRAA: Africa Air Association

ASK: Available Seat Kilometer

ATK: Available Tone Kilometer

CEO: Chief Executive Officer

DF: Dickey Fuller

EAA: East African Airways

EAC: East African Community

EDRI: Ethiopian Development Democratic Front

EPRDF: Ethiopian People's Revolutionary Democratic Front

ESCWA: Economic and Social Commission for Western Asia

ET: Ethiopian Airlines

GDP: Gross Domestic Product

HRM: Human Resource Management

I(1): Integrated of order one

PAX: Passengers

RPK: Revenue Passenger Kilometer

TWA: Transcontinental and Western Airlines

VAR: Vector Autoregressive

VECM: Vector Error Correction Model



# **CHAPTER ONE: INTRODUCTION**

## **1.1 Background of the Study**

Ethiopian Airlines (Ethiopian) (ET) is a government owned company found in the capital city of Ethiopia, Addis Ababa, with its head office located at Bole International Airport (Ethiopian Fact Sheet 2011). The airline, which was established on 1945, is one of the worlds and Africa's oldest airlines, with over sixty years of existence (Iches et.al 2005). On April 08, 1946, the airline started operation by making its first domestic flight to Gondar and international flight to Cairo (Saunders 1971). This makes the airline to take the pioneer position in African air transport industry (Bahru 1988).

Air transport provides several far reaching benefits to different countries worldwide (Aviation n.d.). Explicitly, it is essential to create employment opportunity, growth and sustainability of tourism, fast and efficient trade, sustainable economic growth and the likes (Aviation n.d.). In this regard, Ethiopian Airlines provides several benefits to the country as well as to different stakeholders through the provision of different services to its customers (Civil Aviation Authority 2007). For instance, by being source of direct and indirect employment and hiring essential amount of human resource, it plays a significant role in an attempt to overcome the problem of high unemployment in the country (Nyaringo 1964). Besides, it encourages the national tourism sector by facilitating transportation for a number of tourists from different parts of the world and it also has other benefits (African Aviation 2006; Civil Aviation Authority 2011), which would be discussed later in detail.

Additionally, different literatures categorize Ethiopian Airlines as one of the successful airlines found in Africa and as a major industry in Ethiopia (Ethiopian Factsheet 2010). In a thesis entitled *African Air Transport in the 21<sup>st</sup> Century: a case study of a contrasting experience of Nigeria and Kenya*, describes Ethiopia as a country which has a successful air transport experience and in the detail analysis Ethiopian Airlines is recognized as a successful airline (Fatokun 2005). Similarly, in a thesis entitled as *The Economic Effects of Progressive Air Transport Liberalization in Africa: The Case of City- Pair Routes to/from Addis Ababa*, Ethiopian Airlines is considered as a successful African flag carrier airline (Megersa 2007). Moreover, the airline's 2010 annual report attests the airline's significant revenue increase despite the apparent declining of world's aviation revenue due to the global economic downturn (Ethiopian Annual Report 2010).

Likewise, different studies pointed out several factors for the exhibited success of the airline. Accordingly, the credibility of its training facility is one reason for the outstanding record of service that the airline has maintained (Saunders 1971). In line with this, the utilization of Information and Communication Technology (ICT) at organizational level plays a major role for the success of the institutional business. And, it is asserted that Ethiopian Airlines uses such technology at a large scale (Alazar n.d). Hence, this in turn, has played a significant role in enabling Ethiopian Airlines to make major enrichment in its business (Selamta 2001). The safety record of the airline has as well played a vital role for its success (Bofinger 2009). In addition, dedication of the human resource, promotion and others are also mentioned as factors for the great performance of the company (African Aviation 2006; Nyaringo 1964).

All in all, the aforementioned list of contributing factors for the success of Ethiopian Airlines should not be taken as exhaustive. Therefore, the purpose of this research is to see whether they actually are the reasons for its success or not. And also, it is to see if there are other factors to that effect. Thus, with the support of extensive research an attempt is made to throw light into the success story of Ethiopian Airlines so as other public companies can grasp a valuable experience. In doing so, the determinant factors are identified and can be used as a tool for performance upgrading of other public companies in Ethiopia.

## **1.2. Statement of the Problem**

Having a low per capita income, Ethiopia is among the countries with an appalling level of poverty in the world (Mankiw 2008; Daniel 2011). As a result, the government of Ethiopia has made different reforms at different times. Of which, the 1992 reform has two major objectives which include reducing poverty and enhancing economic growth of the country. Therefore, to meet the aforementioned objectives the government has planned different strategies and building capacity of the public sector is one amongst (Alemayehu & Tadele 2004).

Public sector refers to the group of enterprises owned by a government that sell goods and services in a market (Jones 1982). Especially in developing countries, services such as telecommunications and postal services, electric and gas utilities, most forms of non-road transportations; mainly airlines and railroads, banks, security and defense etc are publicly owned (Megginson & Netter 2001). One major justification for the need of such public enterprises is the fact that they are considered as necessary tools to promote economic growth (Rondinelli & Iacono 1996 cited by Megginson & Netter 2001).



In Ethiopia the airline industry, banking industry, oil industry and so forth are publicly owned (Alazar nd). More specifically, some of the government owed enterprises in Ethiopia include the Ethiopian Airlines, the Ethiopian Shipping lines, the Ethiopian Telecommunications Corporation and Commercial Bank of Ethiopia etc (Alemayehu & Tadele 2004).

Being Ethiopian Airlines is a public owned company; the concern of the researcher here is to evaluate the performance of this company in order to ensure its success and to determine the reasons for that. So that, lessons for other public companies can be drawn from its experience which this helps to build the capacity of the public sector. Then, this in turn, helps to meet one major aim of the country: enhancing economic growth of Ethiopia.

### **1.3 Objective of the Study**

Analyzing why Ethiopian Airlines becomes successful and identifying the lessons for other public companies is the core objective of the analysis. The specific objectives include:

- to assess the performance of the airline
- to determine factors for the success of the airline and
- to draw lessons for different public companies

### **1.4. Research Questions**

Hence, this study deals with the following questions:

- Is Ethiopian Airlines Successful?

- What are the factors that contribute for the success of the airline?
- What are the lessons that can be taken from the experience of the airline by other public companies?

## **1.5. Method of Analysis**

In this study descriptive and econometric analysis methods are used. In the descriptive analysis, both primary as well as secondary data are collected from Ethiopian Airlines and various air transport journals. In this regard, personal observation, semi-structured questionnaire and interview are used to collect the primary data. Besides, 30 years time series data is gathered from Ethiopian Airlines and Ministry of Transport so as to make a co-integration analysis using co-integrating VAR.

## **1.6. Scope of the Study**

In this research an attempt is made to find out the success/growth determinants of Ethiopian Airlines and lessons for other public enterprises from the airlines experience. Besides, the researcher treats success evaluation of the airline as part of the study so that it can be used as groundwork while undertaking this study. Then, the research is made based on the data gathered from Ethiopian Airlines staff members which specifically is from head office of the airline (Bole International Airport), Ethiopian Airlines ticketing offices and Civil Aviation Authority. While analyzing some data, over 30 years of time period is taken to observe the trends of different variables.

In this study no comparison is made between Ethiopian Airlines and other public companies due to the fact that there is much dissimilarity among them and it needs much more time to make detail analysis. Besides, the objective of the study is to identify

possible lessons for others relying on Ethiopian Airlines which is evaluated based on performance indicators. Therefore, this research forwards only an implication for the different public companies of the country so that they can take the lesson in a way that matches the business system of their own company.

### **1.7 Significance of the Study**

As pointed out earlier, the government of Ethiopia has made several objectives in order to eradicate the unfavorable poverty condition of the country. One way for doing that is to enhance the economic growth of the country through different ways, among which, building the capacity of the public sector can play a vital role. Thus, the primary significance of this study is to find a way to enhance the public sector performance via the lessons taken from the success experience of Ethiopian Airlines. The study is also essential to provide additional findings on the issue and can also be used as groundwork to do other related research issues.

### **1.8 Limitation of the Study**

While conducting this study several limitations were there which hold back the research not to produce even better work than this. Therefore, the basic limitations of the study include:

- Limited sample size due to the fact that Ethiopian Airlines does not allow to have large sample size which is in fact with a justification that it consumes much time of the workforce and brings work inefficiency in the company.
- This study cannot made analysis about different public companies so that no comparison is made between Ethiopian Airlines and other public companies. So,

the researcher only provides implication for other companies from the success experience of the airline.

- Part of the research depends on respondents' perception towards the success of the airline and the determinant factors as well.
- This research does not go in to detailed analysis about performance evaluation of the airline due to the fact that this issue by itself can be treated as one research topic which needs detailed analysis with plenty of times.
- Due to data limitation, the numbers of observations in the empirical analysis are 30 years.

## **1.9 Organization of the Study**

This thesis comprises six chapters: the first chapter is introduction. The second chapter deals with background of Ethiopian Airlines and in the third chapter, review of theoretical and empirical literatures proceeds. The fourth chapter presents methodology of the study. Then, data analysis and interpretation is addressed in chapter five. The last chapter provides conclusion and implications based on the analysis result.

## **CHAPTER TWO: BACKGROUND OF ETHIOPIAN AIRLINES**

This chapter initially reviews about world, Africa and Ethiopia's air transport history briefly. Then, discussion proceeds with the back ground history of Ethiopian Airlines and important events of the airline during the different regimes of the country. Then, the airline's contribution to the economic growth of Ethiopia is provided. Finally, justifications are made for the above reviews.

### **2.1 Brief History of World and Africa Air Transportation**

Air transportation is a method of transportation by which people as well as materials move from one place to the other through the air (Donohue & Zellweger 2001). The chief advantage of this method is the considerable amount of time saved because of the high speed of the flight (Faulks 1969).

The history of air transportation in the world begins in the year 1903 with the first flight made by Wright brothers in North Carolina (Trani 2005). Afterwards, on January 1, 1914, the world's first scheduled flight was made with across the bay separating Tampa and St. Petersburg, Florida (Bowen & Rodriguez 1988-2011). Subsequently, commercial aviation has progressed starting from World War I and World War II when, better aircrafts were quickly designed and important technological advance in the air transportation was made, which this leads growth in the air transportation (Bowen & Rodriguez 1988-2011). Then, as Bowen and Rodriguez put it out, more than century after the first flight, the aviation now is intertwined in everybody's life across much of the world.

The aviation history in Africa has dual facet, on the one hand the size and terrain situation of the continent calls for a developed aviation. On the other hand the lack of cooperation among the regions especially at the early time of the industry establishment led to isolated development among the regions and no integration of the continent with the rest of the world (MyFundi 2011). As a result, the beginning history of the commercial aviation in Africa is presented separately dividing the continent in to four regions as East Africa, West Africa, South Africa and North Africa.

On the east side of the continent, three countries which include Kenya, Tanzania and Uganda together formed East African Airways (EAA) Corporation in 1946 (Goldstein 1999). Subsequently, in 1967 these three countries formed an economic union called East African Community (EAC) (Debrah & Toroitich 2005). However, after a decade, due to the political divergence among the capitalist Kenya and Socialist Tanzania as well as the crisis of Uganda under the rule of Idi Amid led the termination of the EAC and creation of three autonomous airlines (Goldstein 1999; Debrah & Toroitich 2005).

Likewise, on the west side of the continent, west African countries including Benin, Cameroon, Central African Republic, Chad, Congo Brazzaville, Gabon, Cotdivore, Mali, Mauritania, Niger, Burkina Faso and Senegal jointly signed a treaty which brought Air Afrique in 1961 (Bofinger 2009; Goldstein 1999). However, after being sold to private investors and Air France for \$69 million with debt of \$500 million it collapsed in the year 2001 (Bofinger 2009).

Unlike, the Eastern and Western counterparts the South African commercial aviation history has different evolution (MyFundi n.d). The contemporary South African Airways

was formerly known as Union Airways before it was bought by the South African government and renamed as South African Airways in 1934 (Goldstein 1999; MyFundi n.d). As per the former encyclopedia (MyFundi n.d), a year later, another airway named as South West African Airways was incorporated to the South African Airways. Then, this airline prospered since 1980s and now it is the continent's biggest and successful airline (Iches et.al 2005; Demuren 2007; Bofinger 2009). Finally, the Northern region of the continent is dominated by two major airlines which are Royal Air Maroc and the slightly larger Egypt's national carrier of Egypt Air (Bofinger 2009).

In this regard, contemporarily African air transport industry progresses at different speeds in the different parts of the continent (Fatokun 2005). According to Fatokun, countries such as South Africa, Kenya, Egypt and Ethiopia are relatively successful in their airlines industry, while countries such as Nigeria are referred as relatively less successful. Similarly, another survey reveals that Egypt Air, South African Airways, Kenya Airways, Air Maroc and Ethiopian Airlines are considered as successful flag carrier airways whereas Nigeria Airways, Ghana Airways, Air Afrique, Cameroon Airways and Air Gabon are regarded as less performing Airways across the continent (Demuren 2007).

## **2.2 Historical Background of Ethiopian Airlines**

In Ethiopia air transportation has a long history. The air transport technology is introduced two decades after the Wright brothers made the first flight in 1903. That is, the aviation history of the country dates back to 1921 when Ethiopia's government officials have made a visit to Yemen (Civil Aviation Authority 2007; Eyob 2001). Along with, detail explanation about aviation history with particular attention to Ethiopian Airlines is presented as follows.

### **2.2.1 The Pre- foundation and Beginning of Ethiopian Airlines**

*Pre Foundation:* In Ethiopia, prior to aircraft technology came into existence, the country largely has depended up on horses and mules for journey across the impossible mountain ranges (Bahru 2007; Bahru 1988). The existence of such terrain situation of the country made these means of transport to be dangerous and more time consuming. Hence, airplane, which does not require heavy road, terrain or bridges, provides a perfect solution for such problems that prevailed in most parts of the country (Bahru 1988).

So, this new technology becomes visible when the first two aircrafts had landed in the late 1920s which, it regarded as a very historical moment in the country's history of air transport (Ibid). It was on August 18, 1929 that the first aircraft arrived at Gefersa, which is 15 kilometers to west of Addis Ababa (Abel 1972; Bahru 2011). Few months later, the second aircraft had arrived bringing the first air mail delivery (Bahru, 1988).

Training of Ethiopian pilots started in 1930 which was held within and outside the country (Civil Aviation Authority 2007). In line with this, in 1935, the country owned a large size of aircraft through gifts and purchase (Ministry of Information 1965). In such a way, it had accumulated different types of aircraft including the Potez25 A-2 type with a leading position (Bahru 1988). After awhile, the first aircraft named as 'Ethiopia1', had assembled in the country which reveals that the craft technology crossed a new frontier (Civil Aviation Authority 2011). However, by the same year, the Fascist Italy had invaded the country which accompanied by the bombardment and destruction of a considerable number of aircrafts (Mak 2006). Consequently, the progress had been



affected by the war until Italian was defeated in 1941(Nayrigo 1964; Ministry of Information 1965; Bahru 1988).

When the country began to reassert its control on aviation, first it was in the military sphere (Bahru 1988). Then, in 1944 and 1945 Ethiopian Air force was born based on the Ivo Olivetti airport used by Italian during occupation and later used to serve Ethiopian Airlines (Mak 2007). Afterwards, training ground shifted to its present city Harar Meda in Bishiftu. Later on, Emperor Haillessilase , who were interested in the money and military matters for its existence were not so happy to ally with the British's which has the same interest as well (Bahru 1988). As a result, the ruler looks for new partner and selects Americans which had a marginal effect in the war (Ibid). Hence, it was around this time that Ethiopian Airlines came in to being.

*Beginning:* The present day Ethiopian Airlines founded On September 8, 1945 by an agreement made between Ethiopian government and Transcontinental and Western Airlines (TWA) (Mak 2006; Civil Aviation Authority 2007). Sooner, both had signed for the creation of an airline which is called Ethiopian Airlines (Bahru 2007). Following that, the corporation was enjoying an exclusive right of providing domestic air service and TWA was acting as an agent for purchase of aircrafts and spare parts, hiring of personnel to flight, maintenance, accounting, communication and traffic. Moreover, TWA was committed in hiring maintenance and flight crew and other key personnel as well (Ministry of Information 1965; Bahru 1988).

Ethiopian Airlines began to deliver domestic and international service soon after its foundation. Then, the airline had acquired five Douglas C-47 sky trains and made the first

scheduled international flight to Cairo in April 8, 1946 (Ethiopian Herald 1946). Very soon, weekly flight service to Cairo, Djibouti and Aden as well as domestic service to Jimma has been started (Saunders 1971). However, the existing Douglas was incapable to give service for the growing demand; the airline acquired four more sky trains which still could not address the problem. Hence, three more sky trains were purchased and these were the first aircrafts to wear the colorful Ethiopian Airlines livery (Selamta 2001).

*Progress:* Few years after the inauguration, three quarter of the airlines staffs were Ethiopians with key posts still held by the expatriate (Selamta 2006). Subsequently, the Ethiopian government and TWA made a new agreement aiming at operating entirely with Ethiopian personnel (Bahru 1988). Then, in 1957 the first Ethiopian commercial commander Alemayehu Abebe was made his solo flight as captain and the airline also established maintenance facility at Addis Ababa (Selamta 2006; Bahru 2007).

The airline further strengthens during the subsequent years; it expanded and new services were introduced. For instance, the year 1960 for Ethiopian Airlines was a year to enter the jet age and after extensive study it was decided that the Boeing 727 B best met its requirement (Mak 2006; Bahru 2011). In addition, the Lideta airway which was built in 1936 by Italian were too short to meet this need and building new air port at Bole became the only solution and then becomes operational in 1962(Mak 2007). Besides, in 1965 the company changed its legal status from a corporation to share company and changed its title from Ethiopian Air Lines to the more modern name Ethiopian Airlines (Selamta 2006).

Consequently, in 1971, Colonel Semert Medhane was appointed as the first Ethiopian general manager (Bahru 1988). Later, in 1989, the cargo management department was established to afford special attention to the development of the airlines cargo service, which is one third source of revenue for the company (Selamta 2006). In February 1999, the Sheba miles frequent flyer program was launched and construction of a new ultra-modern terminal building at Bole international Airport had started (Selamta 2006). Years later, the new terminal was finished and became operational in the year 2003 (Selamta 2001; Selamta 2006). In 2007, Ethiopian Airlines received awards for its excellent financial performance, passenger growth, and route network expansion, fleet modernization, in flight service and overall customer care from African Aviation Journal (Ethiopian Airlines (B) n.d). In 2009, the airline ordered 35 new airplanes direct from the manufacturers and lately in 2010 Ethiopian opened new Service to Pointe Noire, which is the second largest city in Republic of Congo (Ethiopian Airlines (B) n.d).

### **2.2.2 Destinations and Fleet**

As discussed earlier, the airline made its first international flight to Cairo and it then passed through different stages towards its destinations. Initially, its service was mainly to Djibouti, Aden, Asmara, Khartoum, Cairo, Jeddah and Jimma (Ethiopian Herald 1946; Bahru 1988; Selamta 2006; Ethiopian Factsheet 2010). And then, as it is indicated in some writings, Ethiopian Airlines currently gives service to 60 international and 17 domestic destinations (Ethiopian Fact Sheet 2011).

Likewise, Ethiopian Airlines has accumulated and owned various types of aircrafts (fleet) through grants and purchase at different time periods (Bahru 1988). In 2010, Ethiopian Airlines own one Boeing 777-200LR, eleven Boeing 767-300, eight Boeing 757 200, two

Boeing 757, two 60F (cargo) ,two Boeing 747F (cargo), two MD-11F (cargo),five Boeing 737-700NG,five B737-800W, seven Q 400 and 5 Fokker 50 fleets(Ethiopian Fact sheet 2010). In short, Ethiopian Airlines owns a total of 47 different combination of fleet and it has also ordered a total of 34 different types of fleet including 10 Boeing 787 Dream liner Jets from Boeing and 12 A350-900 from Airbus (Ethiopian Fact Sheet 2011).

## **2.3 Ethiopian Airlines across Different Regimes**

Under this sub-topic, the researcher gives emphasis on different kinds of issues about Ethiopian Airlines which happened during different government periods: Emperor Haileseelase I, the Derg, the Transitional government and EPRDF.

### **2.3.1 During the Emperor Regime**

Prior to 1974, the imperial era was on power with market economic system ideology where, most economic activities are on private control and relatively limited control of economic resources were by the public sector (Tewodros 2010).

It is during this period that a French Potez25 type of fleet has been landed in Ethiopia for the first time piloted by Andre Maillet (Abel 1972). In addition, the first air craft called Ethiopia1' was assembled in Ethiopia and in 1935 large numbers of aircraft were existed in the country which was acquired through gifts and purchase (Civil Aviation Authority 2011). However, in 1936 the fascist Italy came to Ethiopia to revenge the Adwa victory of Ethiopians or the humiliation it has suffered 40 years back, then it has made so many destruction in the country till it is defeated by patriots and British army in 1941 (Bahru 1988). Hence, this fact has influenced the government not to give attention in the development of aviation as well as other developmental issues of the country by making

much concern on the war (Bahru 1988). In contrast, it was during the emperor period that Ethiopian Airlines has been founded by an agreement which is made between Ethiopian government and the Trans World Airlines (TWA) to open a corporation named as Ethiopian Airlines (Semret 2005). Subsequently, the airline was on progress till the down fall of the emperor's regime in 1974.

### **2.3.2 During the Derg Regime**

In Ethiopian history the period from 1974-1991 is referred as the Derg regime where the involvement of the government in the economy was so much intensified (Tewodros 2010). During this period the government pursued command economic system and public sectors were expanding at the expense of the private sector (Tewodros 2010).

During this period the country were under the rule of Mengistu Hailemariam and there were some changes at the airline following the socialist revolution of 1974 (Ethiopian Airlines (A) n.d). By the end of 1970, the airline had nearly 3400 employees and quality of the airline service crashed down as staffing becomes enlarged. Captain Mohammed Ahemd, a long time experienced person of the company, was designated chief operating officers in 1980 and tasked with implementing a turn around. He cut the staff by more than 10 percent while running Ethiopian Airlines on a strictly commercial basis (Ethiopian Airlines (A) n.d).

