SCHOOL OF GRADUATE STUDIES: DEPARTMENT OF ACCOUNTING AND FINANCE

DETERMINANTS OF CAPITAL STRUCTURE IN THE AIRLINES INDUSTRY: AN EMPERICAL STUDY ON MAJOR AIRLIES IN AFRICA.

PREPARED BY: YARED SOLOMON

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Signed by the Examining Committee:

Examiner: _______________ Signature_______________ Date ______________

Examiner: _______________ Signature__________________ Date _____________

Advisor: Ato Gebremedhin Gebrehiwot Signature______________ Date _________

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Chair of Department or Graduate Program Coordinator

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DECLARATION

I, Yared Solomon declare that, this study prepared for the partial fulfillment of the requirements for MSC. Degree in Accounting and Finance entitled “Determinants of Capital structure in Airline industry: An Empirical Study on Major airlines in Africa” is my own work. I have made it independently with the close advice and guidance of my advisor.

Name: Yared Solomon

Signature _______________

Date _______________

CERTIFICATION

This is to certify that Ato Yared Solomon has carried out this research work on the topic entitled "Determinants of Capital structure in Airline industry: An Empirical Study on Major airlines in Africa" under my supervision. This work is original in nature and it is sufficient for submission for the partial fulfillment for the award of MSc. in Accounting and Finance.

Ato Gebremedhin Gebre hiwot

Signature____________________

Date _______________________

Acknowledgements

I thank God the almighty for giving me the means courage and strength and determination to complete my study. Also great appreciation goes to my Advisor Ato Gebremedhin Gebre hiwot for his time, dedication and experience sharing to ensure completion of this study.

Dedication

This study is dedicated to Dr Atlaw , for my family and my friends W/t Haymanot,W/o Seble,W/o Emebet, Ato Surafel,Ato Mesfin ,Ato Lemi and Ato Jiregna for their advice, experience sharing and encouragement.

May God Almighty bless them.

Table of contents

List of Tables

Table **Page**

List of Figures

Figure **Page**

Acronyms /Abbreviations

AFRAA:	African Airlines Association
CLRM:	Classical Linear Regression Model
CVA :	Collateral value of Asset
CM :	Com air airlines
ET:	Ethiopian Airlines
GDP:	Gross Domestic Product
GRO:	Growth opportunity
HP:	Hypotheses
IBD	Interest bearing debt
IATA:	International Air Transport Association
ICAO:	International Civil Aviation Authority
KQ:	Kenyan Airways
LEV:	leverage or gearing ratio
LES:	Lease ratio
LIQ:	Liquidity
MO:	Air Mauritius
NDT:	Non debt tax shield
OLS:	Ordinary Least Square
PRO:	Profitability
SA:	South African Airways
SSA:	Sub Saharan Africa
SZE:	Size of the firm
TA :	Total asset

Abstract

Airline Industry is very dynamic, competitive, highly capital intensive and critical for sustainability. This study examines internal factors affecting the capital structure of five major airlines in Africa. It also explores the applicable capital structure theories used in determining capital structure using sixteen-year data from year 2002-2017.The study used quantitative method research approach by using secondary data from audited financial statements and other officially published documents. To deliver the most reliable factors fixed effect model was applied. The findings of the study show that profitability, liquidity, growth opportunity have statistically significant and negative relationship with leverage, firm size has a significant and positive relationship with leverage. Lease financing, Collateral value of asset and non-debt tax shield also have negative relationship with leverage but the result was insignificant. Finally, it is recommended African airlines to focus internal factors affecting the capital structure and to focus internal financing sources before demanding external financing sources, furthermore it recommended to use the most applicable peaking order theory as a guide line when determining the capital structure in order to maintain sustainability, add value and develop in the industry by avoiding in liquidity and bankruptcy problems.

Key words: Capital structure, Major airlines, Leverage, Internal factors

CHAPTER ONE

INTRODUCTION

1.1 Back Ground of the Study

Locating the optimal capital structure has an issue of interest among academicians for long time, due to the fact that the proportion of debt and equity used to finance the firm's asset has implication on firm's value, additionally capital structure affect leverage which also affect expected return and risk facing owners and creditors of the firm (Kasim K.,2018). Optimal capital structure choice is essential in maximizing the enterprise value and hence, in stimulating growth of the firm. It is strongly connected with the long and short term financing methods used by the firms and it reflects the debt to equity ratio in the financing choice (Laura S. and Viorela L.,2014). Optimal capital structure is a point where the cost of capital is minimal. However, the question of how to choose the optimal capital structure of a firm is still unanswered question despite the extensive researches have been conducted in this regards.