In line with this, tough the new government had established strong relation with the Soviet Union, ET continued to choose western made aircraft (Ethiopian Airlines (A) n.d). The fleet was replenished with purchase of Boeing 727 in 1979 and wide body Boeing 767 in 1984 (Selamta 2006). Interest payment on the new planes, unfavorable exchange

rate and a slowdown in business from the drought conspired to wipe out the companies restored operating profits in the mid 1980s (Ethiopian Airlines(A) n.d) . Captain Mohammed explained to the New York Times that ET continued to have a good reputation for maintenance and training. It also had an implacable credit rating. By the end of the decade, Britain financial times were calling it the most profitable airlines in Africa. It posted net income of \$24 million of revenue in the 1988/89 fiscal year (Ethiopian Airlines(A) n.d).

### **2.3.3 The Transitional Government Period and EPDRF Period**

After the end of the Derg regime, the Transitional government took power with a reform that transforms the command economic system to market based system (Tewodros 2010). And currently, Ethiopia is under the rule of Ethiopian People's Revolutionary Democratic Front (EPRDF) which this government as well adopts market oriented economic system (Tewodros 2010).

During the down fall of Mengistus' regime, the fighting approached to the capital that ET temporarily relocated its planes to Nairobi (Ethiopian Airlines(A) n.d). In spite of the disruption and chaos, a downturn in the global aviation industry and the weakening of tourism due to the war, Ethiopian Airlines managed to post a profit (Ethiopian Airlines(A) n.d).

For a second time, in 1998 war once again disrupts planes due to the border dispute between Ethiopia and Eritrea. Then, Ethiopian Airlines again relocated its main operations to Nairobi's for most of the two year conflict which results an enormous increase in fuel costs due to rerouting in international flights out of Eritrea airspace. But,

even with this challenge the routes and frequencies of Ethiopian were increasing and in the late 1990 its financial losses were minimal (Ethiopian Airlines(A) n.d). Ethiopian Airlines even continued to survive in the down turn of global aviation which followed the 11<sup>th</sup> September in 2001 of attack on United States by terrorists (Ethiopian Airlines(A) n.d).

In the year 2003, the airline changed its livery for the first time in 56 years and new terminal was built and ET named Ato Girma Wake as its latest chief executive officer following the retirement of Ato Bisrat Nigatu (Selamta 2001; Ethiopian Airlines(A) n.d).

“Deduction brought us this far and passion will take us even further” was the slogan of the company in the 60<sup>th</sup> anniversary and Ethiopian Airlines, which is the loyal Boeing customer, began operating its first Airbus A330 on leased base in 2006 (Selamta 2006; Ethiopian Airlines(A) n.d). Since then, the airline is on progress in every aspect of its business.

## **2.4 Contribution of Ethiopian Airlines to Economic Growth of Ethiopia**

Under this section, the researcher attempts to show the nexus between the airline and economic growth of the country. In other words, an attempt is made to show the roles and contributions of the airline on the different sectors of the economy which include the transport sector, tourism sector, employment and other sectors and hence on the economic growth of the country.

### **2.4.1 The Airline and Transport Sector**

Like some developing countries, the problem of transportation and communication is not unique to Ethiopia (Ministry of Information 1965). As it was mentioned earlier, before

aircrafts came in to being to the country, horses and mules were used to transport people as well as commodities from one place to the other (Bahru 2007). And, these methods were time consuming and dangerous regarding to the existing terrain system of the country (Bahru 1988). In addition, especially in the early 1920s, the land terrain of the country was so rugged and the road system was so poor that it makes communication and transportation so much difficult (Ministry of Information 1965; Selamta 2001). Then, this causes the need for other means of transportation to solve the aforementioned problems.

Hence, Ethiopian Airlines provides solutions for these problems by being means of transport for passengers as well as commodities through its domestic and international flight services (Bahru 1988). In addition, during the imperial period it has assisted the government administratively by bringing provincial centers much closer to the central government (Nyaringo 1964). Thus, the airline can play a great role in achieving economic growth and then development by improving the infrastructural situation of the country.

Therefore, on the one hand, there is a fact that transport and communication are inseparably linked to the development of a country, and a social and economic welfare of its people (Simon 1996). On the other hand, the airline is an important means of transport which helps the country not to be isolated from the rest of the world and also enhances globalization (Saunders 1971; Ministry of Information 1965). Then, the nexus between the airline and economic growth and hence economic development of the country would be created through the transportation sector.



But, the above fact does not mean that air transportation is free from problems. One problem is, it would be difficult to use air transport for bulky commodities because of its expensive price (Nyaringo 1964). That is, as Nyaringo puts it out, it would be better to transport light commodities in airplane than the bulky ones. To see the difference, he calculated the cost of shipping goods from Gore to Addis Ababa by air and truck. And, found out that the former is more costly than the later which clearly shows that air transport is expensive to transfer bulky commodities (Cited by Nyaringo 1964 from Taffare De Guefe 1959).

#### **2.4.2 Tourism Sector**

Tough air transportation provides several benefits worldwide; tourism and trade are heavily reliant on this mode of transportation (Dempsey 2008). For that reason, the airline industry is a major player in world economy that it contributes significantly to the development of tourism sector (Parahoo nd). Even more, one third of African countries are landlocked that it makes air transportation more important to expand trade and inflow of tourism to the continent (Megersa 2007). Likewise, Ethiopia is a landlocked country that requires air transportation for the development of such sectors and growth of the country (Semret 2005).

For many underdeveloped countries, especially for eastern African countries tourism has higher value in their national income account due to the fact that these countries have various tourist attraction cities (Nyaringo1964). According to Nyaringo, Ethiopia, like the other east African countries, also has a great unexploited potential in this sector with vast historical tourist attraction sites which can play a vital role in contributing for the tourism sector and hence for economic growth and development of the country as well.

Besides, as Ethiopia is a strategic partner and a center of international, regional and sub-regional institutions, it is benefiting from conference tourism which entirely uses air transport for such purposes (Civil Aviation Authority 20011). Air transport also contribute its share towards the development of trade and tourism on Ethiopia and maintain its role as major player for the development of aviation in Africa (Best Practices 2010). Hence, Ethiopian Airlines here as well contributes a lot in fostering economic growth and development of the country by enhancing the tourism sector (Nyaringo 1964).

#### **2.4.3 Employment**

Several countries in the world benefit from the direct and indirect employment potential that the airline industry has (Simon 1996). In contrast, one common problem that almost all underdeveloped countries facing is higher unemployment rate and curbing this problem is one of their major objectives (Nyaringo 1964) In this case, the contribution of air transport to solve this problem would be significant.

In Ethiopian case, one of the government policies is to curb the problem of higher unemployment level of the country (Nyaringo 1964). In doing that, Ethiopian Airlines has played a great role to fight this problem by creating a vast employment opportunity to be employed in the air transportation sector (Civil Aviation Authority 2011). Besides, the airline has created employment opportunity indirectly in allied business like hotels, travel and tour agents, taxis, guard service providers, temporary workers and so forth (Civil Aviation Authority 2011). Therefore, it is obvious that the airline plays a significant role in curbing the higher unemployment rate problem and hence contributes in the economic growth and development of the country.

#### **2.4.4 Other Sectors**

Ethiopian Airlines has also several more benefits which can contribute to the economic growth as well as development of the country. Unlike the period before its establishment, when there was no in and out of service in Ethiopia ,currently it is stretching its routes to all over the world which therefore helps the country to facilitate trade and promote the export sector which then helps the government to reduce trade deficit problem (Saunders 1971; Best Practices 2010). Besides, it benefits the country through the foreign exchange contribution it made by making international flights, which the amount almost equals the foreign exchange generated from export trade. It also promotes foreign direct investment, build the national image etc (Civil Aviation Authority 2011).

**Justifications of the review:** The above review is made with an objective of providing a brief insight for the reader about commercial aviation in the world, Africa and Ethiopia at first. Then, the background history of Ethiopian Airlines is dealt due to the importance of the raised issues. For instance, the issues related to the formation history, destinations and fleets and other factors are believed to be related with the success of the airline. And, it is believed that this helps to meet the objective of the research by giving background information about such factors. The discussion about the airline at different regimes aimed at providing background information for making convenient trend analysis of the airline's performance. Besides, the contribution of the airline to the economic growth of the country is also presented with an intention that other institutions or public companies may take a lesson from it. Also, it is to show that how much the airline is contributing to achieve one major objective of the Ethiopian economy, which is, economic growth.

## **CHAPTER THREE: LITERATURE REVIEW**

This chapter provides theoretical and empirical literature review. Under the theoretical literature, a theoretical background of endogenous growth theory is argued. Then, on the empirical part, prior discussion is made about empirical findings on long run economic growth determinants. This has been done because the econometric model is based on endogenous growth theory which practically is extended to firm level. Then, discussion proceeds with the empirical findings related to success determinant factors of different airways. Finally, critical evaluation of the empirical findings has been made.

### **3.1 Theoretical Literature**

#### **3.1.1 Theoretical Background of Endogenous Growth Theory**

Under this section, discussion is made about an endogenous growth theory with particular interest to AK growth model. However, prior attention is due to general overview on growth theory as well as a number of growth models. Then, it would be easier to select a model among them and use it for the time series econometric analysis of identifying the determinant factors.

The basic proposition of growth theory is that sustained growth rate of output per capita in the long run is possible through continual advances in technological knowledge in the form of new goods, new materials or new processes (Aghion & Howitt 1998).

One major goal of growth theory is to explain the determinants of growth rates with in a country and the reasons for difference in growth rates and per capita incomes across countries (Dornbush & Fisher 1994). Accordingly, Barro has identified three key

determinants of long term economic growth: the accumulation of capital which encompasses both physical capital (machines & buildings) and human capital (improvement in the quality of labor due to education, training, experience, better health care and nutrition), population growth and improvement in technology (Barro 1997).

Besides, Kaldor (1961) and Romer (1989) have suggested some facts that a satisfactory growth theory should be able to explain. These include: continuous growth on output per worker without declining in productivity growth, continuous rise in capital per worker, constant return to capital, negative correlation between population growth and income etc (cited by Hedjira 2002; from Kaldor 1961 & Romer 1989).

In line with this, there have been two period of intense work on growth theory which include the late 1950s & 1960s, a period that produced neoclassical growth theory and the late 1980s & 1990s, which this on the other hand produced the new endogenous growth theory (Dornbush & Fisher 1994). Hence, growth theory generally can be demonstrated using these two major theories: neoclassical and endogenous growth theories (Aghion & Howitt, 1998). Therefore, the two theories are discussed here starting with the former (neoclassical).

The neoclassical growth theory (Solow model) is a growth model developed independently by Solow (1956) and Swan (1956) (Hedjira 2002). This model assumes that if there were no technological progress, then the effect of diminishing return would eventually cease economic growth in the long run (Aghion & Howitt 1998). In other words, the model predicts that long run growth is determined entirely by exogenous factors such as population growth and technological progress (Hedjira 2002). Besides, the

model views improvement in total factor productivity (technological progress) is the eventual source of growth in output per worker though, it does not explain as to where these improvements come from which accordingly are exogenous to the model (Whelan 2005). For this reason, the neoclassical model often referred to as an exogenous growth model (Barro 1997; Hedjira 2002).

The basic building block of the neoclassical model is an aggregate production function with constant return in labor and reproducible capital (Hedjira 2002). The model initially abstracts from constant population growth, labor and technology together with properties such as decreasing marginal productivity of capital and Inada conditions where  $\lim_{k \rightarrow \infty} f'(k) = 0$  and  $\lim_{k \rightarrow 0} f'(k) = \infty$  respectively (Romer 1996). Also, the model assumes the Keynesian saving function where households save a constant fraction of their income (Hedjira 2002). Then, the net increase of the capital stock (net investment) is the difference between the rate at which new capital accumulates  $sY$  and the rate at which old capital wears out  $\delta K$ .

In other words, the rate increase of the capital stock is the difference between new saving and depreciation amount (Mankiw 2010). That is, whenever saving is higher than the depreciation, capital stock increases until it converges in the long run to the capital  $K$  where, the saving and depreciation becomes balance. Such capital stock is known as steady state capital which is a situation in which the rate of growth of the economy is zero so that, the capital stock, output, consumption, gross investment and work effort are all constant meaning that all grows at a constant rate rather than staying constant (Barro 1997). Hence, at the steady state change in capital stock equals zero because gross investment just covers depreciation and hence net investment is zero.

The economic justification behind this is that, capital will be productive when it is scarce so that national income will be large and this will induce people to save more than to offset the wear and tear of the existing capital stock. But due to diminishing return, national income does not grow as fast as the capital stock, that is, saving will not grow as much as depreciation (Aghion & Howitt 1998). Sooner or later, depreciation catches up saving and at that point capital stock will stop rising. Hence, in the absence of population growth and technological change, diminishing return will lead economic growth to cease (Hedjira 2002; Aghion & Howitt 1998; Barro 1997).

Similar conclusion can be drawn about the long run growth even if population growth does not remain constant (Aghion & Howitt 1998). However, the tendency for the output-capital ratio to fall due to diminishing return would be offset by technological progress which will make the technological progress to be the only way to explain the long run economic growth in the neoclassical growth model (Ray 1998; Aghion & Howitt 1998; Mankiw 2008).

Another variant of growth model which has the same argument as the neoclassical model, in regard to long run growth determinants is, the Ramsey growth model. This model is the most important extension of the neoclassical (Solow- Swan) model where it endogenized the ad hoc saving function by introducing infinitely lived optimizing consumers in to the model (Hedjira 2002). According to this model, growth in the long run is determined exogenously or by factors outside the model (Aghion & Howitt 1998). As with the case in the neoclassical model, the steady state per capita growth rate equals the rate of technological change (Barro & Sala-i-Martin 1995).

The Ramsey model has similar property as the neoclassical model (Hedjira 2002). In a sense that, it initially abstracts away from population growth and technological progress and the capital stock as well as output, like in the Solow case, converges to the steady state and hence growth will vanish in the long run. In contrast, when the exogenous technology is incorporated in the model, it then affects the long run growth rate (Aghion & Howitt 1998). Accordingly, like in the Solow model, growth in the Ramsey model is determined by the exogenous technological progress (Barro & Sala-i-Martin 1995).

In contrast, the second growth theory, which is the endogenous growth theory, has a proposition that the long term growth rate is determined by interactions within the model instead of entirely external factors such as population growth and technological progress (Barro 1997). This theory provides a theoretical framework to analyze endogenous growth, that is, persistent growth which is determined by the system governing the production process rather than by forces outside that system (Todaro & Smith 1994). Hence, endogenous growth theory attempts to make the growth rate endogenous, which is, determined within the theory (Dornbush & Fisher 1994).

According to Hedjira, there are three approaches of endogenous growth theory. One is the capital fundamentalist model which generates perpetual growth by abandoning one key assumption in the neoclassical model, which is, average product of capital goes to zero as the capital stock gets very large. As per this model, long run growth depends on saving rate and it is possible to produce without labor at all and also labor is easily substitutable for capital that average product of capital reaches a finite limiting value (Hedjira 2002). Another variant of endogenous growth theory is AK model, which it would be discussed in detail later, exhibits constant return to the broad capital necessary



to generate sustained capital accumulation (Aghion & Howitt 1998). In addition, this model emphasizes on purposeful accumulation of human capital as engine for growth. The third approach of the endogenous growth theory is the research and development approach by which firms constitute the engine of growth in an economy (Hedjira, 2002).

*The AK Growth Model:* One way to endogenize a growth theory is to eliminate the long run tendency of diminishing return of capital (Barro & Sala-i-Martin 1995). By doing that, there would be a class of model in which one of the other determinants of growth is assumed to grow automatically in proportion to capital in which the growth of the other determinants counter acts the effect of diminishing return, thus allowing output to grow in proportion to capital (Aghion & Howitt 1998). Such models referred to as AK models due to the form of their production function expressed as  $Y = AK$  Where A refers to any factor that affect technology, K refers to both physical as well as human capital (Todaro & Smith 1994; Aghion & Howitt 1998). This model which is also referred to as linear growth model assumes constant marginal productivity of capital and generates persistent long time growth (Shine, 2010). In addition to the constant return to scale assumption to the broad measure of capital, the AK model violates the Inada conditions which include  $\lim_{k \rightarrow 0} F'(k) = \infty$  and  $\lim_{k \rightarrow \infty} F'(k) = 0$  (Hedjira 2002).

Mostly, the neoclassical model and the AK growth model stands as two competing explanations for growth (Aghion & Howitt 1998). In particular, the neoclassical model is the starting point for almost all analyses of growth. In this regard, models that depart fundamentally from neoclassical model are even best understood through comparison with this model (Romer 1996).

The traditional AK model with constant return to capital is restrictive to explain the real world economic performance that it can be augmented to include human capital and represented as  $Y = F(H, K)$  where H refers to human capital and K refers to physical capital (Acemoglu 2009; Barro & Sala-i-Martin 1995).

Another important justification for divergence in growth among nations and determinant of growth in the long run is attributed to institutional difference. That is, economic institutions which comprises, property rights, presence and functioning of markets, the contractual opportunities available to individuals and firms etc are the fundamental causes of growth difference across countries (Acemoglu 2009). In addition, one important reason for countries to have different per capita growth is that they differ with respect to public policies or basic institutions (Barro 1997). Empirical findings support that countries with more secure property rights or better economic institutions have higher average incomes (Acemoglu 2009).

Hence, in order to select a model, the researcher has reviewed a literature about determinant factors for the success of Ethiopian Airlines. And, based on some literature review, the factors that determine success of Ethiopian Airlines has found to be internal factors which are provided as follows.

In a research entitled as 'Ethiopian Airlines' done by Nyarigo (1964), promotions, opening of new route, acquisition of modern aircraft are mentioned as factors that play a vital role in sustaining the good reputation of the airline. In addition, in this research, technological progress has been suggested as one factor which contributes for the growth of Ethiopian Airlines. Moreover, the training facilities provision of the airline for its people is mentioned as another reason for the outstanding service of the airline (Saunders

1971). Also one CEO of the airline at once mentioned that the success of the company is built on the past history of the company and dedication of employees in every aspect (African Aviation 2006). Moreover, the success of the airline is also related to the fact that government does not intervene and the management of the airline is announced to operate independently (Ethiopian Airlines (C), 2010).

In general, several factors which include promotion, best practice, opening of new routes, acquisition of new modern aircrafts, training facility provision, technological progress, past history of the company, dedication and independence are mentioned as determinant factors for the success of the airline. And these factors can be generalized as human capital and physical capital factors. Therefore, due to these factors which are internal to the organization, it convinced the researcher to choose the augmented AK model over the neoclassical and Ramsey growth models.

Thus, by using the augmented AK model as a theoretical background the researcher finds out what determines the success/growth of the airline applying time series econometric analysis. With the intention that, these factors can be taken as a lesson by other public companies in order to enhance their performance so that, this can play a major role for the economic growth of Ethiopia.

To summarize, as it has been mentioned in the beginning of the paper, the government of Ethiopia has introduced different reforms since 1992 of which one aims at accelerating economic growth of the country. Accordingly, building the capacity of public sector is one strategy used by the government to achieve its aim (Alemayehu & Tadele 2004). Besides, there is a fact that in a given country the economy comprises three agents which

include workers, firms (public and private) and government: and for the economy to grow the three agents have to grow or have to become successful (Lombardini 1996).

Based on this, this research has made one major objective, which is to take a lesson for public companies from the success experience of Ethiopian Airlines. So that, when the existing public sectors become successful in combination with the performance of other economic agents then, it plays a vital role in the growth of the economy.

Hence, taking Ethiopian Airlines as a benchmark, the ultimate aim of the research is to find a way to foster the economic growth of the country by suggesting a way for building the capacity of the existing public sectors of the country.

## **3.2 Empirical Literature**

### **3.2.1 Empirical Findings on the Determinants of Long run Growth.**

The different growth theories discussed earlier have been subject to empirical testing and some empirical findings in regard to long run economic growth determinants are provided as follows.

According to the cross country regression analysis of King & Levine (1992), growth in the long run can be determined by the financial sector development. Besides, Benhalia & Spiegel (1994) gave stress on the importance of human capital which is measured by school attainment as determinant of economic growth in the long run which, this favors the endogenous growth approach in which growth is endogenous (cited by Aghion & Howitt 1998). In addition, Barro and Sala-i-Martin (1995) showed that growth in the long run is positively correlated with the level of educational attainment.

Another, empirical research is related to the returns of physical capital by estimating the elasticity of output with respect to physical capital in which, Romer's (1987) estimation of the elasticity of goods output with respect to physical capital was very high (cited by Aghion & Howit 1998).

Moreover, Bernanke & Gilikaynak (2002) made a cross country data by extending Mankiew, Romer and Weil's work by using more recent data and longer sample periods and they found out that country's investment in physical capital is strongly correlated with its long run economic growth. Besides, they also found that human capital accumulation also plays a vital role in determining long run economic growth. Hence, both human capital formation and physical capital accumulation appears to be strongly related to output growth in the long run.

Mcgrattan (1998) argues that time series with longer horizon of data and cross country analysis supports the AK endogenous growth model where capital is the major determinant for the long run economic growth (Sakamoto 2008).

The endogenous growth model developed by Romer (1986) and Lucas (1988) has focused on the role of human capital as a main source of increasing returns and divergence in growth rates between developed and underdeveloped countries (Pyo 1995). Then, many empirical testing of this theory has been done of which, Barro's (1991) cross country regression of per capita income growth on a set of variables including the primary school enrolment ratio as a proxy variable for human capital, is one among. Then, he found out that the level of human capital to be a significant determinant of economic growth (Pyo 1995).

Again, Kyriacou (1991) has made a cross country human capital index from data on average school years in the labor force and school enrollment ratios and from the regression of per capita income growth he finds the coefficient of initial human capital stock to be positive and significant. Pyo (1995) has used time series regression and made a direct estimate of human capital stock for the United States and South Korea. And, the estimation result confirms the proposition that the level of human capital plays a significant role in economic growth.

Therefore, from these empirical researches one can understand that though there are many factors that determine growth in the long run human capital and physical capital can be regarded as a crucial determinants for the long run economic growth.