Optimal capital structure is key for one firm because it affects the financial performance and it is one of the tough challenges that firms faces to determine (Abor ,2004). It is a tools for managing the cost of capital and enhance the firm value. Technically capital structure is a careful balance between equity and debt that a business uses to finance its assets, day-to-day operations, and future growth hence it influences everything from the firm's risk profile, how easy it is to get funding, how expensive that funding is, the return its investors and lenders expect, and its degree of insulation from both microeconomic business decisions and macroeconomic downturns (Laura S. and Viorela L.,2014) .

The optimal capital structure most suitable for an organization is much debated question since 1958 after the famous theory of Miller and Modigliani on the capital structure of a firm. Many studies theoretically and empirically also investigated and explained on firm's capital structure choice difficulties but still not suggest clear answer. (Rajan and Zinglales ,1995);(Gill, Amarjit, Nahum Biger, Chenping Pai, and Smita Bhutani ,2009) cited by (Gharaibeh,2015) pointed out that the empirical evidence of successive theories of capital structure is still far from conclusive.

One of the causes for complexities in choosing and determining optimal capital structure of a firm is it is influenced by different sources factors. According to the studies there are two main sources of factors determining the capital structure of the firm i.e internal micro level factors and external macro level factors , to mention some factors specific to the firm are profitability, firm size ,tangibility of asset, liquidity ,asset turnover, non-debt tax shield etc and external exogenous factor like inflation rate, interest rate, Government regulation etc (Laura S. and Viorela L.,2014) ,hence in order to maintain one firms financial health as well us enhance performance ,analyzing and studying these factor and its relation with leverage ratio is very essential.

The financial health of African aviation industry it is highly vulnerable because of different reasons as a result it is the most lagging industry behind the rest of the world, however the demand of air transport is increasing in the region, for instance over the period 2010 -2015, the average growth rate of passenger was 6.1% compared to the global average growth rate of passenger and these trend expected to grow due to a number of factors such as economic growth, demographic boom, increasing urbanization and emergency of middle class as per the world bank &African development bank (Fofack and Ndikumana,2009) .

According to International Air transport association (IATA,2015) report, except few carriers across Africa the performance is low and the weakest region, profit is barely positive $2.51 per passenger but the industry average is $9.89, breakeven load factors are relatively low. (IATA ,2012) report also indicate the profitability of the airline in the region is less than one percent and below the industry average over the past 10 years. Recently the two strong airlines in Africa Kenyan airways and South African airlines suffer with a continuous loss, similarly others Africa airline firms either closed, bankrupt or incurring loss due to miss management of resources, poor financial planning and decision, corruption etc(FT.com T&Cs, 2017).

Despite awareness of the role of aviation industry for African is growing, for instance its role for economic integration between Africans, promote business, trade, tourism as well as cultural exchange, specially mitigating the chronic transport problems for the 16 landlocked Africans countries, appropriate attention not yet given by all the concerned to solve the recurring problems Africa Still Not Ready for Projected Growth (IATA,2017).

Having the importance of capital structure for one firm financial health and growth, and the issues of African aviation industry as stated above and in general the volatility of airline business i.e profitability not assured due to huge amount of costs incurred to run operation which also depends on debt, it is important study the major determinates that affect the capital structure of airline firms. Therefore, this studies aim to contribute on the development of African airlines by addressing one of the issues, through empirical analysis on determinants of capital structure with most recent available secondary data.

Econometrics model with application of Eviews 8 software applied, thus the study specifically helped to maintain the financial health and enhance the value of the major airline firms in Africa. Moreover, the study provides for the management, employee and the concerned empirical facts and awareness on the issue in a way to take in to consideration those influencing factors while choosing and determining capital structure of their respective airline, beside it assist and guide while choosing optimal capital structure thus protect their respective airline from continuous loss, in liquidity and bankruptcy problems.

1.2 Statement of the problem

Capital structure decision is a useful source of information that helps Airlines make key decision regarding investment in aircraft and choosing optimal capital structure as a whole, moreover it gives the management an overview of the current state of the company.