Hence, in our case as one major objective of the study is to identify determinant factors for the success of Ethiopian Airlines, we extend this endogenous growth theory to firm level. So that, the determinant factors for the growth/success of Ethiopian Airlines can be determined using a time series econometric analysis based on endogenous growth model.

### **3.2.2 Empirical Findings on the Success Determinants of Different Airways**

Different empirical studies related to air transportation are available in a literature. However, empirical findings related to success determinant factors of many airlines are very scant. So that, though the researcher has an interest to see the practical experience of many carriers, due attention is given to the benchmark airways of Ethiopian Airlines which are Kenya Airways, South Africa Airways, Emirate Airways and British Airways.

Kenya Airways is one of the successful African carriers found in the eastern region of the continent (Bofinger 2009). Several factors by different researchers are mentioned as

factors for the success of this airline. For instance, autonomous civil aviation authority, strong international passenger, strong air cargo traffic, well managed national carrier and so forth are some among the factors (Fatkon 2005). Another finding also suggests that the success of Kenya Airways is mainly attached with the privatization of the airline supported by good commercialization process that involves better general management, competent and experienced employees, high quality consultants, good financial controls, lack of interference from political decision makers in the affairs of the company, the development of a mission, vision and strategy which all worked together to improve the performance of the airline and bring it to success (Debrah & Toroitich 2005). Geographical location of the country as well is regarded as one factor for the airline's success (Megersa 2007).

Being the biggest airline of the continent, South African Airways is another successful African airline (Fatokun 2005). This airline is the only African global carrier which gives service to different parts of the world (Iches et.al 2005). Like the former airline there are several factors that make the airline successful, of which, the safety oversight and its geographical location has been regarded as important factors that contributed a lot for its success (Bofinger 2009; Megersa 2007).

Emirate Airways is another successful carrier of the Arab world (ESCWA 2007). This airline is based on Dubai and has emerged as one of the world's most dynamic and fastest expanding air carriers (Iches et.al 2005). The Arab air transport sector has benefited from strong economic growth in the region which is driven by the high oil price and growing world air transport industry (ESCWA 2007). As Emirate Airways is from the Arab world it is enjoying the aforementioned benefits as well it was financially supported by the

government in order to meet the future depletion of the oil resource that this has a vital role for its current reputation (Iches et.al 2005). Besides, the fact that Dubai is a major transshipment hub for manufactured goods between Asia and the Middle East has also a role in its successful business (Iches et.al 2005).

British Airways is one of the world's major carriers found in Europe, Great Britain (Iches et.al 2005). This airline has been present on the East African market ever since its establishment where this part of the African region is its chief destination market (Iches et.al 2005). Tough, there are several factors that lead British Airways to success, Iches has pointed out that, the market strategy of the airline together with the priority it gives to achieve economies of scale are some of the factors for its success.

In the same fashion, Ethiopian Airlines is another successful airline of African continent (Bofinger 2009). And, some members of the continent's airline industry regard Ethiopian Airlines as a carrier with huge potential and as the only Eastern Africa's carrier with routes to North America (Iches et.al 2005). As the case for other carriers there are several factors that contributed for the success of this airline. For example, safety trend of the airline and its geographical location are mentioned as some of the contributing factors for its success (Megersa 2007; Bofinger 2009).

As it has been discussed earlier several factors has lead the aforementioned carriers including Ethiopian Airlines to the road of success. However, in Ethiopian Airlines case tough the empirical findings are helpful they cannot be used more than giving a hint due to the fact that their major objective of analysis is not to discover the factors rather it has



different intention. Therefore, this indicates that discovering the factors by itself needs extensive research that it convinced the researcher to do that.

### **3.2.3 Critical Evaluation of the Empirical Findings**

In the first part of the empirical analysis, several studies have identified human capital formation and physical capital accumulation as a vital long run growth determinants using cross country and time series regression analysis. However, in this case a time series test of firm growth determinants based on endogenous growth theory is conducted. Which, somehow this extension makes this analysis different from the other findings.

In the second part of the empirical literature the researcher has tried to discuss about empirical findings about the determinant factors for the success of different airways. For instance, in the case of Kenya the major factor that leads the airway to success is its commercialization and privatization policy. Again, in the case of South African Airways the safety trend and its geographical location are identified as its success factors besides its unmentioned success determinants. In the case of Emirate Airways, the fact that it is located in Dubai, the major transshipment hub between Asia and Middle East for manufacturing goods trade, and the government support are some factors for its success. In British Airways, its market strategy and prioritization for economies of scale are identified as reasons for its success. Unlike that, Ethiopian Airlines is a successful national flag carrier airline due to several factors which is the main concern of this analysis.

Hence, from the above empirical findings it is possible to observe that there are different factors that determine success of an airline which vary among different carriers.

Therefore, it would be somehow difficult to identify a unique rule of thumb that can be considered as determinant factors for success of an airline that it needs an extensive research to identify the factors as well as to apply the success factors of one airline to another airline.

## **CHAPTER FOUR: METHODOLOGY OF THE STUDY**

In this study two methods of analysis are used: descriptive and econometric methods. For this reason, this chapter has two parts. The first part is a theoretical framework and the second part is econometric model specification. The former enables to make descriptive analysis about the success and determinant factors of Ethiopian Airlines. In doing so, criteria for measuring the success of a company's business; which is used as a standard to measure overall performance is discussed. The later part proceeds with econometric model specification based on the endogenous growth theory. Then, the data type, source and variable definition used in this method of analysis is discussed. Finally, estimation procedures and techniques of the specified model are provided. Though, prior discussion is made about the data type and source of the two methods of analysis and sample design procedure of the descriptive analysis.

### **4.1 Data Type and Source**

For the descriptive analysis, primary and secondary data are used. The primary data is gathered using personal observation, semi-structured questionnaire and interview. Whereas, secondary data is collected from different published and unpublished materials including several years' annual report of the airline, unpublished materials from the airline and various air transport journals. Besides, due to the fact that the availability and accuracy of data ultimately determines the success of econometric analysis<sup>1</sup>, the researcher discusses the nature and source of the data as follows. That is, the type of data

---

<sup>1</sup> Gujarati 2004

used in the econometric analysis is secondary time series data with a time length of 30 years and data were mainly collected from Ethiopian Airlines and Ministry of Transport.

### **Sample Design Procedure**

In the descriptive analysis, stratified sampling method is applied while selecting a sample size from the sample population. The total number of Ethiopian Airlines employees is taken as the total population or sampling framework to determine the sample size. According to Ethiopian Airlines factsheet of 2010, number of employees of the company was 5555 (Ethiopian Factsheet 2010). Thus, for the sake of convenience the number of employees is sub divided in to sub groups as: marketing & sales, maintenance and engineering staffs, captain and cabin crews and others<sup>2</sup>. Hence, sample is again selected randomly from each group and the interview and the questionnaire is administered to the selected samples.

Though 150 questionnaires were distributed, only 120 of them were interpreted due to the non response problem of the respondents. The justification behind this is that they are so busy that they do not have time to fill the questionnaires. Besides, the sample size is limited to this amount due to the rules of the company not to accept any questionnaires. This is because it is believed that it wastes the work time of the employees that it brings work inefficiency in the airline. Therefore, to fill this gap formal and informal interview

---

<sup>2</sup> The division of employees in to groups is done by the airline and each division has the following share marketing & sales (29%), maintenance and engineering (28%), cabin crew (12%), cockpit crew (6%) and others (25%).

has been made with employees of the airline. Besides, personal observation as well is made to collect the necessary data.

#### **4.2. Measuring Standards for Success of a Company Business (Part I)**

To reflect success of a company business properly, performance measures should increase or decrease based on the existing condition in the business (Merchant & Van der Stede 2007). Thus, discussion about performance indicators is significant in order to evaluate success of a firm business.

In this regard, provided that enterprises are created to produce goods or services to customers, several measuring factors which are internal as well as external to the organization are used to measure their business performance (Lussiler 1997). Internal factors refer to those which affect the performance of a given organization and are under the control of the organization. These include management, strategic plan (vision, mission & values), organizational structure, resources, overall system etc (Lussiler 1997). Hence, discussion begins with the first internal factor: management.

Though there are many definitions of management in a literature, almost all relates management to the process of organizing and directing actions for the purpose of achieving organizational objectives (Merchant & Van der Stede 2007). Thus, for this case, management is defined as a set of activities including planning, decision making, organizing, leading and controlling directed at an organizations human, financial, physical and information resources with the aim of achieving organizational goals in an efficient and effective manner (Griffin 1990). In this regard, though success or failure of

an organization is affected by several factors, management is one major factor that takes credit for the success/failure of a business firm (Lussler 1997).

The other internal factor refers to mission of the company which refers to the reason for the existence of an organization. Vision, mission and values are the first steps in the development of strategic plan of an organization (Deusen et.al 2007). In addition, Deusen argued that, once a solid vision, mission and values are developed then it would be a groundwork for the organization to build the rest of its strategic plan. The fact that most business companies' management does not look the future and develop a mission is one major factor for a failure of a firm business. Hence, developing a mission for a company's business success is one major factor provided that it has to be implemented, monitored and evaluated (Lussler 1997).

Organizational structure is also another factor which affects the performance of an organization. And it is defined as the relatively enduring allocation of work roles and administrative mechanisms that creates a pattern of interrelated work activities (Jackson et.al 1986). In other words, organizational structure refers to the way in which the organization groups its resources to accomplish its missions (Lussler 1997).

Thus, a well designed structure contributes positively to the attainment of an organizations goal and objectives and facilitates a high level of operational effectiveness (Deusen et.al 2007). Besides, in order to enhance the performance of a public enterprise significantly considering the organizational structure is one major factor (Blunt & Jones 1992). Accordingly, Deusen suggested that to consistently improve organizational performance and effectively serve its stakeholders, an organization's structure must be

constantly evaluated and updated. Therefore, effective organizational structure is one means to achieve mission of an organization and it is also one significant factor that leads organizations to a thriving performance (Blunt & Jones 1992).

Resources such as human, physical, financial, and information are the major inputs used to achieve mission of a given organization (Lussler 1997). According to Lussler, specifically human resources are responsible for meeting mission and objectives of an organization. In addition, ability and commitment of the human resource or work force are one major factor that improve the overall performance of an organization and brings it to success (Blunt & Jones 1992).

On the other hand, organizations external factors refer to those exterior factors that affect the performance of the organization and are outside the control of the organization. Such factors include: customers, competition, suppliers, labor unions, government, technology, overall economy etc (Lussler 1997).

Furthermore, there are several additional financial and non-financial factors that influence or contribute significantly to the performance of a firm. These include profitability, productivity, working standard, autonomous management, human resource development, overall system, market share, customer base, integrity, on time performance, etc. (Blunt & Jones 1992; Lussler 1997; Merchant & Van der Stede 2007; Deusen et.al 2007).

Accordingly, profitability is one economic way to measure performance and success of a company business (Bojic 2009). In line with this, Lussler suggested that working

standards are the backbone of a firm performance. Besides, productivity as well is regarded as one way to measure success of a firm business (Bojic 2009).

In this regard, productivity is defined as a performance measure which relates inputs with outputs and is measured by dividing the output to the inputs (Lussler 1997). Productivity is important for many reasons: productivity in a given firm is a primary determinant of level of profitability and ultimately for its ability to survive. Besides, productivity is important due to the fact that it particularly determines firms' competitiveness (Griffin 1990).

Thus, there are three ways to increase productivity in a given firm: First, by maintaining the value of inputs and to increase the value of output. Second, is to decrease the value of inputs while maintaining the value of output. Finally, is to increase the value of outputs and decrease the value of inputs (Lussler 1997).

Overall, factors such as autonomous management, human resource development, overall system, market share, integrity, customer base, etc have their own contribution to the overall performance of a firm performance and hence on the success/failure of a firm (Blunt & Jones 1992; Lussler 1997; Merchant & Van der Stede 2007; Deusen et.al 2007).

Hence, in this study, the aforementioned performance indicators are used as a frame to identify the success of Ethiopian Airlines and to determine the factors behind that.

### **4.3 Econometric Model Specification (Part II)**

Provided that different growth models has been discussed earlier, neoclassical growth model, which is a starting point for almost all analysis of growth and the modified AK version of endogenous growth model are taken as a models of choice for comparison.



Accordingly, the neoclassical model on the one hand has a principal conclusion that the accumulation of physical capital cannot sustain growth in the long run due to diminishing return of the factor input. Rather, the exogenous technological factor is the major determinant factor which sustains growth in the long run (Romer 1996).

In contrast, the modified AK model assumes that capital (which comprises physical and human capital), is the major determinant factor that sustains growth in the long run (Nowak-Lehman 2000).

In this regard, as the earlier findings on the literature reveal that, the determinant factors for the success/growth of Ethiopian Airlines are attributed to physical and human capital factor inputs. Hence, though the growth models mostly are used in a country basis on many empirical analyses here the augmented AK growth model is extended to be used in a firm level which specifically is in Ethiopian Airlines case. Provided that, this on the way would check the applicability of the growth model on a firm base ,which would be as if hitting two birds with one stone.

Therefore, using the Cobb Douglas production function the augmented AK growth model is represented as

$$Y = AH^{\alpha}K^{1-\alpha}$$

Where, Y refers to output, A refers to technological level and K refers to physical capital and H refers to human capital.

Hence, when the augmented AK model is extended to a firm level Y would represent output/service of the firm, A represents the technology level, K represents the physical

capital and H refers to human capital of the given firm. Thus, in Ethiopian Airlines case, the proxy for output/service is net profit of the firm as GDP is the case in a country base. Physical capital is represented by the value of plant, property and asset of the airline and human capital of the airline is represented by education.

Accordingly, the net profit function for Ethiopian Airlines is specified as follows:

$$LNP_t = \beta_0 + \beta_1 LHCAP_t + \beta_2 LVPPA_t + \beta_3 DM_t + \mu_t$$

Where, L = natural logarithm

NP = net profit of the airline

HCAP = human capital represented by educational standard

VPPA = value of property, plant and asset (investment on physical capital)

DM = dummy for regime change and

$\mu$  = error term

#### 4.3.1 Variable Definition and Expected Sign of Coefficients

**Dependent Variable:** Net Profit (NP) is defined as nominal net profit of the airline in Ethiopian currency deflated by GDP deflator.

**Explanatory Variables:** Human resource by educational standard is used to proxy human capital by making division of the data as skilled and unskilled based on the company's business activity and taking the skilled data to represent human capital. Again, value of property, plant and asset (VPPA) is used to proxy physical capital and it is also its nominal value deflated by GDP deflator. Dummy variable (DM) is used to

proxy regime difference between the Derg and EPRDF regime. For the regime difference, the value of dummy is set 0 for the Derg regime and 1 otherwise. And, except the dummy variable all variables are explained in logarithmic formulation and the expected sign of all variables is to be positive.

#### **4.3.2 Estimation Procedure**

Prior to the procedures, it is worth mentioning some attributes of time series analysis. To start with time series data, it is one among the important types of data used in empirical analysis. And, empirical work based on time series data assumes that the underlying series is stationary (Gudjrati 2004). However, most economic variables practically are non stationary (Verbeek 2008). Models that contain non stationary variables will often result in spurious/non sense regression result. That is, regressing a non stationary variable upon another non stationary variable/s may lead to a spurious regression in which estimators and test statistics are misleading (Verbeek 2008). Hence it is necessary to test the variables for stationarity before estimation is conducted.

If the variables of interest are non stationary, differencing is one way to make them stationary (Gudjrati 2004). And estimating the difference stationary variables would only give short run dynamics (Eyob 2001 cited from Harris 1995). However, it is also important to determine the long run relationship as well, which this calls for the concept of co-integration. Hence, the co-integration test would help to determine the long run relationships between variables in the model.

If the variables are co-integrated then, the short run relation between co-integrated variables can be represented by an error correction model, which combines both the long

run and short run dynamics (Eyob 2001 cited from Harris 1995). Accordingly, the estimation procedure in this study follows the following steps:

- I) To make unit root test using the Augmented Dickey Fuller (ADF) test to identify the stationarity of the variables of interest and to determine the order of integration of these variables.
- II) If the variables are non-stationary, then the Johansen maximum likelihood approach is used to test for co-integration among the variables and if co-integrated, the Johansen method is used to identify the number of co-integrating vectors.
- III) If variables are co-integrated, error correction model is specified and estimated using standard methods and diagnostic tests. However, prior to the empirical results and interpretations the researcher presents a theoretical background for the above estimation procedures as follows.

#### **4.3.2.1 Unit root test: Augmented Dickey Fuller Test (ADF)**

There are many tests for determining whether a series is stationary or non stationary and the most popular one is the Dickey Fuller test (Hill et al. 2008). In this test, three variations are designed to take account the role of the constant term and the trend.

The first case is when there is neither a constant nor a trend in which case, given an AR (1) process  $Y_t = \rho Y_{t-1} + U_t$ ,  $Y_t$  is stationary when absolute value of  $\rho < 1$ . But, when  $\rho = 1$  then  $Y_t$  becomes non stationary or it has a unit root (Gudjrati 2004). Hence, one way to test for stationary is to examine the value of  $\rho$  which is, to test whether it is less than one

or equal to one. For convenience, we can make the unit root test by subtracting  $Y_{t-1}$  from both sides of the above AR (1) equation such as:

$$\begin{aligned} Y_t - Y_{t-1} &= \rho Y_{t-1} - Y_{t-1} + U_t \\ \Delta Y_t &= (\rho - 1) Y_{t-1} + U_t \\ &= \gamma Y_{t-1} + U_t \end{aligned}$$

Where,  $\gamma = \rho - 1$  and  $\Delta Y_t = Y_t - Y_{t-1}$  then, the hypothesis can be written either in terms of  $\rho$  or  $\gamma$  as follows

$$H_0 = \rho = 1 \Leftrightarrow H_0 = \gamma = 0$$

$$H_1 = \rho < 1 \Leftrightarrow H_1 = \gamma < 0$$

Where,  $H_0$  is the null hypothesis referring that the series is non stationary/has a unit root and the alternative hypothesis  $H_1$  refer to stationary series. Therefore, after the test is made and if the DF test statistic is less than the critical value of different significance levels then, we fail to reject the null hypothesis of non stationary or unit root. In contrast, if the DF test statistic is greater than the critical values we reject the null hypothesis of unit root and we conclude that the series is stationary (Hill et al. 2008; Alemayehu et.al 2003).

Regarding to the other two cases where the DF test includes only constant or both constant and linear trend, we have the same null and alternative hypothesis as the first case. The only change here is that the critical values in the three cases are different because it changes the behavior of the time series that it will alternate the test result (Madala 1992).

Hence, when carrying out a Dickey Fuller test a useful first step is to plot the time series of the original observations of the variables so that a proper test equation can be selected based on visual inspection of the plots (Hill et al. 2008). Thus, if the series appear to be fluctuating around a sample mean of zero, it is possible to ignore both the constant and the linear trend from the test equation. And, if the series on the other hand fluctuates around the sample mean of non zero then only a constant can be included. Finally, both a constant and linear trend is used in the test equation if the series appears to be fluctuating around a linear trend (Alemayehu et.al 2003).

An important extension of the Dickey Fuller test is the Augmented Dickey Fuller (ADF) test which handles the problem of residual correlation by including lags of the dependent variable to insure that the residuals are uncorrelated (Harris 1995). For this test, the hypotheses of stationary and non stationary as well as the critical values are expressed in the same way as the case of DF test. Hence, practically the Augmented Dickey Fuller (ADF) test is always preferred rather than the DF test to insure that error terms are uncorrelated (Harris & Sollis 2003; Hill et al. 2008).

Thus, while making the ADF test the first step is to determine the lag length for ADF and next is to make decision about the inclusion of a constant, linear trend and constant or nether a linear trend nor a constant term in the test equation (Alemayehu et.al 2003). In absolute term, if the computed ADF test statistics is less than the critical value of a given significance level we fail to reject the null hypothesis of unit root or non stationary series. On the other hand, if the computed ADF test statistic is greater than the critical value of a given significance level we reject the null hypothesis of unit root and then the series become stationary.

After making unit root test the next step is to check the order of integration of the time series variables. That is, when variables become non stationary at level we can use differencing or de-trending mechanism to make them stationary. And, most series becomes stationary after first difference (Harris 1995). Hence, series which can be made stationary after taking first difference are said to be integrated of order one  $I(1)$ . In general, the order of integration of a series is the minimum number of times it has to be differenced to make it stationary (Hill et al. 2008). Therefore, if the variables of interest become integrated of the same order then, it is possible to follow to the next step which it to make the co-integration test.

#### **4.3.2.2 Co-integration Test**

The classical regression model assumes that the dependent as well as the independent variables in a regression analysis to be stationary overtime (Alemayhu et.al 2003). But, most time series data of economic variables are non stationary (Green 2008). So that, it is necessary to make the data stationary before regression is made so as, to avoid spurious regression result (Harris 1995; Alemayhu et.al 2003). One way to do this is by differencing the data series which, most of the time it becomes stationary after first difference (Harris 1995).

Then, though it becomes possible to estimate the first difference stationary variables; it gives only the short run dynamics in which case the long run information of the data could be lost (Yohannes 2011 cited from Kennedy, 1992). However, it is essential to determine the long run equilibrium relationship among variables and co-integration now plays a vital role to identify the long run equilibrium relationships (Eyob 2001 cited from Harris 1995).

To put simply, if a linear combination of  $I(1)$  variables is a stationary process of  $I(0)$ , then variables are known to be co-integrated (Muchai 2011). And, the economic interpretation of co integration is that if two or more series are linked to form an equilibrium relationship in the long run, then though the series becomes non stationary they will move closely together overtime and the difference among them becomes stationary (Harris & Sollis 2003).

There are two approaches of testing the existence of co- integration among variables of interest: the Engle-Granger or EG approach and the Johansson Approach (Alemayhu et.al 2003 cited from Engle and Granger 1987).

#### **A. Engle Granger Approach**

In this approach, the first step is to check the order of integration for the variables so that, if all are the same order of integration then co-integration test proceeds (Muchai 2011). In order to determine if the variables are co-integrated, we test if residuals generated from the estimated static equation are stationary or not (Yohannes 2011 cited from Engle & Granger 1987). And, if the residuals become stationary, it implies that the variables are co-integrated or they have a long run relationship. Then, there exists error correction representations which give information on long run relationship, short run relationship and the speed of adjustment (Muchai 2011).

Though the Engle Granger Approach is simple to implement it has different draw backs such as: while testing using more than two variables there might be more than one co-integrating vector that this approach does not have any systematic procedure to handle



this (Alemayhu & Daniel 2003). This approach again does not allow the variables in the right hand side to be potentially endogenous (Harris 1995 cited by Yohannes 2011).

## **B. Johansen Approach**

Another approach to make co-integration test is the Johnson method (Enders 1995). This method is a multivariate autoregressive approach which considers a model where we have a vector of variables  $Z_t$  which are endogenous (Muchai 2011). Then, it is possible to specify and model  $Z_t$  as unrestricted vector autoregressive (VAR) which involves up to  $K$  lags of  $Z_t$ .

$$Z_t = A_1 Z_{t-1} + \dots + A_k Z_{t-k} + U_t \quad U_t \sim (0, \Sigma)$$

Where,  $Z_t$  is a  $(n \times 1)$  matrix,  $A_i$  is an  $(n \times n)$  matrix of parameters,  $k$  is the lag length and  $U_t$  is independently and normally distributed error term with mean null vector and vector of variances as shown in the VAR equation. This system is in reduced form with each variable in  $Z_t$  regressed on only lagged values of both itself and all the other variables in the system (Harris 1995).

There are two test statistics known as trace statistic ( $\lambda_{\text{trace}}$ ) and the maximum Eigen value ( $\lambda_{\text{max}}$ ) used to determine the co-integrating vector in co integration test (Enders 1995).

The trace statistic is determined by applying the following formula:

$\lambda_{\text{trace}} = -T \sum_{i=r+1}^n \ln(1 - \lambda_i)$  where, T represents number of observations,  $\lambda_i$  is the  $i^{\text{th}}$  eigen

value (Muchai 2011). On the other hand, the maximum Eigen value statistic is determined using the following formula:  $\lambda_{\text{max}} = -T \ln(1 - \lambda_{r+1})$ .

Hence, in both cases if the test statistic is greater than critical values of a given significance level we reject the null hypothesis. In contrast, if the test statistic for both tests is less than the critical values the null hypothesis is failed to be rejected (Muchai 2011).

#### **4.3.2.3 Vector Error Correction Model**

If two or more variables are co integrated there must be an error correction model (Harris 1995). That is, estimating a dynamic equation in the levels of the variables is problematic and differencing the variables is also has a problem since it removes any information in the long run (Harris 1995). Therefore, according to Harris the more suitable method is to convert the dynamic model in to an error correction model which contains information on both the short run and long run properties of the model, with disequilibrium as a process of adjustment in the long run.

The vector error correction is a multivariate dynamic model that incorporates a co-integrating equation (Verbeek 2004; Hill et al. 2008). This model is relevant when we have two or more variables that are co-integrated. Therefore, including the error correction terms derived from long run co integrating vectors as independent variable in the estimation process of the error correction model, recovers all the long run information that was lost in the original estimation process (Eshete Amsalu 2007 cited by Wubshet 2008). Thus, the vector error correction model can be formulated as follows:

$$\Delta Z_t = \Gamma \Delta Z_{t-1} + \dots + \Gamma_{k-1} \Delta Z_{t-k+1} + \Pi Z_{t-k} + U_t \quad \text{Where } \Gamma = -(I - A_1 - \dots - A_i), (i=1, \dots, k-1), \text{ and}$$

$\Pi = -(I - A_1 - \dots - A_k)$ . Hence, according to Harris, this way of specifying the system contains both the long run and the short run adjustments information to changes in  $Z_t$  through the estimates of  $\Gamma$  and  $\Pi$  respectively.

If  $\Pi$  has a full rank then the variables in  $Z_t$  are  $I(0)$  and all variables are in fact stationary. The other case is when the rank of  $\Pi$  is zero in which case there are no co-integration relationships. However, more usually  $\Pi$  has a reduced rank and this can be factorized as  $\Pi = \alpha\beta'$  where  $\alpha$  matrix represents the speed of adjustment to disequilibrium and  $\beta$  is a matrix of the long run coefficient (Eyob 2001 cited from Harris 1995).

Hence, in this study, after the unit root test for stationary and identification of order of integration, the co integrating relationships that span the long run relationship is determined. By doing that, the estimate of  $\alpha$  and  $\beta$  is also generated.

## **CHAPTER FIVE: DESCRIPTIVE AND ECONOMETRIC ANALYSIS**

### **5.1 Introduction**

In this chapter both descriptive as well as econometric analysis are made. In the descriptive analysis, the performance indicators discussed in the preceding chapter are used to evaluate the performance of Ethiopian Airlines. In doing so, the researcher initially makes discussion about the overall performance of the airline. Accordingly, discussion begins with management, organizational structure and strategic plan of the airline, followed by a discussion on the operational and financial performance together with data analysis. By using these and other additional information, evaluation of the overall performance of Ethiopian Airlines is made.

In this regard, the study identifies the determinant factors for the success of the airline relying on the standards and the available data, which is one major objective of the study. In line with this, the empirical results and interpretation of the results are discussed in the econometric analysis part. And then, the descriptive and empirical analysis is joined together to identify the determinants.

Finally, based on the results of both methods, discussion is made about the possible lessons that can be taken from the experience of Ethiopian Airlines for other public companies. Hence, this enables the researcher to meet the other major objective of the study which is, to identify possible lessons for other public companies.

## **5.2 Overall Performance of Ethiopian Airlines**

### **5.2.1 Management and Organizational Structure of Ethiopian Airlines**

Management in a business performs several tasks. It undertakes transaction on behalf of the firm by identifying and negotiating contracts with input suppliers and output buyers, it arranges and coordinates activities of the firm and identifies the direction the firm is to take, is responsible for the implementation of the strategy and evaluates and enforces the overall activities of the firm (Ferguson et.al 1993). In short, management of a business has a vital role in the performance and well functioning of a given enterprise.

Ethiopian Airlines is a state owned enterprise which is managed by Board of Directors appointed by the minister in charge of the appropriate government department. Having one chair person, these board members are taken from the organization and outside the organization. Accordingly, the members represent higher government officials, employees as well as different individuals selected by stakeholders to represent their interest in managing the airline. Then, a Chief Executive Officer (CEO) for the company will be appointed by the board members which he then will again appoint his own management team members. Subsequently, all team members of the management will be approved by the board of director members which mostly are with a position of vice presidents of different departments, executive vice presidents, chief operating officers, acting general managers etc.

In Ethiopian Airlines, the term of the Chief Executive Officer to stay in his position is undetermined. That is, he can stay in the position until his retirement period so long as he works very hard and the board members believes that he is doing his duty and career very

well and so right. Hence, this long time experience will enable him/her to internalize every activities and situations of the airline so that can be a good decision maker.

Besides, though the airline is fully owned by the government it is independent & commercially driven company that it makes decision based on set of applicable principles and standards. In line with this, each management division in the airline has its own duty and obligation that one undertakes transaction on behalf of the company, while other coordinates the activities of the business and is responsible for the implementation of the planed strategies whereas, the other division will evaluate and enforce the overall situation in the company.

Accordingly, the board management is the higher body that manages and supervises the enterprise, decide strategic issues and supervise the plan and performance of the enterprise. On the other hand, the management team together with the CEO, which is one member of the team, manages and allocates expenditure within the limit of authority, is responsible for the successful operation of the airline, and decides day to day activities. However, this does not mean that there is no room for the employees to contribute in the planning and performance of the enterprise rather they also participate on the enterprise plan and its performance being represented by the labor union. Thus, business activities are subdivided in to sub groups that there is a specialization which this makes the airline to be more productive.

Moreover, the hierarchical management of the enterprise allows accountability of one management division to the other. That is, the board which is accountable to the government (owner) will watch the activities of the CEO which, he then watches for the

team management members. The team, on the other hand, will watch the activities of other lower management divisions and staff members of the enterprise.

*Organizational Structure of Ethiopian Airlines:* From business point of view, there are different forms of organizational structure. Starting from the simplest form associated with a small business where the owner directly controls and performs managerial tasks, to different types of organizational structures which include unitary organizational form, multidivisional form etc (Ferguson et.al 1993). These different organizational forms have different characteristics of their own and also have merits and demerits as well.

For instance, some airlines adopt a hierarchal unitary (U-form) organizational structure, which incorporates a branching or pyramid management structure organized according to functional specialism. This form has two disadvantages for a large size firms: control loss and cost inefficiency. Whereas, some others use multidivisional (M-form) of organizational structure, which offers distinct advantages for the large and diversified enterprise with economies of scale advantage (Fergusson et.al 1993).

Picking an organizational structure which fits the type of business would be important for a well functioning and good performance of a given company (Kuzman et.al 2009). Therefore, due to the fact that the efficiency of an airline does not merely depend up on its business activities but also on the form of its internal organization (Fergusson et.al 1993), Ethiopian Airlines has developed its own organizational structure which alters itself based on the change in the business environment.

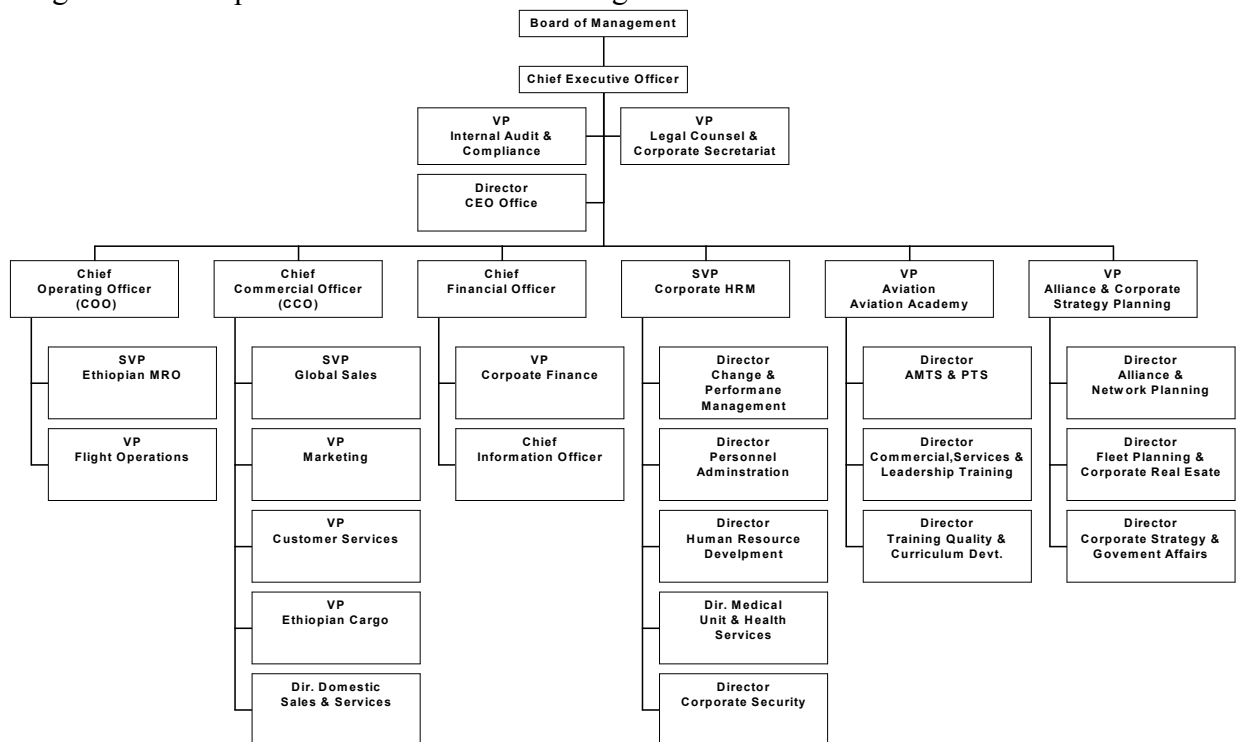
Accordingly, Ethiopian Airlines is one among which uses the multidivisional organizational form which comprises two or more unitary form. It uses such organizational structure with an intention to decentralize decision making and give

responsibility for employees. So that, the flexibility of the firms' response to changing market conditions would increase. Thus, based on figure 5.1 the board management supervises the chief executive officer which he is advised by the two vice presidents of internal audits compliance & legal counsel and corporate secretariat respectively. In addition, the former two vice presidents together with the director of CEO office gives auditing and consultant service for the rest of the management divisions.

On the other hand, the chief executive officer directly supervises the operating, commercial and financial chief officers as well as the vice presidents of the three divisions: corporate human resource management (HRM), Aviation academy and Alliance & Corporate strategy planning respectively. In line with this, the aforementioned chief officer intern supervises vice presidents of their lower department. Likewise, the vice presidents of the above three divisions manage directors of their lower departments. Moreover, these lower divisions in their turn supervise other lower sub division managers and this process proceeds till it reaches to the ordinary staff member of the enterprise.



Figure 5.1 Ethiopian Airlines Summarized Organizational Chart of 2010/11



Source: Ethiopian Airlines unpublished material

### 5.2.3 Strategic Plan of Ethiopian Airlines

Planning is a forward looking process in which we decide what to do, how to do it, when and whom to do it (Mohammed 1995). In planning managers determine the goals of the organization or workgroup and develop the overall strategies to achieve them (Ferguson et.al 1986). In line with this, planning has several benefits where it facilitates professional growth, provide the framework for organization, aids in delegating authority, help monitor work etc (Kinard 1988). Moreover, it helps to avoid errors, waste and delays and also aids to have an effort of becoming both effective and efficient (Ferguson et.al 1993).

A given organization can have different planning levels where, strategic plan is one among them. Strategic planning is the process in which overall company objectives are set and strategies for each segment of the organization are formulated (Mohamed 1995).

Ethiopian Airlines is an enterprise which has its own strategic plan which includes its vision, mission, and values. These plans are set by the top management which comprises short term and long run plans of five, ten and fifteen years. Prior to the vision 2025 Ethiopian Airlines had five years plan of vision 2010 which has several targets to meet. The following table presents how the 2010 vision was achieved.

Ethiopian Airlines in the year 2003/04 had 44 destination places and had a vision to make it 60 in 2010 where according to the information in the table 5.1, it had increased 13 destination places and attained 98% of its vision by stretching its service to totally 59 international destinations. Regarding to the fleet size, it had 23 fleets in 2003/04 and it planned to make it 30 in 2010 but, fortunately it had acquired 2 more fleets beyond its target and in 2010 Ethiopian Airlines had 32 fleets which is 107 % achievement of its vision in terms of its fleet size.

Likewise, in the year 2003/04 Ethiopian Airlines had 1.2 million passengers (PAX number), 390 million \$ Revenue and Operating Profit of 31 million \$. Having these, the airline had a vision to have 3 million passengers, 949 million \$ revenue and 75 million operating profit in the year 2010. Then, in 2010, it had surpassed the targets and realized 105%, 135% and 136% achievement in the three variables respectively. Hence, from the above one can understand that Ethiopian Airlines met its vision very well even by surpassing its targets which might be through working of day and night with full commitment.

Table 5.1: Achievement of Vision 2010

	<b>2003/04</b>	<b>Vision 2010</b>	<b>2009/10 Achievement</b>	<b>% attained</b>
Number of International Destinations	44	60	59	98
Fleet Number(Jet)	23	30	32	107
PAX Number(millions)	1.2	3	3.1	105
Revenue (millions US\$)	390	949	1,239	135
Operating Profit	31	75	105	136

Source: Unpublished material from Ethiopian Airlines

Similarly, the company again set fifteen years plan of vision 2025 which is explicitly presented as follows. By 2025, Ethiopian Airlines has a vision to become the most competitive and leading aviation group in Africa by providing safe, market driven and customer focused passenger and cargo transport, aviation training, flight catering, Maintenance Repair and Overhaul (MRO), and ground services (Ethiopian Annual Report 2010).

Besides, Ethiopian Airlines has different missions which include the provision of the aforementioned services with better quality and price than its competitors, insuring of being an airline of choice to its customers, employer of choice to its employees, and an investment of choice to its owner (Ethiopian Annual Report 2010). It also has a mission to contribute positively to socio- economic development of Ethiopia in particular and the countries to which it operates in general by undertaking its corporate social

responsibilities and providing vital global air connectivity (Ethiopian Annual Report 2010).

Regarding to values of Ethiopian Airlines, it gives priority to safety and then it has the following values: It values a high performance and learning organization with continuous improvements, innovation and knowledge sharing, it accept change for growth, opportunity it brings and it always seek for and apply the best ideas regardless of their source. In addition, it recognize and reward employees for their performance and demonstrate integrity, respect to others, honesty and team work, it act in an open fashion and be result oriented, creative and innovative, adopts zero tolerance to indifference, inefficiency and bureaucracy, encourages free flow and sharing of information, it always look for ways to make it easier for customers to do business with the company and it is an equal opportunity employer (Ethiopian Airlines unpublished material source 2010). Hence, having the above mentioned visions, mission and values Ethiopian Airlines is expected to work so hard to meet those objectives and strategic plans.

### **5.2.3 Operational Level and Financial Performance of Ethiopian Airlines**

A given company/enterprise can use several parameters in order to measure the operational level and financial performance of its business. Likewise, Ethiopian Airlines has used different operational performance measuring parameters which include capacity availed in terms of Available Seat Kilometers (ASK), Revenue Passenger Kilometers (RPK), Load Factor etc. Detail operational statistics is presented in (Figure 5.2).

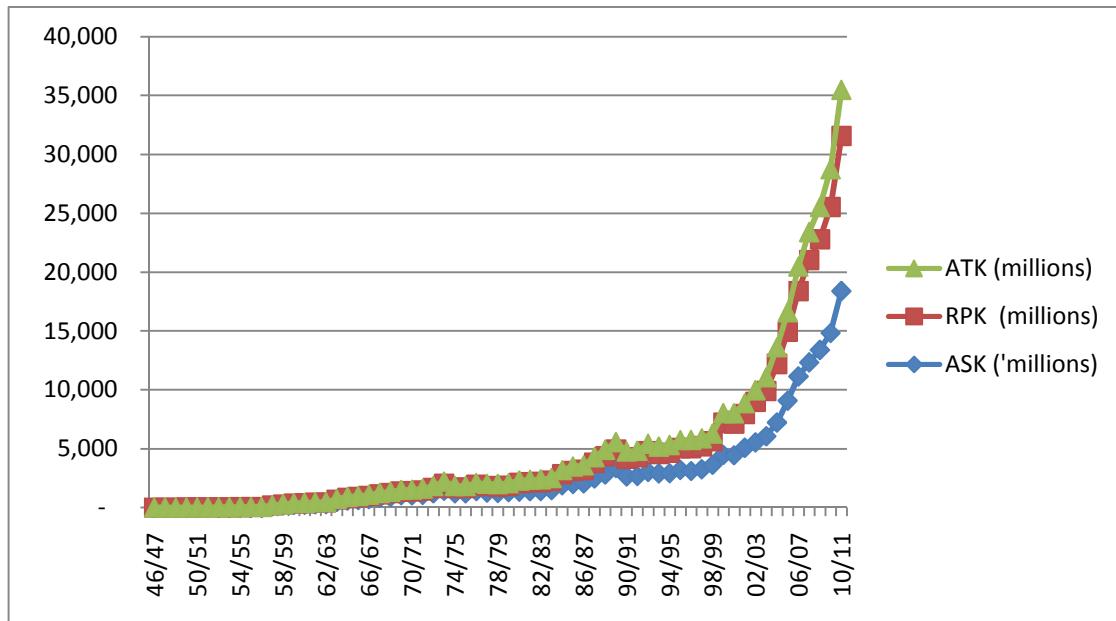
To start with ASK, it is the product of passenger seat capacity measured in seats available by distance flown and it measures available passenger capacity (Annual report of ET 2010/11, Aviation & Allied Business 2006). According to fig.5.2, ASK was increasing

steadily until the down fall of the imperial regime. Subsequently, it had a stable trend which is due to the political instability in the country. However, it slightly increased up to the end of the Derg regime. During the EPDRF regime ASK has increased consistently especially in the recent years due to, major changes made in its network, its acquisition of new airplanes and opening of new destinations.

RPK, which is number of revenue passengers carried multiplied by the distance flown, measures actual passenger traffic (Aviation & Allied Business 2006, Ethiopian Airlines 2010). RPK had a stable trend between beginning of the airline and the end of the imperial regime. Consequently, it had a stable trend until the mid regime of the Derg period and it increased steadily up to the end of the regime. In the early EPRDF period, it has again stable trend and from that time onward it later has showed an upward trend / increased consistently. And this is due to the above mentioned justifications for ASK, which it also applies for RPK as well as ATK.

ATK is another measuring variable, which refers to the overall capacity measured in tones available for carriage of passengers and cargo load multiplied by the distance flown and it measures available total capacity (Ethiopian Annual Report 2010, Aviation & Allied Business 2006). ATK has insignificant contribution almost for the two consecutive regimes. However, it had stable trend between late Derg regime and early EPRDF periods. Later on, it showed consistent upward trend during the EPRDF regime due to the growth strategy applied by the airline since 2003/04. That is, vision 2010 and it has significantly impacted the airlines growth.