Various reports and studies in the region of Africa shows that African airlines performance is low and the weakest region (IATA,2015). The studies mention most of the reasons for low performance are low credit rating, inadequate capitalization, operational inefficiency, higher level of regulatory costs, higher liquidity risk and others (IATA ,2015),(African development bank ,2017). Nevertheless, the capital structure issues, its relevance for the firm value or its linkage with profitability as well as the determinates of capital structure specific to the airline industry in the region is not properly addressed except few studies in area like manufacturing and banking sector and some on the determinants of profitability on airlines industry in sub-Saharan Africa by (Fikre M.,2015) and (Robert Oginda,2011),the determinants of capital structure in banking sector by (KassahunT.,NahomA.,&Sintayhu A.,2011) and determinants of capital structure in the first world airline industry by (Bratlie, E.K. & Jotne, A., 2012) and (Fadi,2017).

Airline industry is among the most highly leveraged industry, in the last decades studies show that the financial health of the industry is subject to much debate and public concern (Brown ,1982),given these facts scholar says high level of financial leverage often threaten the survival of the industry believing that heavy debt load impose firms financially to deteriorate (Kasim K.,2018).But other studies argue that financial leverage in the airline industry is not necessarily bad (Brander and Lewis ,1986) cited by (Amir h.,2014) showed that debt can be used as a strategic devise to demonstrate one firm's commitment to an aggressive strategy in output market. But the question is, do only these issues affect the optimal capital structure decision and what else remain?

Capital structure is an area that is unresolved with scope to be looked in to, according to (Mayers,1984) most of the theories analyzed in detail only the role played by debt capital in determining the optimal capital structure to enable the firm to increase the profit and thereby improve the value of the firm, however, still the determinants of optimal capital structure remain unsolved puzzle. Hence which theory is the most appropriate to explain and guide the optimal capital structure of airline firms, in particular providing evidence for major African carriers in which a total lake of or young stock market, is not developed and a gap that invite a research with empirical evidence.

The influencing factor affecting the capital structure differ from one country to other due to differences in the level of social, environmental, economic, technology and cultural development (Mazur ,2007). (Doug S. ,2014) cited by (Gharaibeh,2015) pointed out that different studies have suggested that the financial decision in developing countries are somehow different those of developed ones because of their institutional difference such as level of transparency and investor protection besides the bankruptcy and tax low. Consequently, research finding from one country can't be generalized to other country.

Beside most capital structure studies to date are based on empirical data from developed countries' firms. It analyzes the capital structure of firms in economies with highly developed stock market (Gupta ,1969) cited by (Fofack and Ndikumana,2009), very few studies provide evidence from developing countries (Booth, L., Aivazian, V., Demirguc-Kunt, A. and Maksimovic, V. ,2001) cited by (Gharaibeh,2015) as a result there is no clear understanding on how African based airlines construct their capital structure.

Moreover, to be able to know the proper mix of capital structure, airline firms should know the factors that influence that capital structure (i.e., the determinants of capital structure). Accordingly, financial managers (policy makers) will principally should know the relationships between certain firm-specific measures and the leverage ratio. They possibly will need to know the factors that influence the capital structure of their firms. In that case, financial managers need to primarily know the impacts of changing certain firm-specific measures on the capital structure of the firm. Primarily, they need to identify the relationships between certain measures like profitability, liquidity, growth opportunity, non-debt tax shield, tangibility of asset, firm size liquidity, leasing policies, dividend policies, ownership structure, riskiness, etc. on financing decisions of the firm.

Therefore, given the unique financial features of airlines (highly capital intensive), the sensitive environment in which they operate (risky business), and the current financial crises and weak performance of the major African carriers like Kenyan, south African and others there is a strong ground to conduct separate study on determinants of capital structure in major airline in Africa.

This paper thus studies on the determinants of capital structure choices of decisions of major airline firms in Africa and will answer or infer what should be taken in to consideration to gain the optimal capital structure in the context of third world Aviation industry and further it attempt to add a milestone to narrow on the debate regarding capital structure decision and its effect on firms value between airline carriers .In addition, this paper will address the capital structure applicable theory relevance to airline value by using the available empirical data in region of Africa .