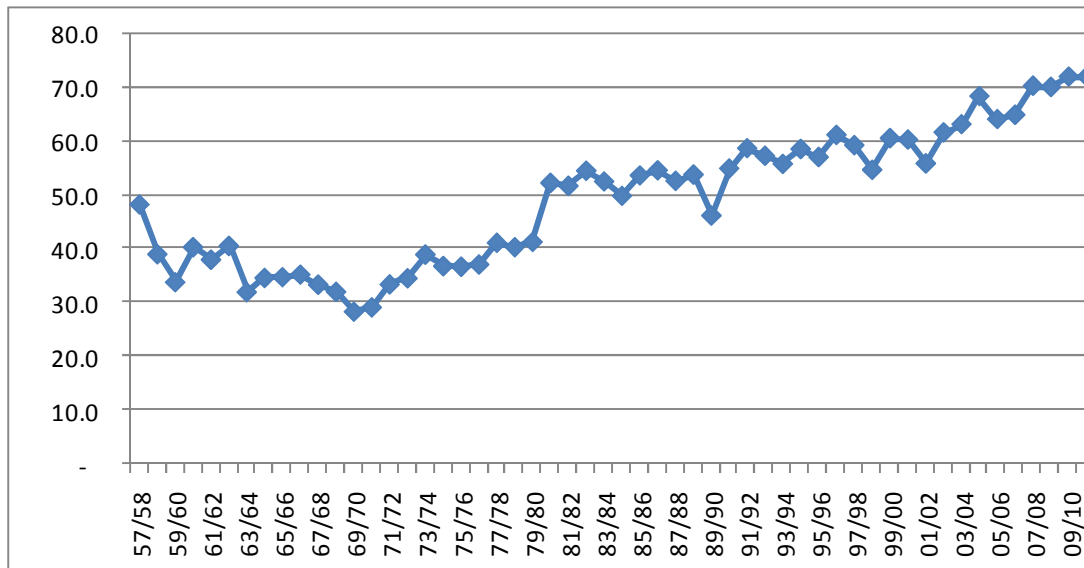
Figure 5.2: Trends of Available Seat Kilometer, Revenue Passenger Kilometer, Available Tone Kilometer (1946/47-2010/11).



Source: Own compilation from the Ethiopian Airlines unpublished materials

Load Factor (LF) is another operational performance measure of the airline. And, overall load factor is defined as Revenue Tone Kilometer (RTK) per Available Tone Kilometer (ATK). This refers to how much revenue does the airline obtained from the available tone kilometer and it is measured by percentage. As it is depicted in fig 5.3, it has a fluctuating trend during the three regimes and recently it fluctuates around 70% revealing that more than 70% of the revenue out of available tone kilometer is attained.

Figure 5.3: Load Factor Trend of Ethiopian Airlines (1957/58-2010/11)



Source: Own compilation from unpublished materials of Ethiopian Airlines

*Financial Performance:* Ethiopian Airlines currently uses different financial performance indicators which include operating revenue, operating expense, profit etc.

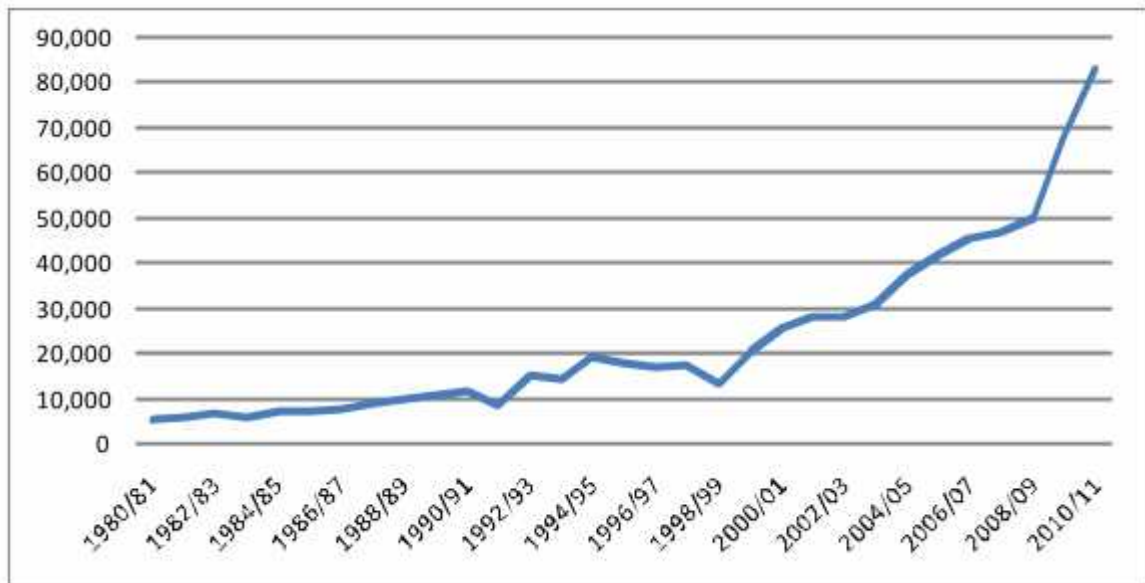
Ethiopian Airlines generates revenue through the provision of services which incorporates passenger, mail and cargo transport, aviation training, flight catering, Maintenance Repair and Overhaul (MRO), and ground services. Having these, the revenue of this company can be presented using different segments such as revenue in terms of business segment, geographical segment and operating revenue generated by providing the aforementioned services (Ethiopian Annual Report 2010).

Operating revenue of Ethiopian Airlines had been stable during the late periods of the Derg regime (Figure 5.4)<sup>3</sup>. But, in the period of EPRDF, revenue of Ethiopian Airlines

<sup>3</sup> 30 years data are used to make the trend analysis for revenue, expense and profit. And, only the late Derg regime and EPRDF regime are used to make the trend analysis.

has increased consistently. However, the war between Ethiopia and Eretria had led revenue decline in 1999/00.

Figure 5.4: Operating Revenue Trend from 1980/81-2010/11 in Millions

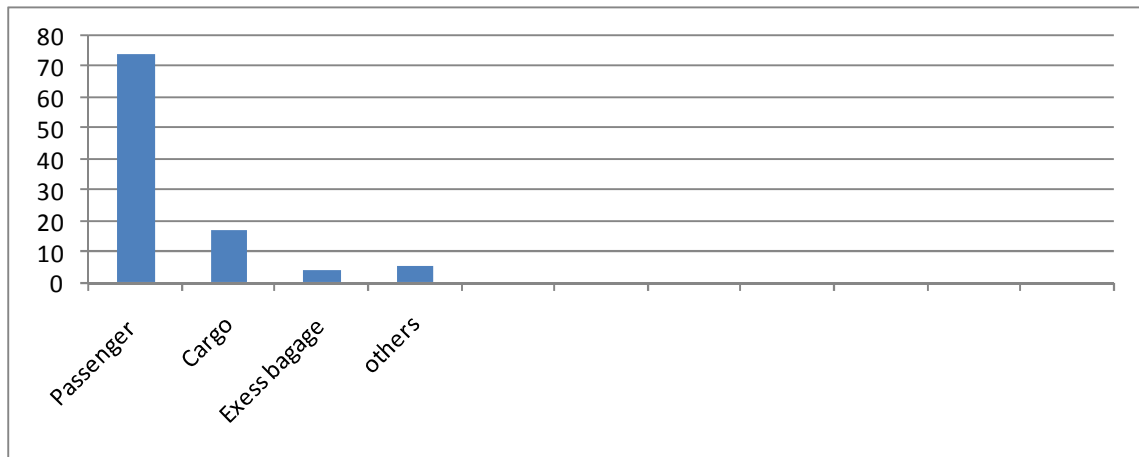


Source: Own compilation from unpublished materials of Ethiopian Airlines

Likewise, figure 5.5 reveals the share of each component of revenue of Ethiopian Airlines. Accordingly, revenue from the transportation of passengers covers the lion's share of the airline's total revenue. On the other hand, cargo transportation accounts 17% from the total revenue. Besides, the airline generates its revenue from other business segments such as mail delivery, excess baggage, ground handling, aircraft maintenance, subsidiary and others which all accounts the remaining percentage of the total revenue.



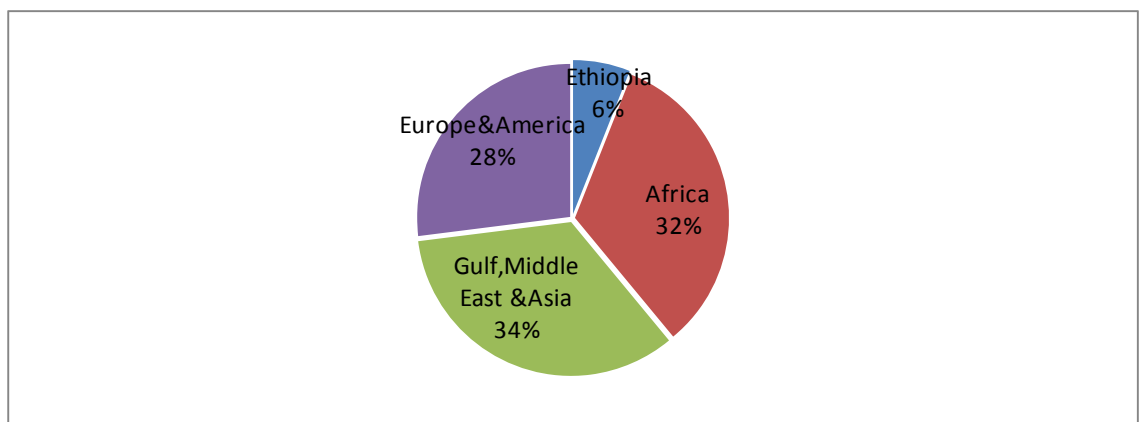
Figure 5.5: Revenue by Business Segment in % (Percentage) 2009/10



Source: Ethiopian Airlines Annual Report 2009/10

In terms of geographical segment, revenue generated from Africa, Gulf, Middle East & Asia accounts more than 65%, which it takes the highest share followed by Europe and America which accounts 28% of the total share (figure 5.6). On contrary, contribution of domestic revenue has remained very low: 6% of the total revenue.

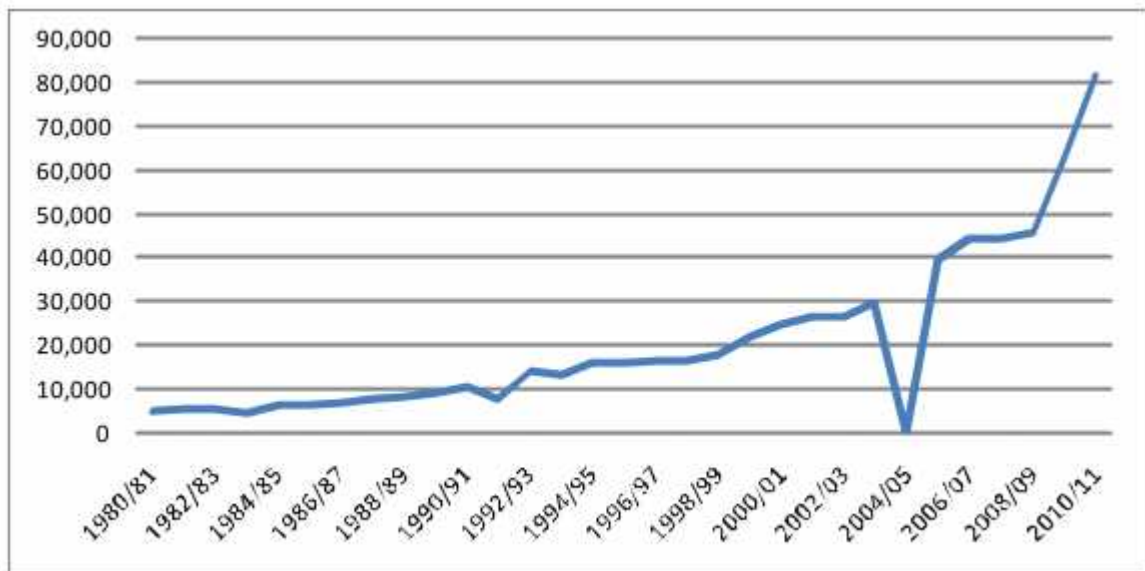
Figure 5.6: Ethiopian Airlines Revenue by Geographical Segment 2010/11



Source: Ethiopian Airlines

*Expense:* Expense of the airline has showed a stable trend during the late periods of the Derg regime. And then, it showed consistently upward trend until the year 2005/06 where, expense has declined rapidly. Since then, it has somehow a fluctuating trend (figure 5.7).

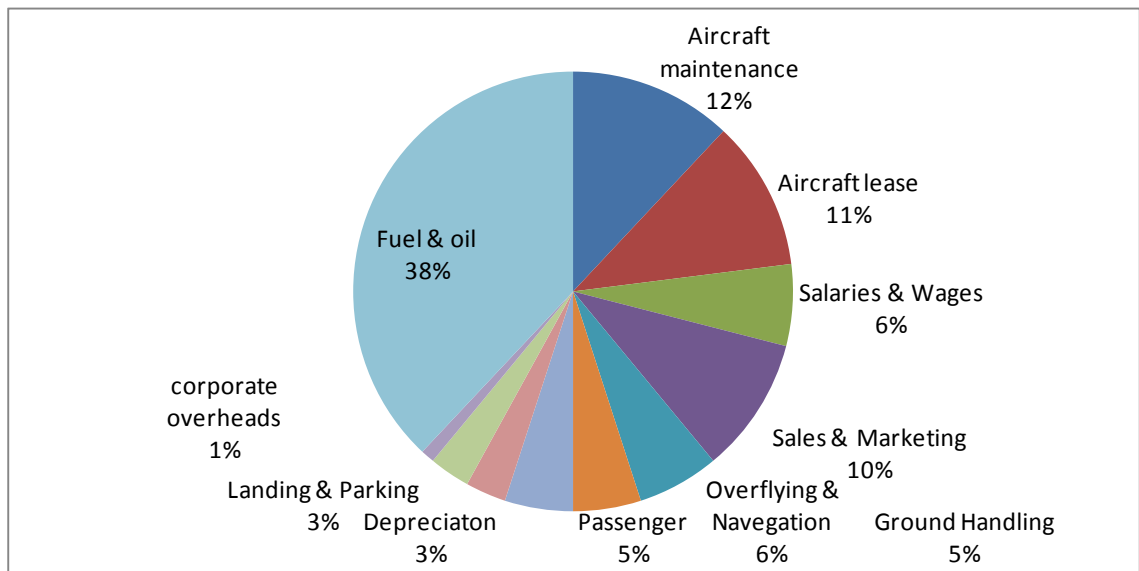
Figure 5.7: Expense Trend of Ethiopian Airlines 1980/81-2010/11



Source: Own compilation from unpublished materials of Ethiopian Airlines

Regarding to components of expenditure, fuel & oil takes the largest share which is 38% percent of the total expenditure. The expenditure for aircraft maintenance (12%) and lease (11%) captures the next higher share followed by 10% expenditure for sales and marketing. The remaining 29% percent of total expenditure has been accounted for salaries & wages (6%), overflying & navigation (6%), ground handling (5%), depreciation (3%), landing & parking (3%), corporate overheads (1%) and passenger handling (5%) (Figure 5.8).

Figure 5.8: Components of Ethiopian Airlines Expenditure 2009/10



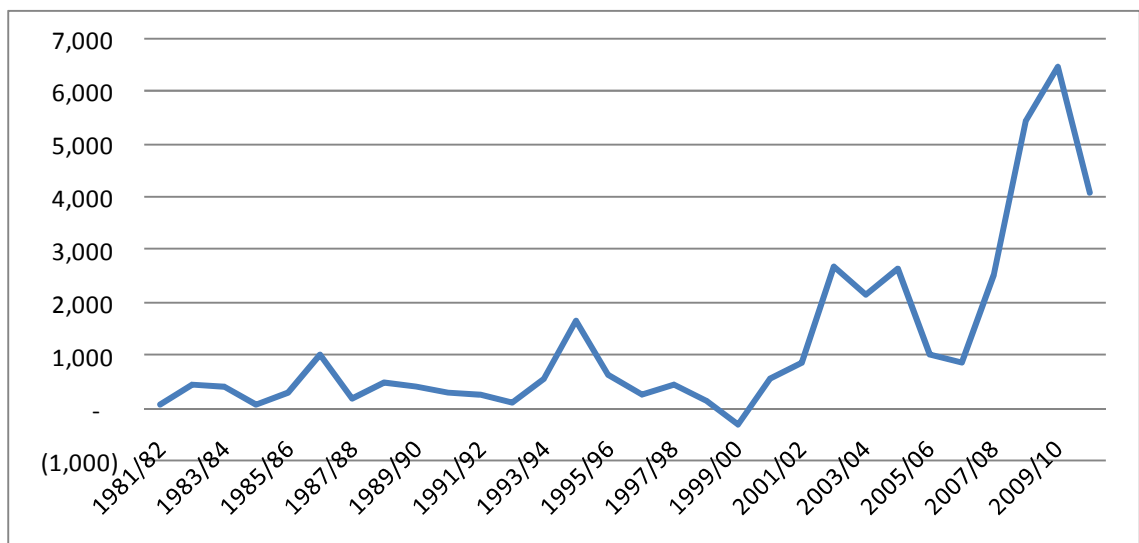
Source: Ethiopian Airlines Annual Report 2009/10

*Profit:* Profit of Ethiopian Airlines comprises two types: operating profit and net profit/profit before tax. Operating profit is the difference between total revenue and total cost. And, to get net profit, additional variables such as net financial expense, foreign exchange gain/ (loss), and non- operation items is considered.

The profit trend of the airline has a fluctuating trend. During the late Derg regime, profit has showed fluctuating trend whereas, it has shown an increasing trend in EPRDF regime. However, in 1999/00 the airline incurred a loss due to war between Ethiopia and Eritrea which forced the airline to change its main hub to Nairobi, Kenya and increased its cost in order to minimize the risk of the war. Subsequently, starting from the year 2002 the trend has increased dramatically which is because of a stable management,

strategic leadership, acquisition of new aircrafts, network expansion and so forth. Moreover, except for the year 2006/07, where profit has showed a declining trend, the profit trend has increased. Even, when the world economy is heated by the financial crisis, Ethiopian Airlines was making profit unlike other carriers in the world, which is due to its market strategy. That is, majority of its customers were from African region which is not heated as worth as the western countries.

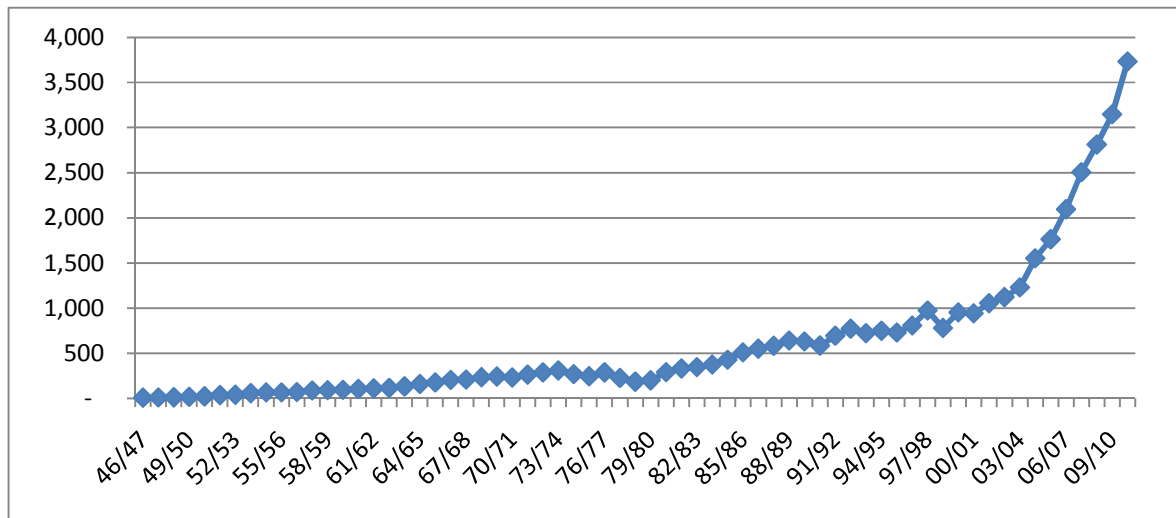
Figure 5.9: Profit Trend of Ethiopian Airlines (1981/82-2010/11)



Source: Own compiled from unpublished materials of Ethiopian Airlines

Figure 5.10 shows the trend for passenger numbers of Ethiopian Airlines for the last 60 years. The number of passengers has a stable trend up to middle of the Emperor regime and increased slightly until the end of the regime. Afterwards, it fluctuated a bit till it has increased sharply in 1999. Unlikely, it has decreased sharply in the following year and then showed upward trend in the subsequent periods of EPRDF regime.

Figure 5.10: Trend of Passenger numbers of Ethiopian Airlines (1946/47-2010/11)



Source: Own compilation from unpublished materials of Ethiopian Airlines

#### 5.2.4 Productivity

Productivity is one criterion to measure success of a company. And table 5.2 provides productivity trend for the airline.

Here, different indicators of productivity measure are used: ASK/Employee, RPK/Employee, ATK/Employee, Revenue/Employee and Net profit/Employee. Accordingly, in level all indicators show an increasing trend revealing the fact that productivity of employees measured by the aforementioned factors has increased between 2003/4 and 2009/10. In particular, net profit per capita has increased by 474% compared to the level of net profit per capita in 2003/4.

Table 5.2: Productivity 2003/04 - 2009/10

	<b>2003/04</b>	<b>2004/05</b>	<b>2005/06</b>	<b>2006/07</b>	<b>2007/08</b>	<b>2008/09</b>	<b>2009/10</b>
ASK/Employee('000)	1,340	1,564	1,935	2,415	2,555	2,676	2,672
RPK/Employee('000)	846	1,069	1,240	1,540	1,797	1,875	1,922
ATK/Employee('000)	255	308	358	442	492	548	572
Revenue/Employee (ETB '000)	754	934	1,149	1,465	1,904	2,439	2,936
Net Profit/Employee (ETB '000)	51	67	28	28	105	269	293

Source: Ethiopian Airlines unpublished material source 2011

With the exception of ASK/employee, which grows by 99% all variables has grown by more than 100% over the period in consideration. This paramount growth has been achieved as a result of the working standards and procedures used by the airline for every activity in the business. And, the new working strategy adopted by the airline as well has resulted in high capacity growth, with almost similar employee number (Table 5.3).