The major gap of the previous studies are:

- So far there is no clear and conclusive evidence about the potential determinants of capital structure on major airlines in Africa.
- There is no clear evidence either the financing decisions made by major African airlines provide empirical support for the existing capital structure relevancy theories.
- No sufficient study has been made regarding the determinants capital structure in airline industry in Africa.
- Inconclusive research made on areas of capital structure decision in Airline industry. Factors that could determine the airline optimal capital structure decision not properly studied with support of empirical data with context and circumstance of all regions and most important factors determining the capital structure were missing from the available literatures in African airlines context ,only the South Africa Airlines was combined and studied with the most large and developed nations Airlines like United Air, Delta Air, US airways and other Europe based Airlines by (Bratlie, E.K. & Jotne, A., 2012), as far as the knowledge of the researcher .

Therefore, this paper generally aims to fill the above stated gap in the literature by identifying the factor that influence or determine capital structure decision of major African airline and contribute for the development of African airlines by address the issues, further provide additional facts to the theories of capital structure relevancy evidencing major African airlines.

1.3 Objectives of the study

1.3.1 General Objective

The general objective of this study is to analyze the internal factors affecting and determining the capital structure decisions of major airline in Africa. Hence the study is aiming to address mainly:

- What factors determine the capital structure of major airline in Africa?

1.3.2 Specific objective

The specific objectives of the research are:

- To examine the effect of profitability on the financing mix (leverage) of airlines in Africa.
- To examine the effect of collateral value of asset (tangibility of assets) owned by major African airline on leverage ratio,
- To study airline size effect on leverage of major African airline,
- To study the effect of growth of major African airline on the leverage ratio,
- To examine the effect of liquidity on major African airlines leverage ratio,
- To study the effect of leasing decision on the capital structure of major African airlines,
- To study the effect of non-debt tax shield on the capital structure of major African Airlines.

1.4 Hypothesis development

Based on the empirical findings, experience and theories the following hypothesis was formulated in order to test the hypothesis, answer the research questions, objectives and identify the influence of the seven internal level factors on the capital structure decision of the Airlines.

HP1 – There is a negative and significant relationship between profitability and leverage ratio.

Profitable airlines have a capacity to expand more using the available potential air transport market demand between Africa and the rest of the world ,thus invest more on aircrafts and improve facilities for estimated passengers, accordingly they use own sources of funds from the retained earnings to acquire aircraft, improve facilities generally to grow using the potential market demand in the region before acquired external sources of funds ,thus the more profitable in the region demand less debt hence there is in direct ,negative relationship between profitability and leverage ratio.

HP2 – There is a positive and significant relationship between collateral value of asset and leverage ratio.

Tangible assets used as collateral for the use of debt. For a creditor, airlines with more collateral value of assets mean less risky, therefore the airlines with more collateral assets has more flexibility of accesses debt, hence collateral value of asset (tangibility) has a positive relationship with leverage ratio.

HP3 – There is a positive and significant relationship between firm size and leverage ratio.

A large airline size indicates the capability of the airline bearing debt thus airline size and leverage has positive relationship. Big airlines have a potential to invest more using the capacity, the potential and management skills acquired through experience in the business accordingly prefer and demand more sources of funds for investment with aim of increase the airline value more and more.

HP4 – There is a negative and significant relationship between growth and leverage ratio.

A growing airline acquired lower leverage because growing airline bear higher distress costs and have less free cash flow also have less agency problem and need more flexibility thus they are less levered.

HP5 – There is a negative and significant relationship between liquidity and leverage ratio.

Airlines that have a liquidity can use their liquid assets to finance the operation. The liquid assets can be used as internal financing. More liquidity means that the airline need less external funds thus there is a negative relationship between liquidity and leverage ratio.

HP6 – There is a negative and significant relationship between leasing and leverage ratio.

Airlines have access and engage the option of leasing have many advantage can be flexible, liquid and less risky thus less demand the debt option, therefore there is a negative relationship between leasing and leverage ratio.

HP7 – There is a negative significant relationship between non debt tax shield and leverage ratio.

Airlines prefer non debt tax shield than debt to avoid risk and bankruptcy problem since can get the advantage of less tax in the form of non-debt tax shield instead in the form of debt. Thus prefer less risky option non debt tax shield than debt financing and maximization of airline's value. Accordingly, it is expected inverse relation between airline's leverage and non-debt tax shield.

1.5 Significance of the study

This study contributes to the literature on determinants of airline capital structure in developing nation context and issues concerning efficiency and value maximization of the airlines in the region. It contributes by providing an empirical study for major African airline focusing in to internal factors affecting capital structure. In addition, evaluate, this study result with developed nation airlines study result concerning to capital structure determinant. The study also assesses theories of capital structure decision that could best fit for major airline in Africa. Moreover, it provides the management, employee and the concerned parties empirical facts and awareness on the issue in a way to take in to consideration those factors while choosing or determining capital structure for their respective airline and guide in order to choose optimal capital structure based on the available fact. Finally, the study will help as reference for future study for those interested in the area of the field.

1.6 Scope and limitation of the study

There are different factors affecting the capital structure of the firm, broadly speaking internal factors like profitability, tangibility of asset ,size, growth opportunity, liquidity, non-debt tax shield, lease financing, volatility of earning, age, corruption etc and external factors such as economic growth ,Government regulation ,competitors in the industry, political phenomena ,technology and so on but , in this study only internal or firm specific factors was taking in to consideration due to the fact that the external factors are difficult to measure with the available data and as most are qualitative and difficult to predict the data .

The study used secondary data audited and published officially by major airlines in Africa, which is published with limited information for various reasons such as restriction due to firm's internal policy, to avoiding potential price competition etc. Hence the quality of the study depends on the availability of information on the secondary data source. Beside it was limited to only major African carries.

The study excluded the primary data such as interview of the Airlines CEOs and financial managers to analyze their knowledge on capital structure and their financing decision practices as it is difficult to access the management of the Airline due to geographically costly to find them physically, busy on operation with tight schedule and might not give their expensive time for this specific interview.

1.7 Organization of the paper

The organization of this paper comprises with five chapters as follows:

The first chapter introduces the research subject briefly and outlines the research background, incorporating the problems and results from past studies. The problem statement is given and research objectives have been clearly described and the hypothesis is specified. Apart from this, it also identifies the significance, scope and limitations of the study.

The second chapter presents the review of related theoretical and empirical literatures. It is divided into several areas as follows; general overview, definition, theories of capital structure, theoretical determinants, empirical evidence, features of capital structure, airlines capital structure, and overview of African airline industry.

The third chapter highlights the methodology of the study. The chapter comprises the study design, sampling design, data source and collection, method of data analysis and model specification. Here, the definitions and measurements of the variables are also well defined.

The fourth chapter presents the results of the multiple regression models. This chapter analyzes the collected secondary data, the results and explains the determinants of capital structure in the selected case.

The fifth chapter presents summary, conclusion and recommendation, it summarizes the findings of the study, concludes the results and forwards recommendations based on the findings of the study.

CHAPTER TWO

LITRETURE REVIEW

INTRODUCTION

This chapter presents reviews of relevant literature which are organized around a topic, hence in the first part it presents review of both major theoretical and empirical literature on capital structure issues, followed by the determinants of capital structure towards leverage ratio and in this part more focus will be given to seven variables such as profitability, firm size, tangibility, firm growth, liquidity, lease financing and non-debt tax shield will be discussed in detail and separately in section 2.2. In section 2.3 review of capital structure and its impact on performance of a firm presented, in section 2.4 guiding principle of capital structure decision will be discussed, beside the target or optimal capital structure presented, in section 2.5 target optimal capital structure of the firm, then in 2.6 the history and characteristics of the aviation industry in general and the history and current performance of the aviation industry in Africa and literature gap will follow, finally in section 2.7 the conceptual framework of this study presented.

2.1 Theoretical review

Theories of Capital structure

Due to imperfect market and limited resources the choices of optimal capital structure became complex and in fact affected by many different factors to determine it hence scholars In the field of finance and economics developed numerous theories of capital structure to analyze the alternative capital choices that can maximize the firm value .Some of the major theories of capital structures are Miller and Modigliani (M&M) irrelevant theory ,the picking order theory, the tradeoff theory, Agency cost theory, the cost of capital theory which also exists in a large body of literature that examines the financing behavior of firms, reflected by their capital structure. Accordingly, each of the theory presented here below.