Table 5.3: Growth of Productivity from 2003/04-2009/10

<b>Growth of Productivity from 2003/04-2009/10</b>	<b>ASK/Employee</b>	<b>RPK/Employee (000)</b>	<b>ATK/Employee (000)</b>	<b>Revenue/Employee(000)</b>	<b>Net Profit/Employee (000)</b>
Increased by	99%	127%	124%	289%	474%

Source: Ethiopian Airlines unpublished material source 2011

### **5.2.5 Ethiopian Airlines Route/Destination Details**

Ethiopian Airlines has passed through different stages towards its destination. Initially, its main destinations were Djibouti, Aden, Asmara, Khartoum, Cairo, Jeddah, and Jimma (Ethiopian Herald 1946; Baheru 1988). Subsequently, when Ethiopian Airlines celebrated its 25<sup>th</sup> anniversary, the number of destinations increased to 44. And, it has diversified its destinations and has linked East and West Africa countries as well as started new international flights (Saunders 1971).

In its 50<sup>th</sup> anniversary, the route network stretched from Europe (London, Frankfurt, and Rome) to China (Beijing) and Thailand (Bangkok). Middle East and Indian sub continent were well represented and African route reached Senegal and Ivory Coast in the west, Cairo in the north and Johannesburg and Durban in the south.

Currently, Ethiopian Airlines has more than 65 international and 17 domestic destinations to Africa, Europe & America, Middle East & Asia and Ethiopia respectively and are presented in (table 5.4).

Ethiopian Airlines gives service to 39 destinations in Africa region which takes the largest share from the overall destinations followed by its service to Middle East & Asia (15). Besides, the airline has 7 destinations to Europe & America and 17 destinations in Ethiopia (see Appendix 3).

### **5.2.6 Ticketing Offices and Sales Agent of Ethiopian Airlines**

Ticket sales are one part of an airline activity which can be done by the airline itself or else, by independent travel agents, who gets paid commissions based on the gross value of the tickets sold (Ferguson et.al 1993). Regarding to Ethiopian Airlines, it sales tickets

using its own ticket offices and through its sales agents, which they are paid commissions by selling the tickets.

Ethiopian Airlines has domestic as well as international ticketing offices to deliver its ticket to its customers of which, it has 17 offices domestically and more than 25 internationally (Table 5.5). On the other hand, in 2009/10 Ethiopian Airlines has about 60 general sales agent offices spread over different parts of the world (Table 5.6 see both tables on Appendix 3).

### **5.2.7 Ethiopian Airlines Fleet Details**

Being an airline which operates the newest and youngest fleets, Ethiopian Airlines has accumulated and owned various types of aircrafts through grants and purchase at different time periods (Bahru 1988).

Starting with five Douglas C-47 sky trains which are acquired during its establishment, Ethiopian Airlines has used different kinds of aircraft to provide its passenger and cargo transport services. Some of them include Convair 240, Dc-68 cloud master, Fokker 50, ATR-42, DHC-6 Twin Otters, Boeing 720, Boeing 720 flight simulator, Boeing 727, Havilland ,Canada DHC-5 Buffalo, Boeing 737, Boeing 757, Boeing 767, Boeing 707, Boeing 757, Lockheed L-100 commercial Hercules, DHC – 5 Buffalo and so forth (Baheru 1988; Ethiopian Annual report 2010/11) . In addition, other kinds of aircrafts for passengers and cargo have been also used by this airline during its service life and currently Ethiopian Airlines has such a fleet mix (table 5.7).

The table shows passenger fleets used for domestic and international flights. And, most of the fleets used are jet fleets of Boeings. However, the airline also uses other kinds of



fleets such as Bombardier Dash Q-400, Fokker 50 and it also ordered A350-900 of Airbus. From these fleets, some are owned and others are leased from other carriers. Besides, the airline has ordered 12 A350-900 Airbus & 10 Boeing 787 Dream liner jets from the manufacturers of the two companies respectively. Moreover, for its international service it mainly uses Boeing fleets such as Boeing 777-200LR, Boeing 767-300ER, Boeing 757-200, Boeing 737-700 and Boeing 737-800 and it uses Bombardier Dash Q-400 & Fokker 50 for the domestic service.

Table 5.7: Domestic and International Passenger Fleet Mix

<b>Aircraft type</b>	<b>Services International/ Domestic</b>	<b>Owned</b>	<b>Leased</b>	<b>Orders</b>	<b>Total</b>
Air bus A350-900	-	-	-	12	12
Dream Liner Jets Boeing 787	-	-	-	10	10
World liner Jets Boeing 777-200LR	International	4	-	-	4
Boeing 767-300ER	International	3	8	-	11
Boeing 757-200	International	3	5	-	8
Boeing 737-700	International	3	2	-	5
Boeing 737-800	International	-	5	-	5
Bombardier Dash Q-400	Domestic	4	4	-	8
Fokker 50	Domestic	5	-	-	5
<b>Total</b>		<b>22</b>	<b>24</b>		<b>46</b>

Source: Ethiopian Airlines Unpublished Material and Annual report of 2010

Likewise, Ethiopian Airlines uses different aircraft type to provide its cargo service. As per the table below, Boeing 757-260, Boeing 747-200 and MD-11F are used to deliver

the service. In this regard, not all of these fleets are owned rather some are leased from other carriers.

Table 5.8: Domestic and International Cargo Fleet Mix 2009/10

<b>Aircraft type</b>	<b>Owned</b>	<b>Leased</b>	<b>Orders</b>	<b>Total</b>
Boeing 757-260	1	1	-	2
Boeing 747-200	-	2	-	2
MD-11F	1	1	-	2
Total	2	4	-	6

Source: Ethiopian Airlines Annual report & Compiled from unpublished materials of ET

#### **5.2.8 Internal and External Relation of Ethiopian Airlines**

Internal relation in this context is used to refer the relationship of Ethiopian Airlines with the government of Ethiopia (owner). In other words it is to refer how the government participates or uses its power on the overall performance of the airline.

According to my respondents, though it is government owned enterprise, the role of the government in the overall performance of Ethiopian Airlines is so limited that the company operates independently without strict intervention. Accordingly, unlike other publicly owned enterprises, the independence facilitates for the airline to be competitive airline rather than to stay at its statuesque. Besides, the government supports the airline by exempting taxes: profit tax and import tax and it even allows the airline to use its profit for reinvestment and to improve itself. Moreover the government enables it to use all foreign exchange it gets from the service it provides. Hence, this autonomous management has a great role for the airline and helps it to function and perform well without limitations so that can exploit its maximum capacity.

External relation in this context is to refer the relation of the airline with other carriers in terms of code sharing agreement and alliance and also its relation with international companies such as Boeing and Airbus.

Code Sharing is a commonly used form of commercial cooperation among airline in international air transport (Africa Wings 2010). It is defined as an agreement between two or more air carriers whereby the carrier operating a given flight allows one or more other carriers to market this flight and issue tickets for it as if they were operating the flight themselves (European Commission Authority n.d.). In practice, it is a case where one airline permits another to use its designator code on a flight, or two carriers share the same airline code for a flight (Africa Wings 2010).

Code share agreement among carriers has different benefits for the carriers and the passengers as well. Presence on routes which they do not fly by reasonably priced marketing tools, opportunity for increased market access and better display position in computer reservation systems are among the benefits which accrue for the carrier's. Passengers on the other hand will have benefits such as convenience of coordinated schedule, shared terminal facilities, lower fares, and common frequent flyer programs (Africa Wings 2010).

In this regard, Ethiopian Airlines has made code sharing agreement with different carriers in order to get the aforementioned and other additional benefits. The airline has made such agreements with Air China, Air Mozambique, British Midland (BML), Lufthansa, Kuwait Airways, Saudi Arabian Airways, Turkish Airways, South African Airways,

Scandinavian Airways, Gulf Air, Brussels Airline and Air Nigeria which is on the process to be implemented (Table 5.9).

Table 5.9: Code Share Agreements of Ethiopian Airlines in 2010

<b>Ethiopian Airlines Code Share Agreements</b>			
Air China	British Midland (BML)	Kuwait Airways	Scandinavian Airways
Air Mozambique	Brussels Airlines	Lufthansa	South African Airways
Air Nigeria(Under implementation)	Gulf Air	Saudi Arabian Airways	Turkish Airways

Source: Own compilation from the Ethiopian Airlines unpublished materials

Alliance is another form of cooperation among carriers and is defined as: cooperation agreements by which airlines integrate their networks and services and operate as if they were a single entity (European Commission Authority, n.d). Currently, there are three well known global alliances: Star Alliance with its 27 members, One World with 10 members and Sky Team with its 11 members and 3 associates (Africa Wings, 2010).

So far, only four African carriers have joined the above global alliances, of which South African Airways, Egypt Airways, and Ethiopian Airways are members of Star Alliance whereas, Kenya Airways is member of One World (Africa Wings, 2010).

There are different companies which produce commercial Aircraft for diverse carriers that exist all over the world. Among these, Airbus and Boeing companies are placed at the first and second order in providing such aircraft (Segal 2011).

Especially since 1962, which is the jet age in Ethiopian Airlines history, the airline commonly has used different types of Boeing fleet. However, recently it has ordered 12 A350-900 Airbus fleets which make it client of Airbus as well. Thus, currently Ethiopian Airlines is customer of the two giant fleet manufacturers: Boeing and Airbus.

#### **5.2.9 Data Analysis**

Initially, the researcher grouped the respondents based on their years of experience on the ground that they have different profession and works on different departments that, it is difficult to make a group easily. Thus, for convenience, they are grouped based on experience: from 1-10 and more than 10 years of experience.

In this regard, 93% of respondents which are between 1-10 years of experience agreed that Ethiopian Airlines is a successful public enterprise. Likewise, among those with more than 10 years of experience 90% of them approved its success. On the other hand, about 7% respondents grouped in 1-10 years of experience and 10% respondents from the other group (above 10 years of experience) has disagreed on the success of the airline. The justification for their disagreement is the fact that they have compared the airline with other international companies and they believed that the airline is in its infant stage comparatively. However, compared to other public enterprises of this country (Ethiopia) they agree on its success. Even more, they suggested that the airline has to work so hard so that can be cited as one model for international companies as well (Table 5.10).

Table 5.10: Respondents Reply on Success of Ethiopian Airlines

<b>Is Ethiopian Airlines Successful?</b>	<b>Years of Experience</b>	
	<b>1-10 years</b>	<b>Above 10 years</b>
Yes	93.02%	90%
No	6.97%	10%

Source: Survey, 2011

In Table 5.11 different measuring conditions for success of a company business are presented and the response of the sample population is grouped in to three: percentage of agreed respondents, those that disagree and those who are not sure about these measurements. In addition, based on the respondents, the most prominent factors are ordered as 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> etc, in order to see the most significant factors for the justification of the success. Accordingly, from the given variables more than 78% of the respondents agreed that profitability, growing customer base and continuous improvement culture of the airline as their justification for the success of the enterprise. In line with this, 75% and 69% of respondents agreed that market share and productivity of factors of production respectively as the other justifications for the success of the airline. Moreover, 58% and 56% of respondents agreed that integrity and customer satisfaction variables as well are other justifications of the success. In contrast only 25% of respondents consented on employee satisfaction as a justification for the success of the airline.

On the other hand, in relative term, lower percentage of respondents disagreed on these variables on the ground that they may agree on the one factor very strongly and neglect the others so that increases percentage share of disagree for the other factor. Moreover,

some of the respondents are not sure about these measures and even left a blank space which is out of the three options. Thus, the remaining percentages out of the three options are leftovers without any justification by the respondents.

Table 5.11: Respondents Reply on Success Measuring Criteria's

<b>Ethiopian Airlines is Successful because of:</b>	<b>Response of Employees</b>			<b>Respondents order of the Variables (%)</b>
	<b>Agree (%)</b>	<b>Disagree (%)</b>	<b>Not Sure (%)</b>	
Profitability	89.09	1.8	9.09	51.1(1 <sup>st</sup> )
Customer satisfaction	56.36	12.72	16.36	*
Growing customer base	80	3.65	5.45	35.5(2 <sup>nd</sup> )
Employee satisfaction	25.4	54.54	5.45	*
Continuous improvements	78.18	5.45	1.8	25(3 <sup>rd</sup> )
Integrity	58.18	14.54	5.45	*
Productivity	74.59	5.45	7.27	13.3(4 <sup>th</sup> )
Market Share (Africa case)	69.09	9.09	1.8	25(3 <sup>rd</sup> )

Source: Survey, 2011

Note: the \* above refers to the variables that are relatively less significant factors

Table 5.12 shows the determinant factors for success of the airline and agreed respondents reply with the rank of the variables. As per the table, factors such as state art of technology, best practice and working standards, size and type of fleets, opening of

new routes, dedication of work force, training and promotion are considered/agreed as determinant factors for the success of the airline by more than 75% of the respondents. In addition, cost efficiency, management autonomy, safety trend, geographical location, formation history, quality of management leadership, employee motivation and the existing infrastructural facilities are agreed by 60%-74% of respondents as other determinant factors for the success of the airline. Number of ticketing offices (56%) and human resources (61%) are also agreed by the respondents as factors which contribute to the airline's success.

Again, according to respondents, factors such as best practice & working standards, dedication of work force, state art of technology, the existing fleets, training, route expansion, safety trend and promotion are regarded as more prominent factors for the success of the airline.

Table 5.12: Reply of Respondents on Success Determinant Factors of Ethiopian Airlines

<b>Determinant factors for success of Ethiopian Airlines</b>	<b>Agree (%)</b>	<b>Rank of variables (%)</b>
Technological level	83.3	13.3(2 <sup>nd</sup> )
Promotion	75.9	11%
Best practice & Working standard	77.7	18(1 <sup>st</sup> )
Opening of New route	79.6	6
Size of fleets	90.74	13.3(2 <sup>nd</sup> )
Training	75.92	18(3 <sup>rd</sup> )
Formation History	72.2	*
Dedication of work force	79.6	18(1 <sup>st</sup> )
Geographical location	64.81	*



Management Leadership	64.81	*
Human capital contribution	77.7	*
Infrastructure	66.6	*
Ticketing offices	55.6	*
Employee motivation	72.2	*
Safety trends	74.09	11%
Number of human resource	61.1	*
Management autonomy	62.9	*
Cost efficiency	70.37	*

Source: Survey, 2011

Note: \* refers factors that have relatively less contribution for the success of the airline

#### **5.2.10 Major Challenges of Ethiopian Airlines**

In a business environment every company faces different types of challenges. Correspondingly, Ethiopian Airlines as well faces a variety of challenges of which: unstable and escalating fuel price, external competition, unstable political and economical situation on the destination regions, labor turnover, foreign currency risk, exchange rate risk and poor economic and tourism development of Ethiopia are the major ones.

Hence, the airline uses different types of remedy for the above mentioned problems. For instance, in order to manage the financial risks: Foreign currency risk, exchange rate risk and fuel price risk the airline uses five step risk management cycle adapted from the best international practices. Accordingly, different hedging strategies are in use in order to control such risks (Ethiopian Annual Report 2010). In addition, as one of the airline's visions is to work hard for the economic development of Ethiopia in particular and its destinations in general then, this facilitates to handle the challenges related with poor

economic and tourism development. Regarding to, labor turn over and external competition the airline should work very hard on it.

### **5.3 Evaluation of Ethiopian Airlines Overall Performance**

#### **5.3.1 Is Ethiopian Airlines Successful?**

In the first section of this chapter several things about Ethiopian Airlines has been discussed which is related to its overall situation. Thus, based on the criteria measurement, Ethiopian Airlines in relative terms is considered as a successful public company. This is due to the fact that it has a management system lead by a board and power is decentralized that business activities of the company would be handled very well. Besides, the management structure reveals that existence of specialization, accountability and good decision making ability due to long time experience. In addition, the enterprise uses internal organizational structure which fits its business activities and updated every time, which makes the airline more efficient. Moreover, Ethiopian Airlines is an enterprise which has a visionary leadership style that helps it to identify which way to go in order to achieve the intended plans. In line with this, recently the operational as well as the financial performance of the enterprise has showed a good record where almost all with an increasing trend with different justifications for that.

Regarding to the route, Ethiopian Airlines is stretching its network world wide and also increasing the size of its fleet so that it can give services efficiently. Even more, Ethiopian Airlines has smooth internal relation with the government so that with its autonomous management it operates independently which helps the enterprise to function using its capacity without limitation. On the other side, Ethiopian Airlines has healthy relation with its code share partners and the international companies such as Boeings.

Finally, from the distributed questioners more than 95% respondents agreed that Ethiopian Airlines is a successful company on the ground that it a profitable company, it has a higher market share in the region(Africa), its higher customer base, its culture of continuous improvement etc.. From the remaining 5% respondents, some of them are not sure whether Ethiopian Airlines is successful or not and some others says that it is not a successful company with a justification that comparing the company with similar business worldwide it is too early to say that it is a successful company.

Hence, tough success does not have an end by itself and it is not possible to say a given business enterprise is perfectly successful it is possible relatively. Hence, based on the aforementioned factors, my personal observation and agreement of majority of my respondents, Ethiopian Airlines is regarded as a successful public enterprise.

### **5.3.2 Determinant Factors for the Success of Ethiopian Airlines**

Different factors can be mentioned as a factor for the success of this enterprise where, the following are the major ones. Safety is one major criterion to measure success of aviation industry (Haile 2006). And, according to my respondents,' safety record of Ethiopian Airlines in particular and the aviation industry in general is like European standard. In addition, unlike most African carriers Ethiopian Airlines has passed almost more than 80% of the eight major safety criteria's for an airline success. Therefore, the good safety record of the airline is one major factor that leads the airline to this trend.

Market strategy of the airline is referred as another major determinant factor for the success. This strategy refers to the major destination /market concentration of the airline and major passenger types. Regarding to the market concentration the lion share of

Ethiopian Airlines destination is in Africa which is unexploited region. In regard to passenger type, Ethiopian Airlines has business travelers as dominant customers which make continuous movement from one place to the other unlike other passengers which occasionally or sometimes travels using carrier due to different limitations they have such as time, financial resource, individual interest and so forth.

The standardized overall system of Ethiopian Airlines which manages the uncontrollable behavior of the human capital is the other determinant factor for its success. That is, as one of my informant has mentioned “it is difficult to control or manage the human behavior” so that it would be better to develop a controlling system of this behavior rather than controlling it. Thus, in Ethiopian Airlines one has to pass through several stages in order to become one staff member of the enterprise due to the stretched system of the company. This includes, first an individual has to fulfill some qualification criteria’s such as educational, physical and medical in order to pass the entrance exam. After passing the exam the person will attend a training of a given time period depending up on his working position requires. Taking the final practical training the person will take the final exam and has to pass it to begin the work. In addition, unlike most public enterprises in Ethiopian Airlines there is a re- training program when new things occur there and in this company it is believed that what you know might expiree so that you have to update yourself through re current training. Thus, before being a member staff of the company the system will enable the workforce to develop the working culture of the company which is hard working with much dedication and commitments. Moreover, in Ethiopian Airlines everybody understands the value of time so that the time management

there is so good. Hence, this would make the system to be other major factor that contributes to the success of the airline.

Another reason for the success is the visionary leadership style of the company. As an enterprise it had vision of 2010 which has the intention to transport 3 million passengers and to generate revenue of 1 million where all of these are achieved as they were intended. It has again fifteen years vision of 2025 which enables the company to work hard to meet the intended objectives.

The state art technology which is latest in the company is another determinant factor which contributes to the success of the company by making the human as well as the physical capital to be more productive.

Training of the human resource provides trained manpower and creates belongingness to every employee that the company is like his own which it is also another factor that leads the company to the road of success.

In addition, the government gives strategic, economic as well as diplomatic support which strengthens the management system so that the autonomous leadership plays a great role in the performance of the company. Moreover, though the airline is fully owned by the government, it is international standard airline which requires standard knowledge and cannot be handled by anyone without a profession. Therefore the government does not intervene and leaves the airline to function freely using its capacity which this helps the company to manage everything independently by itself without bureaucratic process such as take permission from ministry of transport to do this and that. Thus, this can be considered as another important determinant factor for the success.

In line with the above, the good will of the company which is not built overnight but took 65 plus years is another determinant factor. This good will is a reason behind the desire of every staff member to stay in the company although they have got other else opportunity which they rather stay there and proud to do that due to this good image creation. Moreover, when a staff member gets an opportunity of high salary payment he/she rather stay there due to the fact that there is a culture of working together as a family and it is possible there to get whatever improvement they wants in every aspect provided that they have the necessary knowledge, experience then will have equal chance.

Another determinant factor is the geographical location of the country which enables Ethiopian airlines to have a competitive advantage over other carriers.

Up until several determining factors has been mentioned. However, the work force of the company is so much dedicated and committed that it has high contribution and there is close monitoring of performance of the company as a whole which is one factor which differentiates this company from others.

Besides, the formation history of the company has also significant effect on its success. Even more, tough the airline is government owned and somehow was monopoly till recent times it acts as a competitive industry and has its own international benchmark carriers: British Airways, South Africa Airways, Kenya Airways and Emirate Airways so that works so hard by competing with these and other carriers which then helps it to succeed.

So far, several factors have been identified as determinant factors for the success of Ethiopian Airlines, relying on the descriptive analysis. And, the next section provides the determinant factors for the growth/success of the airline using econometric analysis. In doing so, we can obtain a quantitative support for the previous qualitative finding.

## **Part II: Econometric Analysis**

In this part, econometric procedures for time series analysis is used to quantify the determinant factors for the growth/ success of Ethiopian Airlines. Therefore, this can be combined with the descriptive analysis result so as to identify the overall determinant factors and the possible lessons for other public companies.

### **5.4 Empirical Results and Interpretation**

#### **5.4.1 Unit Root Test**

The Augmented Dickey Fuller (ADF) test is employed in order to test stationarity of variables included in the model. In doing that, Eviews 7.0 statistical software package is used.

#### **Augmented Dickey Fuller (ADF) Test**

The following table shows the ADF test on level and first difference of the variables at 1% and 5% significance level. According to the unit root test using the ADF test the null hypothesis of unit root for all variables at level is failed to be rejected at 1% and 5% significance level, that this reveals the non stationarity of the variables at level. However, the null hypothesis of unit root of the first difference of the same variables is rejected at 1% and 5% significant level. This tells the fact that the variables are stationary at their

first difference. Hence, due to the fact that all of the variables are stationary at their first difference, all are considered as integrated of order one variables (I).