2.1.1 The Irrelevancy theory: Modigliani and Miller (M&M) Model

The pioneer in examining theoretically the capital structure effect on a firm value were by the two economist Modigliani and Miller in 1958, which proposed to Nobel laureates for their work. Modigliani and Miller proceed with two proposition regarding the capital structure and its effect on firm's value: (i) The first proposition investigate the invariance of firm's value with its capital structure, (ii) The second proposition stated that the cost of equity for a leveraged firm is equal to the cost of equity for an unleveraged firm, plus an added premium for financial risk. That is, as leverage increases, while the burden of individual risks is shifted between different investor classes, total risk is conserved and hence no extra value created. The framework lately called as "irrelevance framework" or "invariance proposition".

According to Modigliani and Miller (M&M) theory they assume that there is no optimal debt to equity ratio and the firm's financing strategies do not affect the shareholder's wealth in a perfect market (Fabozi,2010). The perfect market carried have the characteristic of no transaction or bankruptcy costs; perfect information; firms and individuals can borrow at the same interest rate; no taxes; and investment decisions aren't affected by financing decisions. the firms having same risk class.

In their first proposition on the no taxes circumstances debt had no related with firm's market value. The operating income of the firms is solely and independent from how firm's asset are finance. In order to support the debt irrelevant concept, they claim that shareholders can borrow same rate as firm's rate, this may double up the effect on firm's leverage level (Addae, Nyarko & Hughes ,2013). Second M&M Proposition II focuses on cost of equity and leverage proposition without taxes. This time they claim that cost of equity would increase linearly with firm's debt financing with equal proportion. Furthermore, they stated that without risk premium, financing debt may look cheaper than equity, causes average cost of capital would not affected by increasing leverage. This is due to debt had priority claim while greater cost of equity would offset this effect. Hence, they claim that total cost is the best way to used when doing rational investment decision which measured by using required rate of return on fully equity-financed firms (Jensen,1986).

Later on after five year, (Modigliani & Miller ,1963) had modified their model and included corporate taxes into the previous model. The optimal capital structure can be maximized at 100 percent debt financing from the tax shield benefits of using debt. The value of firm now become higher with tax introduced. However, all those assumptions made by both researchers are unrealistic to real world, thus it had been criticized by others researchers (Addae et al.,2013).

In fact, M&M theory were developed in the assumption of perfect market but the real world market exists with imperfection, whatever it had contributed to future theorists which had a deep sight in the theory of capital structure. They had essentially ignited the factors that may made capital structure relevant. (Durand D.,1952) cited by (Ong, Sia, Tan and Wong,2016) discover that financial leverage of the firms is vital because it affecting the overall cost of capital, the return from investment to the investors and the value of a firm. Accordingly, by relaxing the theory of M&M and incorporating the real world imperfection five major theories of capital structure were developed which is explaining to solve the capital structure issue of a firm and discussed below.

2.1.2 The peaking order theory

The pecking order theory is one of the famous financial principal that supports company chooses its capital structure, accordingly most company's capital structure has been empirically perceived defined by pecking order theory. The pecking order theory created by Myers and Majluf in 1984 based on two prominent assumptions. The first assumption propose that managers or insiders of a corporation have the higher chances possess private information about their firm's conditions such as firm's return stream or investment opportunities which outsiders may not know about the information. This asymmetric information matter arises when managers decide to issue new equity. This is because investors will infer this action as bad sign in the sense that they will assume that the stock price is issued at an overvalue price (Seifert and Gonenc ,2008). The second assumptions propose that managers work on behalf the interest of present shareholders. A firm would sacrifice the opportunity in investing in a positive net present value projects due to the issuance of under values shares to new investors in order to get the projects since firm's manager need to consider the welfare of their existing shareholders (Ong, Sia, Tan and Wong,2016) cited (Ahmadinia, Afrasiabishani & Hesami, 2012).

Scholars like (Chen and Huang ,2013) cited by (Ong, Sia, Tan and Wong,2016) stated that this theory maintains that businesses adhere to a hierarchy of financing sources and prefer internal to external financing on account of adverse selection. To lower the information cost associated with debt financing, managers would prefer debt over equity if there is additional fund needed (equity would mean issuing shares which meant bringing external ownership' into the company). In addition, (Ong, Sia, Tan,Teo and Wong,2016) cited (Leary M. and Roberts,2010) also mentioned that pecking order theory forecasts that preferences ranking over financing bases are created due to information asymmetry between managers and shareholders. In essence, the internal fund such as retained earnings of the firm will be used prior than other financial sources. If there is insufficient amount of internal sources the firm only will switch to external resources such as debt. Finally, as a last resort, the firm have to finance itself through issuing new shares, for instance, the firm will issue new shares to investors if they really need additional funds. Ong, Sia, Tan,Teo and Wong(2016) cited (Leary M and Roberts ,2010) added that firm work with the pecking order to finance the company is one of the ways to reduce the adverse selection problem. Therefore, according to the pecking order theory, there is no target capital structure. Rather firms choose capitals according to the following order of preference: internal finance, debt, and equity. This implies that issuing equity becomes more expensive as asymmetric information insiders and outsiders increase. Firms whose information asymmetry is large and need additional fund therefore should issue debt to avoid selling underpriced securities.

The pecking order theory also affirm that firms generally prefer to finance with internal funds. Ideally, a firm would have a debt ratio equal to zero. However, only firms that have enough internal funds can reach this long run equilibrium. Firms that are most likely to achieve a well-established source of internal equity are older, mature firms. Small, young or growing firms, that lack own resources, will have to rely on debt (and equity) financing (Rakmo,2011). In the short run, the debt ratio tends to deviate from zero. In the short run, the theory suggests that firms increase or decrease their debt ratio if they have a negative free cash flow or a positive free cash flow respectively.

Finally, as a last option, the firm have to finance itself through issuing new shares, for instance, the firm will issue new shares to investors if they really need additional funds. Ong, Sia, Tan,Teo and Wong(2016) cited (Leary and Roberts ,2010) added that firm work their way up the pecking order to finance the company is one of the ways to reduce the adverse selection problem.

2.1.3 The static trade off theory

The static tradeoff theory was the earliest and most recognized theory of capital structure which explains the formulation of capital structure. Modigliani and Miller (1963) developed their trade off theory which assumed that there are optimal capital structures by trading off the benefits and costs of debt and equity. The main benefit of debt is tax deductibility of interest and the costs are bankruptcy cost Rakmo(2011) cited (Kim,1978) and agency cost(Jensen and Meckling,1976) & (Myers,1984).

A classic statement is made by (Harris and Raviv ,1991) cited by(Rakmo,2011) that optimal leverage reveals a trade-off between the tax advantages of debt and the costs of bankruptcy. Bankruptcy cost is a cost directly incurred when the perceived probability that the firm will default on financing is greater than zero. One of the bankruptcy costs is liquidation cost, which represents the loss of value as a result of liquidating the net assets of the firm. Another bankruptcy cost is distress cost, which is the cost a firm incurs if stakeholders believe that the firm will discontinue.

As stated by (Myers ,1984), a target debt ratio is first determined by firm that pursues the trade-off theory, after that it will move towards the target gradually. By harmonizing debt tax shields against deadweight costs of bankruptcy, the target is determined.

Static trade-off theory signifies the positive relationship between leverage and profitability in contrast to the pecking order theory. According to this theory, the increase in debt level will diminish the value of the company through the increasing cost of agency, bankruptcy, and financial distress. Thus, in the circumstance that the firm is not able to make an interest payment, for example, it may give rise to the increased cost of bankruptcy Ong, Sia, Tan,Teo and Wong(2016) cited (Wahab and Ramli,2013). A company therefore needs to find equilibrium which the level of debt would be able to offset its costs.

However, there are more benefits and costs correlated with the use of debt and equity. When the firm is already at maximum value, more debt usage will not become beneficial to the firm and instead, incur additional costs. In short, profitable companies will resort to high debt financing by reducing bankruptcy costs, agency costs and taxes Ong, Sia, Tan,Teo and Wong(2016) cited (Ahmad and Rahim,2013).

2.1.4 Agency Cost Theory

Agency cost theory was developed by Jensen and Meckling in 1976, their theory shows important issues in corporate governance in both financial and nonfinancial industries. They explore the nature of agency costs generated by the existence of debt and outside equity. They proposed that two kinds of agency costs borne by the conflict of firm manager and shareholder and debt holder and shareholder these are agency costs of equity and agency cost of debt. The conflicts between managers and shareholders leads to agency costs of equity, and the conflicts between shareholders and debt-holders leads to agency costs of debt. There are three types of agency costs which can help explain the relevance of capital structure which are asset substitution problem, underinvestment problem and free cash flow problem. This problem will affect the final investment decision of a leveraged firm. Besides that, the total agency cost of debt will depend on the trade-off between the agency problems.