Table5.13: Augmented Dickey Fuller (ADF) test on level and First difference

Variables	ADF test statistic	1% Critical Value	5% critical value
Lnprofit	-2.224380	-3.699871	-2.976263
Lncapital	-1.053715	-3.689194	-2.971853
Lnskabor	-0.110179	-3.679322	-2.967767
D(Lnprofit)	-5.975481	-3.724070	-2.986225
D(Lncapital)	-3.907050	-3.689194	-2.971853
D(Lnskabor)	-4.783774	-3.689194	-2.971853

\*MacKinnon critical values for rejection of a unit root.

#### 5.4.2 Co-Integration Test

The next step after stationary test is to make co integration test using the Johansson approach. However, prior to that some diagnostic tests are conducted and optimal lag length of the VAR is selected based on Schwarz Bayesian Criterion (SBC), Akaike Information Criterion (AIC) and Hannan Quinn (HQ) information criterion etc<sup>4</sup>. According to the diagnostic tests, the result reveals that VAR is stable and the optimal lag length for the VAR is set on 2 lags. Therefore, it is now safe to make the co-integration test.

---

<sup>4</sup> See Appendix 2



Thus, the co-integration test result using both  $\lambda$  trace and  $\lambda$  max test statistics below tells that the null hypotheses of none co integrating vector is rejected at 5% significance level. However, the null hypothesis of at most 1 co-integrating vector is failed to be rejected at 5% significance level. And, this confirms the fact that there is a unique co-integrating vector in the given model. Which, this is not a surprising result because for a model with k endogenous variables there happens to exist less than or equal to k-1 co-integrating vectors (Harris 1995). Hence, the co-integration test below shows the  $\lambda$  trace and  $\lambda$  max results that, at 5% significance level both test statics reveals the existence of one co-integrating vector. Therefore, relying on the two test statistic results the co-integrating vector is identified as one.

While making the co-integration test some diagnostic tests have been made. And, the null hypothesis for the normality and serial correlation of the residual is failed to be rejected at 1% and 5% significance level which assures the normality of the residuals and that there is no autocorrelation problem. Besides, the null hypothesis of homoscedasticity is also failed to be rejected that there is no hetroscedasticity problem (See results on the appendix 2).

Table 5.14: Co-integration test result of  $\lambda$  trace &  $\lambda$  max

Unrestricted Co-integration Rank Test (Trace)

Hypothesized		Trace	0.05	
No. of CE(s)	Eigen value	Statistic	Critical Value	Prob.**
None *	0.707635	39.26752	29.79707	0.0030

At most 1	0.299972	10.98323	15.49471	0.2125
At most 2	0.113874	2.780622	3.841466	0.0954

---

Trace test indicates 1 co-integrating eqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

#### Unrestricted Co-integration Rank Test (Maximum Eigenvalue)

---

Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.707635	28.28428	21.13162	0.0042
At most 1	0.299972	8.202609	14.26460	0.3585
At most 2	0.113874	2.780622	3.841466	0.0954

---

Max-eigenvalue test indicates 1 co-integrating eqn(s) at the 0.05

level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

After discovering the co-integration vector, is to identify the  $\beta$  and  $\alpha$  coefficient and to identify the significance of the long run  $\beta$  coefficients for the model. Hence, the following table shows the long run coefficients, the standard errors and the significance test statistic of the coefficients (T-value).

Based on table 5.14, all coefficients of the profit function have the expected positive sign. That is, in the long run, physical capital and human capital are positively related to profit.

Besides, coefficients of all the explanatory variables are significant. For instance, a percentage increase in physical capital increases profit by 1.05% percent. Again, a percentage change in human capital leads to 1.68% percent increase in profit respectively. This reveals that profit is highly elastic for a percentage change in both variables in the long run. Thus, the long run equation can be written as

$$\text{LNPROFIT} = 1.681551 \text{ LNSKLABOR} + 1.050057 \text{ LNCAPITAL} - 17.45911$$

(0.33571)                      (0.26270)

Table5.15: Coefficients of the long run parameters

Variables	Coefficients	Std. Error	T-value
LNPROF	1.000000	-	-
LHCAP	-1.681551	(0.33571)	5.00888
LPCAP	-1.050057	(0.26270)	3.99718
Constant	17.45911	-	-

#### 5.4.3 Vector Error Correction Model

Another important part of the analysis is to estimate the error correction model. This reveals the adjustment coefficient or the vector error correction term derived from the long run relationship and information on the short run coefficients of the variables in the model.

According to the table below, only skilled labor at the first lag is significant in the short run but has a negative sign with an implication that in the short run adding more labor will result in diminishing return and can affect profit negatively. However, most of the coefficients are statistically insignificant in the short run. That is, the first and second lag of profit and physical capital, the second lag of skilled labor as well as the constant term

and the dummy variables have insignificant t values. However, tough adjustment coefficient is negative and its coefficient value is -0.52, its t statistic value is small which that would make it insignificant.

Table5.16: Results of error correction model with Log profit (LNPROFIT) as dependent variable:

Variable	Coefficient	Std. Error	T-statistic
D(LNPROFIT(-1))	0.119513	0.53184	0.37239
D(LNPROFIT(-2))	-0.396873	0.33756	1.17573
D(LNSKLABOR(-1))	-4.923862	2.03609	2.41829
D(LNSKLABOR(-2))	-0.378886	2.26887	0.16699
D(LNCAPITAL(-1))	1.164603	0.92072	1.26488
D(LNCAPITAL(-2))	0.901393	0.93613	0.96289
C	-0.089556	0.36584	0.24480
DUMMY_1	0.100589	0.43207	0.23281
ECT-1	-0.524215	0.53184	-0.98567

Therefore, to solve this problem the insignificant shorts run coefficients is condensed to make the VCEM a parsimonious model. In doing that, the re-estimation result has provided the result on (table 5.17).

The estimation result shows that the adjustment coefficient is significant and it has a negative value of 0.89 which reveals that 89% of the disequilibrium is adjusted within one year. Besides, the first lag coefficient of profit is significant at 5% significance level which implies that last year profit has a short run effect on the profitability of the airline. Similarly, physical capital has a positive effect in the short run and it is significant at 10% significance level. That is, assuming other things being constant a 1% increase in physical capital leads a 1.5% increase in profit in the short run. This implies that profit is

more responsive to physical capital in the short run than in the long run. However, this does not mean that profit is inelastic to physical capital change in the long run rather, a percentage increase in physical capital leads to a 1.05% increase in profit in the long run. In contrast, unlike in the long run, human capital in the short run is found to be statistically insignificant.

Here, the diagnostic test of the parsimonious VCM reveals that the model is free from problems of autocorrelation, hetroscedasticity, normality, functional misspecification etc<sup>5</sup>

Table5.17: Parsimonious Error Correction Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNPROFIT(-1))	0.473376	0.200938	2.355832	0.0283
D(LNCAPITAL(-1))	1.582089	0.853817	1.852960	0.0780
D(LNSKLABOR(-1))	-2.455011	1.631874	-1.504413	0.1474
ERRCT(-1)	-0.897725	0.264332	-3.396207	0.0027

In summary, net revenue (profit) of the airline is determined by physical and human capital in the long run. Which this fact coincides with the endogenous AK growth theory where the broad definition of capital (human and physical capital) is the major determinant factors for growth to happen in the long run (Lehmann 2000).

Therefore, we can bring the findings of the descriptive as well as the empirical analysis in to one core idea that the long run growth or success of Ethiopian Airlines is determined by physical and human capital. And, these factors intern are determined by the success determinant factors identified in the descriptive analysis. That is, these factors in combination enable the human and physical capital to become more effective and

---

<sup>5</sup> See appendix 2

productive and bring the airline to success. Hence, it is the combination of all factors that enables the airline to grow and/or become successful.

### **5.5 What Lessons Can Other Public Companies Learn From the Experience of Ethiopian Airlines?**

There are several lessons that can be taken from the experience of Ethiopian Airlines:

- If a given company does not have a business plan it would be better if it develops one. Because, it will help the company to know its destination so that would be easier to choose the best way to reach there. However, having a business plan only is not enough by itself rather the plan should be revised in response to the dynamic environment change.
- Having strategic plan for a company would be useful if they are executed very well and there exists a method/monitoring authority that evaluates the execution of the strategies.
- Even though Ethiopian Airlines is public enterprise, it does not stay as it is rather it tries to be competent with other carriers in the world. Thus, from this a given company can learn that it should try to avoid staying on its statuesque even if it has a monopoly status. Rather it should be able to compete as much as it is possible with other similar companies around the world.
- Another important lesson from Ethiopian Airlines is that there should be current and re- current company specific trainings. In Ethiopian Airlines much attention is given to training of the human capital. Even, to show the strong stand that they have on training one former Chief Executive Officer of the airline once Saied that

“you can cut budgets but not budget of training” this reveals the fact that training is basic for the existence and well functioning of an organization.

- The overall system of an organization is so important that a company can develop a standard system of its organization in a manner that enables everything to function very well by passing through the stretched system of the company.
- While government companies fail terribly elsewhere, it is fine over here. This is due to the fact that the airline has freedom to perform every task without any interference of the government. Moreover, the government also supports the airline by exempting it from paying taxes and allows it to use the foreign exchange it generates. Besides, provided that Ethiopia is a land locked country and political capital of Africa, the government have to support the airline that it has to function independently so that can use its potential without any limitation. Thus, tough a given company is owned by a government leaving it to operate independently may help the company to exploit the maximum potential by putting much effort and may perform well. Even more, it can be competent enough and can compete with other same companies of publicly owned or privately owned.
- Thus, other companies in this regard should learn that government support and low interference in the business is so much important for the performance of their business. So that, they should convince the government by working so hard even by feeling it, like their own business that the government would be confident enough to leave them independently in order to use their maximum potential and perform well.

- Moreover, other companies can learn and apply visionary leadership style, systematic and organized working culture, creating live long national feeling of the exiting workforce and so forth which can make their company well performing and successful.
- Besides, it is believed that human and physical capital resource of a firm are significant factors for its success/growth in the long run that firms should give more attention to these factors of productions.



## **CHAPTER SIX: CONCLUSION AND IMPLICATIONS**

### **6.1 Conclusion**

This study attempts to assess the key determinants for the performance growth of Ethiopian Airlines.

In doing so, the descriptive analysis reveals that, Ethiopian Airlines is a successful public enterprise on the ground that it is profitable almost for the entire time of its existence and its customer base is growing time to time. In addition, it is achieving high productivity growth, it shows continuous improvement in every aspect of its business and it has comparatively higher market share among African carriers.

Accordingly, several factors have been identified as determinants for the success of this airline. Which include, best practice and working standards, dedication of work force, state art of technology, autonomous management, overall system of the airline, formation history, safety trend, continuous fleet modernization, market strategy, emphasis on human resource and capacity development, current and recurrent training of all staff members, route expansion etc. Thus, it is not a single factor that makes Ethiopian Airlines a successful enterprise rather it is a combination of several factors.

Besides, the empirical analysis result consents that the long run determinant factors for the growth or success of Ethiopian Airlines as physical and human capital.

Finally, there are many lessons that state owned enterprises can learn from the success experience of Ethiopian Airlines: application of best practice & working standard, overall system development, business specific training, market strategy, human resource development etc. However, the most important point is that, a single factor cannot make

any difference that every enterprise should give attention to all crucial factors so that it makes sense to bring success in a business.

## **6.2 Implications**

First, being autonomous management is one factor that might lead to a success; government should leave publicly owned enterprises to function freely. So that, it would be possible to beat two birds with a single stone by making the company successful, on the one hand, and meeting public interests on the other. However, in order for the government to leave the enterprises independently they should work very hard so that can persuade the government to leave them free and have an autonomous management.

Public enterprises should develop working standard and overall system which fits the type of their business which then enables to control factors of production. Specifically, it is essential to manage the human resource and allows everything to function based on the established system.

Third, whether public enterprises are monopolies or oligopolies, they should be as much competitive as possible domestically as well as internationally so that can enhance their performance.

In addition, being human resource is the basic in put in any organization, a given business enterprise should work on its human resource development through the provision of current and recurrent business specific trainings.

Moreover, every business enterprise faces different types of challenges or risks. Accordingly, any company should first identify what are the challenges of their business and then should develop different strategies to solve them.

Besides, any given enterprise should develop visionary leadership method which enables the enterprise to identify what to do in order to meet these visions. However, only developing a vision by itself does not have any benefit unless there is a way to monitor and evaluate the achievements.

Moreover, in combination with the abovementioned implications, due attention has to be given for physical capital and human capital factors of production for a firm growth or success.

The last implication is that, in order for an enterprise to be successful it has to develop a management system which fits its business, should give much care about its internal organizational structure and should revise it and if necessary change it based on the business environment change. Besides, an organization should have a strategic plan which on the same time has to be monitored and evaluated. Finally it should work so hard on its human resource and make them really committed and dedicated through development of business specific working standard or system for the enterprise.

## REFERENCE

- Abel, A & Pasteau, M 1972, 'The Arrival of the First Airplane in Ethiopia', *Journal of Ethiopian Studies*, vol X, no.2, pp.97-99.
- Acemoglu, D 2009, *Introduction to Modern Economic Growth*, Princeton University Press, Princeton.
- African Aviation 2006, 'Special supplement on Ethiopian Airlines: Ethiopian Airlines celebrating 60 Years', *African Aviation*, May.
- Africa Wings 2010, 'Cooperation among African Carriers- A Choice Or A Necessity', *Africa Wings*, no. 12, 12 Nov.
- Aghion, P & Howitt, P 1998, 'Toward Endogenous Growth', *Endogenous Growth Theory*, The MIT Press, Cambridge, Massachusetts, London, England, pp. 11-47.
- Alazar Ahmed n.d, 'Roles and Responsibilities of Manager in Expanding and Developing ICT', Addis Ababa University College of Commerce, Ethiopia.
- Alemayehu, Geda, Daniel, Zerfu & Ndung'u, N 2003, *Applied Time Series Econometrics: A Practical Guide for Macroeconomic Researchers*, Addis Ababa University, Ethiopia.
- Alemayehu, Seyoum and Tadele, Ferede 2004, 'The structure of the Ethiopian Economy- A SAM- based Characterization', *Ethiopia-A strategy to Balance and Stimulate Growth: A Country Economic Memorandum*, 2005, Green Cover, The World Bank, pp. 1, 11-14.

Aviation & Allied Business 2006, 'Explanation of Measurements', *Africa's Journal of Aviation Development*, pp36, Landover Company Limited, Nigeria.

Aviation: *n.d.*, 'Air Transport Brings Our Economies and Societies a World Wide Range Of Far reaching Benefits', *The Real World Wide Web*, Oxford University, pp.18-59.

Bahru, Zewde 1988, *Bringing Africa Together: The Story of Ethiopian Airlines*, Ethiopian Airlines, Addis Ababa, Ethiopia.

Bahru Zewde 2007, *A History of Modern Ethiopia 1855-1991*, 2<sup>nd</sup> edn, Addis Ababa University Press, Addis Ababa, Ethiopia.

Bahru Zewde 2011, 'Ethiopian's Entry into the Jet Age' *Selamta: The in-flight Magazine of Ethiopian Airlines*, vol.28, no.1, January-March.

Barro, RJ & Sala-i- Martin, X 1995, *Economic Growth*, McGraw-Hill, New York.

Barro,RJ 1997,'Economic growth', *Macroeconomics*, 5<sup>th</sup> edn, The MIT Press, Cambridge, Massachusetts, London, England, pp. 389-424.

Bateman, H & Macadam, K 2006, *Dictionary of Economics*, A & C Black Publishers Ltd, London.

Bernanke, SB & Giirkaynak, SG 2002, 'Is growth Exogeneous? Taking Mankiew, Romer and Weil Seriously April 2001', MIT press.

Best Practices n.d, *Ethiopian Airlines Pioneer of African Aviation Industry*, Newsletter 6,  
viewed 27 November 2010

<[http://www.mfa.gov.et/Press\\_Section/Newsletter6/BestPractices.htm](http://www.mfa.gov.et/Press_Section/Newsletter6/BestPractices.htm)> .

Blunt, P & Jones, ML 1992, *Managing organizations in Africa*, Walter de-Gruyter,  
Berlin, New York.

Bofinger, HC 2009, 'Unsteady Course: Challenges to Growth in Africa's Air Transport  
Industry', *Africa Infrastructure Country Diagnostic*, Background paper 16 (Phase  
II), The International Bank for Reconstruction and Development/ The World  
Bank, Washington DC, USA.

Bojic, B 2009, 'Measure of success in management of facilities', *Law, Economy and  
Management in Modern Ambience*, vol. 2, pp. 478-479.

Bowen, J & Rodriguez, J 1988-2011, *Air Transport*, Departement of Global Studies and  
Department, Hofstra University, viewed 25 January, 2011  
<<http://www.hofstra.edu/Academics/colleges/HCLAS/GEOG/index.html>>.

Civil Aviation Authority 2007, 'A Profile of Civil Aviation in Ethiopia' *Ethiopian Civil  
Aviation Authority*, Addis Ababa, Ethiopia.

Civil Aviation Authority 2011, 'An overview of Ethiopian Air Transportation' *Ethiopian  
Civil Aviation Authority*, Addis Ababa, Ethiopia.

Daniel, Abrham 2011, *The Impact of Fiscal Policy on Poverty in Ethiopian: A  
Computable General Equilibrium Micro Simulation Analysis*, Degree of Masters  
of Science (MSc.), Department of Economics, Addis Ababa University, Ethiopia.

Debrah, YA & Toroitich, OK 2005, 'The Making of an African Success Story: The Privatization of Kenya Airways', *Thunderbird International Business Review*, vol.47(2), Wiley periodicals Inc, Published online in Wiley Inter Science <www.interscience.wiley.com>.

Dempsey, PS 2008, 'The Importance of Air Transport', *The Airline Business*, Institute of Air & Space Law, McGill University.

Demuren, HO 2007, 'Building Competitive African Air Transportation Infrastructure', *The Corporate Council On Africa US-Africa Infrastructure Conference*, Grant Hyatt, Washington DC, USA.

Donohue, GL & Zellweger, A (ed.) 2001, *Air Transportation Systems Engineering: Progress in Astronautics and Aeronautics*, AIAA Press

Dornbusch, R & Fischer, S 1994, 'Long-term growth and productivity', *Macroeconomics*, 6<sup>th</sup> edn, McGraw-Hill Inc, pp.261-293.

Deusen, C, Williamson, S & Babson, HC 2007, *Business policy and strategy: the art of competition*, 7<sup>th</sup> edn, Averbach Publications.

Enders, W 1995, *Applied Econometric Time Series*, Iowa State University, John Wiley & Sons, Inc., England.

ESCWA 2007, '*ESCWA Study on Air Transport in the Arab World*', United Nations, New York.

Ethiopian Airlines(A) n.d, *Ethiopian Airlines- Company Profile, Information, Business Description, History, Background Information on Ethiopian Airlines*, viewed 9

February 2011, <<http://www.referenceforbussines.com/history2/39/Ethiopian-Airlines.html>>.

Ethiopian Airlines(B) n.d, Ethiopian/Company/History, viewed 9 February 2011, <<http://www.ethiopianairlines.com/en/corporate/history.aspx>>.

Ethiopian Airlines(C) n.d, Company Profile and History, viewed 9 February 2011, <<http://www.ethiopianairlines.com/en/corporate/history.aspx>>.

Ethiopian Airlines 2005, *Annual Report 2004-05*, Ethiopian Airlines, Addis Ababa, Ethiopia.

Ethiopian Airlines 2010, *Annual Report 2009/10*, Ethiopian Airlines, Addis Ababa, Ethiopia.

Ethiopian Airlines 2011, *Annual Report 2010/11*, Ethiopian Airlines, Addis Ababa, Ethiopia.

Ethiopian Airlines Summarized Organizational Chart 2010/11, Ethiopian Airlines  
Unpublished Material Source.

Ethiopian Airlines 2011, 30-60 years data of several variables, Ethiopian Airlines,  
Unpublished Material Source.

Ethiopian Fact Sheet 2010, Ethiopian Airlines, Addis Ababa, Ethiopia.

Ethiopian Fact Sheet 2011, Ethiopian Airlines. Addis Ababa, Ethiopia.

Ethiopian Herald, 1946, 'Direct Air Service: Addis Ababa to Cairo', *Ethiopian Herald*, 8 April.

European Competition Authorities n.d, 'Code- Sharing Agreements in Scheduled Passenger Air Transport', The European Competition Authorities.



- Eyob, Estifanos 2001, *The demand for Domestic Air Transport in Ethiopia*, Degree of Master of Science (MSc.), Department of Economics, Addis Ababa University, Ethiopia.
- Fatokun, OS 2005, *African Air Transport in the 21<sup>st</sup> Century: A Case Study of the Contrasting Experience of Nigeria and Kenya*, Degree of Master of Science (MSc), Cranfield University.
- Faulks, RW 1969, *Elements of Transport*, 2<sup>nd</sup> edn, Ian Allan, London.
- Ferguson, PR, Ferguson, GJ & Rothschild, G 1993, *Business Economics*, the MacMillan Press Ltd, England.
- Goldstein, AE 1999, 'Infrastructure Development and Regulatory Reform in Sub-Saharan Africa: The Case of Air Transport', *Research Program On: emerging Africa*, OECD development Center, working paper no.154.
- Green, WH 2000, *Econometrics Analysis*, 4<sup>th</sup> edn, Prentice-Hall Inc, New Jersey.
- Griffin, RW 1990, *Management*, 3<sup>rd</sup> edn, Houghton Mifflin Company, Boston.
- Gujarati D 2004, *Basic Econometrics*, 4<sup>th</sup> edn, The McGraw-Hill Companies.
- Haile, Belai 2006, 'Aviation Safety and Security', *Safe, Secure and sustainable Air Transport in Open skies- Challenges and Potential*, ICAO, Montreal.
- Harris, R 1995, *Using Co-integration Analysis in Econometric Modeling*, Prentice Hall/ Harvester Wheatsheat, Hemel Hempstead, UK.
- Harris, R & Sollis, R 2003, *Applied Time Series- Modeling and Forecasting*, Durham University, John Wiley & Sons, Inc., England.

Heijdra, 2002, *The Foundation Of Modern Macroeconomics*.

Hill,RC, Griffith, WE, and Lim,GC 2008, *Principles of Econometrics*, 3<sup>rd</sup> edn, Jhon Willey and Sons Inc. USA.

Iches, M, France's Civil aviation Department and Ministry of Foreign Affairs 2005, *East Africa Air Transport Survey*, Revision 2, June.

Jackson, JH, Morgan, CP & Paolillo, JG 1986, *Organization theory: a macro perspective for management*, 3<sup>rd</sup> edn, Prenticen-hall, Englwood Cliffs, New Jersey.

Jones, LP 1982, *Public Enterprise in Less- Developed Countries*, Cambridge University Press, London.

Kinard, J 1988, *Management*, Western Kentucky University D.C Health Company, Lexington, Massachusetts, Toronto, Canada.

Kuzman, S, Dogic, R & Kulovic, DZ, 'Trends in Organizational Design', *Law, Economy and Management in Modern Ambience*, vol. 2, pp. 669-677.

Lehmann, FN 2000, 'Was there Endogenous Growth in Chili (1960-1998)? A Test of the AK Model', University of Gottingen.

Lombardini, S 1996, 'The Agents', *Growth and Economic Development*, Edward Elgar Publishing Limited, Brookfield, US, pp. 41-42.

Lussiler, RN 1997, *Management concepts applications skill developments*, South Western College Publishing, Springfield, Massachusetts.

- Maddala, GS 1992, *Introduction to Econometrics*, 2<sup>nd</sup> edn, Macmillan Publishing Company, Newyork.
- Mak, R 2006, 'Ethiopian Airlines', *Airliner World*, Key Publishing Ltd, Stamford links, UK, March.
- Mak, R 2007, 'Africa's New Super Hub', *Airliner World*, Key Publishing Ltd, Stamford links, UK, March.
- Mankiw, NG 2008, 'Production and Growth', *Principles of Macroeconomics*, 5<sup>th</sup> edn, South-Western CENGAGE Learning, Canada, pp. 245-269.
- Mankiw, NG 2010, 'Economic Growth I: Capital Accumulation and Population Growth', *Macroeconomics*, 7<sup>th</sup> edn, Worth Publishers, New York, pp. 191-253.
- Megersa, Abera 2007, *The Economic Effects of Progressive Air Transport Liberalization in Africa: The case of City- Pair Routes to/from Addis Ababa*, Degree of Master of Art (MA.), Department of Economics, Addis Ababa University, Ethiopia.
- Megginson, WL & Netter JM 2001, 'From State to Market: A Survey of Empirical Studies on Privatization', *Journal of Economic Literature*.
- Merchant, KA & Van der Stede, WA 2007, *Management control systems, performance measurement, evaluation and incentives*, 2<sup>nd</sup> edn.
- Ministry of Information 1965, 'Ethiopian Airlines', *Transport and Communication*, The Publications and Foreign Languages Press Department, Addis Ababa, Ethiopia.
- Mohammed, Seid 1995, *Management: An introduction*, Faculty of Business and Economics, Addis Ababa University, Ethiopia.

- Muchai, DM 2011, 'Research Method II: Co-integration', *African Economic Research Consortium (AERC)*, Joint Facility for Electives (JFE), Kenya School of Monetary Studies.
- MyFundi n.d, *The History of Commercial Aviation in Africa: Online Encyclopedia*, viewed 25 January, 2011,<  
[http://myfundi.co.za/e/The\\_History\\_of\\_Commercial\\_Aviation\\_in\\_Africa\\_I](http://myfundi.co.za/e/The_History_of_Commercial_Aviation_in_Africa_I)>.
- Nyaringo, Y 1964, 'The Ethiopian Airlines', Senior essay (BA Degree), Department of Economics, Addis Ababa University, Ethiopia.
- Parahoo, SK n.d, *The Strategic Pertinence of Service Quality and Value to Airlines: An Empirical Assessment*, Hamdan Bin Mohammed e-University, Dubai.
- Plunket,WR & Attner, RF 1986, *Introduction to Management*, 2<sup>nd</sup> edn, Kent Publishing Company, Boston, Massachusetts.
- Pyo, HK 1995, 'A Time Series Test of the Endogenous Growth Model with Human Capital' *Growth Theories in light of the East Asian Experience*, National Bureau of Economic Research (NBER), Vol. 4, University of Chicago Press.
- Ray, D 1998, 'Economic Growth', *Development Economics*, Princeton University Press, New Jersey, pp.47-94.
- Romer, D 1996, *Advanced Macroeconomics*, The McGraw-Hill companies, Inc, United States of America.
- Sakamoto K 2008, 'An Examination of the time series evidence on AK-Style Endogenous Growth Models'.

- Saunders, R 1971, 'Ethiopian Airline Celebrates 25<sup>th</sup> Anniversary', *Topic Washington* No.59. pp. 33-37.
- Segal, S 2011, 'Summary Commercial Aircraft Orders to End of February 2011', *Airfinance*, no.337, March.
- Selamta 2001,'Heights of Excellence', *Selamta: The In-flight Magazine of Ethiopian Airlines*. Vol.18, no.2, April-June, Addis Ababa, Ethiopia
- Selamta 2006, 'Ethiopian Airlines: A Proud History', *Selamta: The In-flight Magazine of Ethiopian Airlines*, Vol. 23, no.2, April-June.
- Semret, Medhane 2005, 'Intergenerational Transfer of Knowledge: The Case of Ethiopian Airlines'.
- Simon, D 1996, *Transport and Development in the Third World*, Routledge, London & New York.
- Tewodros, Ayalew 2010, *Fiscal policy and Economic Growth*, Degree of Master of Science (MSc.), Department of Economics, Addis Ababa University, Ethiopia.
- Todaro, MP & Smith, SC 1994, ' The Solow Neoclassical Model', *Economic Development*, 8<sup>th</sup> edn, Addison-Wesley, Boston, San Francisco, New York, pp.141-153.
- Trani, AA 2005, '*History of air transportation*', PowerPoint Presentation, Department of Civil and Environmental Engineering, Virginia Tech.
- Verbeek ,M 2004, *A Guide to Modern Econometrics*, 2<sup>nd</sup>edn, Erasmus University Rotterdam John Wiley & Sons, Ltd., England.

Whelan, K 2005, 'Topic 2: AK Models', EC4010 Notes, pp.1-6.

Wubshet, Otoro 2008, *The determinants of aggregate import demand in Ethiopia:*

*Cointegration Analysis*, Degree of Masters of Science (MSc.), Department of Economics, Addis Ababa University, Ethiopia.

Yohannes, Birara 2011, *The Impact of foreign Aid on Economic Growth in Ethiopia:*

*Accounting Transmission Mechanisms*, Degree of Masters of Science (MSc.), Department of Economics, Addis Ababa University, Ethiopia

-

# APPENDICES<sup>27</sup>

## Appendix 1: Questionnaire

ADDIS ABABA UNIVERSITY  
SCHOOL OF GRADUATE STUDIES  
COLLEGE OF BUSSINES AND ECONOMICS  
DEPARTEMENT OF ECONOMICS  
**Research Questionnaire**

**Topic: Why Ethiopian Airlines becomes Successful and What are the Lessons for other Public Companies?**

*This questionnaire is prepared to be filled by Ethiopian Airlines employees in order to gather the necessary information while conducting this research. It comprises three types of questions which include: yes or no questions, Matrix format questions and open ended questions. Please answer all questions by reading carefully and spending your valuable time on it.*

*Note that your response will not be used other than pure academic purposes. Please give your response as per the direction/s presented in each question*

*Thank you in advance.*

### **I. Personal information**

1. Name of the respondent: \_\_\_\_\_

1.1 Age: \_\_\_\_\_ 1.2 Sex: A). Male B). Female

1.3 Nationality: \_\_\_\_\_

1.4 Educational Background: A) Below Diploma B) College Diploma

C) Degree D) MA E) PhD and Above

1.5 Profession: \_\_\_\_\_

1.6 Working Position/Occupation: \_\_\_\_\_

1.7 Working experience in the company: \_\_\_\_\_

## II. Research related information

2. Do you think Ethiopian Airlines is a successful company?

A. Yes

B. No

Note: your answer to Question no. 3 & 4 will be based on the information provided on the tables. Then, mark ( ✓ ) on the points you agree and order them according to their contribution.

3. If your response to question no. 2 is Yes, How do you measure its success or what make/s you to say the company is successful? Is it because?

Ethiopian Airlines is successful because of:	Mark (✓)			Order as (1 <sup>st</sup> , 2 <sup>nd</sup> ...)
	Agree	Disagree	I don't know	
Profitability of the company				
Customer satisfaction				
Growing customer base				
Employee satisfaction				
The company's Culture of Continuous improvement				
Integrity				
Higher market share (Africa case)				



Productivity of factors of productions				
Specify if others				

4. What do you think are the factors that determine the success of the company?

<b>Determinant Factors for the success of the airline</b>	<b>Mark (✓)</b>	<b>Order the factors according to their contribution (1<sup>st</sup>, 2<sup>nd</sup>, ...)</b>
Technology system in the company		
The management system		
Incentive for employees		
Incidents of accidents		
Size of fleets		
Existing training centers of the company		
Advertisement		
Size of ticketing offices		
Existing infrastructures of the company including the new international terminal		
Number of human resources		
Land terrain system of the country		
Specify if others		

5. What do you think should a company do to become successful?

---

---

---

---

---

---

---

6. What lesson do you think other public companies can take from the experience of Ethiopian Airlines?

---

---

---

---

---

---

---

---

---

7. In your opinion, what is/are the major challenge/s of the company?

---

---

---

---

---

---

---

8. How do you think the company overcomes those challenges?

---

---

---

---

---

---

---

9. If you have anything to add, comment, suggest, question, or criticizes about the questioner and the issues rose on the topic, you are very welcome.

---

---

---

---

---

---

---

—————*THANK YOU!!!*—————

## Appendix 2: Diagnostic Tests

### A) VAR Stability Test

Roots of Characteristic Polynomial

Endogenous variables: LNPROFIT LNSKLAVOR  
LNCAPITAL

Exogenous variables: C DUMMY\_1

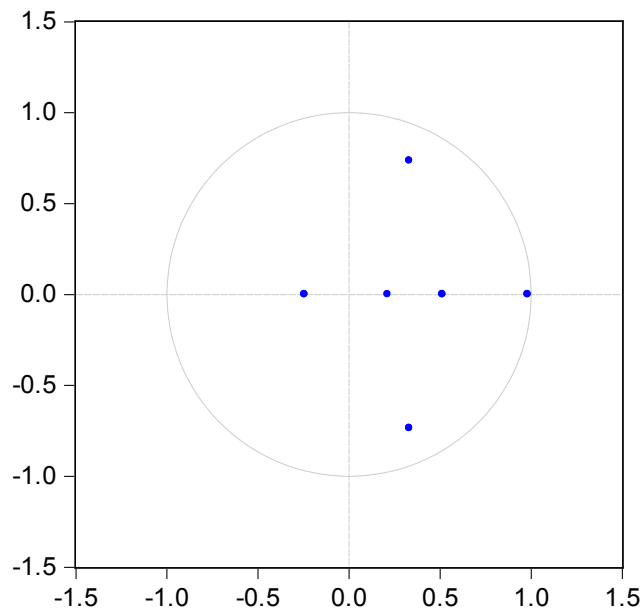
Lag specification: 1 2

Date: 05/08/12 Time: 04:49

Root	Modulus
0.981157	0.981157
0.332503 - 0.735265i	0.806953
0.332503 + 0.735265i	0.806953
0.513583	0.513583
-0.244672	0.244672
0.211561	0.211561

No root lies outside the unit circle.  
VAR satisfies the stability condition.

### Inverse Roots of AR Characteristic Polynomial



## B) VAR Lag Order Selection

### Criteria

Endogenous variables: LNPROFIT LNSKLAVOR  
LNCAPITAL

Exogenous variables: C DUMMY\_1

Date: 05/08/12 Time: 04:52

Sample: 1982 2011

Included observations: 25

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-30.70799	NA	0.003788	2.936639	3.229169	3.017775
1	4.139569	55.75609	0.000486	0.868835	1.600160	1.071673
2	19.68572	21.14276*	0.000304*	0.345143*	1.515263*	0.669684*

\* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

## C) VAR Lag Exclusion Wald Tests

Date: 05/08/12 Time: 04:53

Sample: 1982 2011

Included observations: 25

Chi-squared test statistics for lag exclusion:

Numbers in [ ] are p-values

	LNPROFIT	LNSKLAVOR	LNCAPITAL	Joint
Lag 1	5.754536 [ 0.124183]	24.77571 [ 1.72e-05]	16.90390 [ 0.000740]	78.70172 [ 2.93e-13]
Lag 2	5.707387 [ 0.126748]	5.641791 [ 0.130400]	2.323231 [ 0.508085]	37.58449 [ 2.07e-05]
Df	3	3	3	9

VAR Residual Portmanteau Tests for Autocorrelations

Null Hypothesis: no residual autocorrelations up to lag h

Date: 05/08/12 Time: 04:54

Sample: 1982 2011

Included observations: 25

Lags	Q-Stat	Prob.	Adj Q-Stat	Prob.	df
1	8.298943	NA*	8.644733	NA*	NA*
2	11.10833	NA*	11.69841	NA*	NA*
3	13.90783	0.1256	14.87966	0.0943	9
4	19.48244	0.3627	21.51611	0.2542	18
5	27.83611	0.4195	31.95819	0.2336	27

6	30.39758	0.7318	35.32855	0.5003	36
7	39.96314	0.6848	48.61404	0.3296	45
8	49.07256	0.6645	62.01025	0.2121	54
9	53.39602	0.8004	68.76566	0.2885	63
10	57.42068	0.8947	75.47342	0.3668	72
11	61.48947	0.9477	82.73913	0.4254	81
12	66.03979	0.9728	91.48974	0.4364	90

\*The test is valid only for lags larger than the VAR lag order.

df is degrees of freedom for (approximate) chi-square distribution

\*df and Prob. may not be valid for models with exogenous variables

#### D) VAR Residual Serial Correlation LM Tests

Null Hypothesis: no serial correlation at lag order h

Date: 05/08/12 Time: 04:54

Sample: 1982 2011

Included observations: 25

Lags	LM-Stat	Prob
1	15.14553	0.0870
2	3.106316	0.9599

#### E) VAR Residual Normality Tests

Orthogonalization: Cholesky (Lutkepohl)

Null Hypothesis: residuals are multivariate normal

Date: 05/08/12 Time: 04:55

Sample: 1982 2011

Included observations: 25

Component	Skewness	Chi-sq	df	Prob.
1	-0.258014	0.277380	1	0.5984
2	0.006319	0.000166	1	0.9897
3	0.353779	0.521497	1	0.4702
Joint		0.799044	3	0.8497

Component	Kurtosis	Chi-sq	df	Prob.
1	2.488928	0.272078	1	0.6019
2	2.201738	0.663772	1	0.4152
3	3.334626	0.116640	1	0.7327
Joint		1.052490	3	0.7886

Component	Jarque-Bera	Df	Prob.
1	0.549458	2	0.7598
2	0.663939	2	0.7175
3	0.638138	2	0.7268

Joint	1.851534	6	0.9328
-------	----------	---	--------

**F) VAR Residual Heteroskedasticity Tests: No Cross Terms (only levels and squares)**

Date: 05/08/12 Time: 04:56

Sample: 1982 2011

Included observations: 25

--		
Joint test:		
Chi-sq	df	Prob.
95.32618	78	0.0887

**G) VAR Granger Causality/Block Exogeneity  
Wald Tests**

Date: 05/09/12 Time: 05:39

Sample: 1982 2011

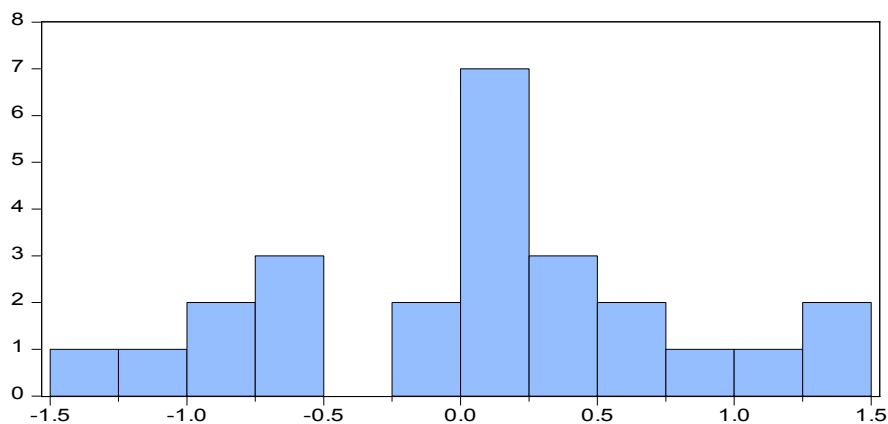
Included observations: 25

Dependent variable: LNPROFIT			
Excluded	Chi-sq	df	Prob.
LNSKLAVOR	5.879653	2	0.0529
LNCAPITAL	1.188793	2	0.5519
All	9.014152	4	0.0607

**H) Breusch-Godfrey Serial Correlation LM Test:**

F-statistic	0.420726	Prob. F(2,19)	0.6625
Obs*R-squared	0.779726	Prob. Chi-Square(2)	0.6771

### L) The test for normality based on Skewness and Kurtosis



Series: Residuals	
Sample 1984 2011	
Observations 25	
Mean	0.078716
Median	0.158485
Maximum	1.469521
Minimum	-1.461216
Std. Dev.	0.742210
Skewness	-0.131969
Kurtosis	2.544164
Jarque-Bera	0.289011
Probability	0.865450

### L) Heteroskedasticity Test: White

F-statistic	1.900560	Prob. F(10,14)	0.1320
Obs*R-squared	14.39574	Prob. Chi-Square(10)	0.1557
Scaled explained SS	7.610955	Prob. Chi-Square(10)	0.6668

### M) Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.470764	Prob. F(4,20)	0.7566
Obs*R-squared	2.151273	Prob. Chi-Square(4)	0.7080
Scaled explained SS	1.137367	Prob. Chi-Square(4)	0.8883

### N) Ramsey RESET Test

Equation: PARSIMONOUSEQ

Specification: D(LNPROFIT) D(LNPROFIT(-1)) D(LNCAPITAL(-1))

D(LNSKLABOR(-1)) ERRCT(-1)

Omitted Variables: Powers of fitted values from 2 to 3

	Value	df	Probability
F-statistic	0.943460	(2, 19)	0.4068
Likelihood ratio	2.367103	2	0.3062



### Appendix 3

Table 5.4: International and Domestic Destination of Ethiopian Airlines 2010/11

International Destinations						Domestic Destns.	
Africa without Ethiopia			Europe & America	Middle East & Asia		Ethiopia	
Abidjan	Entebbe	Luanda	Brussels	Bahrain	Riyadh	Addis Ababa	Kabri Dar
Abuja	Harare	Lubumbashi	Frankfurt	Bangkok	Sana'a	Arba Minch	Lalibela
Accra	Johannesburg	Lusaka	London	Beijing	Tel Aviv.	Assosa	Mekele
Bamako	Juba	Malabo	Paris	Beirut		Axum	Shire
Bangui	Khartoum	Maputo	Rome	Dubai		Bahar Dar	Shilavo
Brazzaville	Kigali	Mombasa	Stockholm	Guangzhou		Dire Dawa	
Bujumbura	Kilimanjaro	N'Djamena	Washington	Hangzhou		Gambella	
Cairo	Kinshasa	Nairobi		Hong Kong		Gonder	
Dakar	Lagos	Ouagadougou		Jeddah		Gode	
Dares Salaam	Libreville	Pointe-Noire		Kuwait		Humera	
Djibouti	Lilongwe	Zanzibar		Mumbai		Jijiga	
Douala	Lome			Delhi		Jimma	

Source: Unpublished Material from Ethiopian Airlines

Table 5.5: Ethiopian Airlines Ticket Offices

<b>Domestic Offices</b>		<b>International offices</b>				
Addis Ababa	Gode	Angola	Dubai	Kenya	Tanzania	Congo republic of
Arba Minch	Jijiga	Bahrain	Egypt	Lebanon	Thailand	Cote D'Ivoire
Assosa	Jimma	Belgium	Equatorial Guinea	Malawi	Togo	Djibouti
Axum	Lalibela	Burkina Faso	Sudan	Mali	Uganda	India
Bahar Dar	Mekele	Burundi	France	Nigeria	United Arab	Israel
Dire Dawa	Shire	Cameron	Gabon	Rwanda	United Kingdom	Italy
Gambella		Chad	Germany	Saudi Arabia	United States	South Africa
Gonder		China	Ghana	Senegal	Yemen	Sweden
		Congo Dem	Hong Kong	Somali Land	Zambia	Zimbabwe

Source: Ethiopian Airlines Annual Report 2009/10

Table 5.6: Ethiopian Airlines Sales Agent Offices

<b>Ethiopian Airlines General Sales Agent</b>					
Abu Dhabi	Chile	Iran	Mexico	Qatar	Syria
Algeria	China	Ireland	Morocco	Rwanda	Tanzania
Angola	Colombia	Israel-Tel Aviv	Mozambique	Saudi Arabia	Taiwan
Australia	Congo	Italy	Nepal	Seychelles	Thailand
Austria	Czech & Slovak Rep	Japan	Netherlands	Sierra Leone	Tunis
Argentina	Denmark	Jordan	New Zealand	Singapore	Turkey
Bahrain	Dubai	Kenya	Nigeria	South Africa	UK
Bangladesh	Finland & Estonia	Kuwait	Oman	South Korea	USA
Belgium & Luxemb	Germany	Liberia	Pakistan	Sudan	Venezuela
Benin	Greece	Libya(Pas & Cargo)	Peru	Spain	Yemen
Brazil	Hungary	Malaysia	Philippines	Sri Lanka & Maldives	Yugoslavia
Burkina Faso	India	Malta	Poland	Sweden	Zanzibar
Canada	Indonesia	Mauritania	Portugal	Switzerland	

Source: Ethiopian Airlines Annual Report 2009/10