Asset substitution effect: As Debt to equity ratio increases, management has an increased incentive to undertake risky projects. This is because if the project is successful, shareholders get all the upside, whereas if it is unsuccessful, debt holders get all the downside. If the projects are undertaken, there is a chance of firm value decreasing and a wealth transfer from debt holders to shareholders (Rakmo,2011) 5th annual research forum St, marry university collage, Aug 26 ,2011.**Underinvestment problem (or Debt overhang problem)**: If debt is risky (e.g., in a growth company), the gain from the project will accrue to debt holders rather than shareholders. Thus, management has an incentive to reject positive projects, although they have the potential to increase firm value (Rakmo,2011) ,5th annual research forum St, marry university collage, Aug 26 2011.

Free cash flow: Unless free cash flow is given back to investors, management has an incentive to destroy firm value through empire building and perks, etc. Increasing leverage imposes financial discipline on management (Rakmo,2011) .5th annual research forum St, marry university collage, Aug 26 2011.

External capital market controlling brought to company by debt financing, forces manager in value maximizing strategies, rather than personal utility maximization Florinita(2012)cited (Easterbrook ,1984). According to Ong, Sia, Tan,Teo and Wong(2016) cited (Berger and Patti ,2006), under agency cost hypothesis, high leverage reduces the agency cost of external equity and increases firm value by encouraging managers to focus more in the interests of shareholders. Besides, Ong, Sia, Tan,Teo and Wong(2016) cited (Berger and Patti ,2006) states that higher leverage can reduce conflicts between shareholders and managers in the aspect of the investment decision, amount of risk can accept and the condition under which the firm is liquidated and dividend policy.

Debt is an effective tool to reduce the agency costs, and eventually optimal capital structure can be derived from the balance between the costs of debt against the benefits of debt. Ong, Sia, Tan,Teo and Wong(2016) cited (Grosseman and Hart ,1982) argued that managers could pre-commit to work hard by using debt rather than equity. Besides, (Jenson ,1986) stated that increase in agency costs of debt will lead to increase of the bankruptcy costs. According to Myers (1977), firms may abandon good projects if they have significant debt outstanding because a large part of the returns will go to bondholders for a firm that facing financial crisis.

2.1.5 The Cost of Capital Theory

According to Fadi(2017) cited (Qayyum ,2013), theory of cost of capital structure suggests that the market value of a firm is determined by its earning power and the risk of its underlying assets and its independent of the way it choose to finance its asset. In other words, capital structure is not affected by the manner in which the needs of the business are being satisfied but is affected by its revenues and the assets it holds. It is often argued that the value of an organization depends upon the structure of its capital. In such a situation, an arbitrage opportunity is available to the business organization in the perfect capital market. In addition to this, this theory also argues that opportunity cost does not exist. It means the investor has the capability of neutralizing the decisions regarding capital structure of the organization, if the rate of interest is same for the investor as well as the business organization. However, this theory is characterized by many unrealistic assumptions. Few of such unrealistic assumptions include no transaction costs, no opportunity costs and perfect capital market. Even though the theory does not provide a realistic approach but it forms the basis of further researches on the appropriate structure of capital.

After the connotation of this theory, all the above-mentioned theories were developed. Almost all the organizations operating in various industries across the world use the theories detailed above for preparing an appropriate capital structure for their own organization. Such capital structures fulfill the financing needs of the business organizations and are one of the reasons which ensure success of the organizations.

2.2 Empirical review

Determinates of capital structure

To study the determinants that influenced the capital structure in the airline industry, Fadi(2017) cited (Capobianco and Fernandes,2004) tested the hypothesis that the financial performance of the airline industry depends upon the reasonable level of leverage. The research was conducted on the first world biggest airline companies which make use of capital for generating return by keeping a low level of fixed assets. The capital of the shareholders of these types of companies represents at least 40% of all funds employed. The results of the study revealed that the performance of the companies fundamentally depends upon the management structure of the companies.

Studies generally agree that leverage increases with fixed assets, non-debt tax shields, growth opportunities, and firm size and decreases with volatility, advertising expenditures, research and development expenditures, bankruptcy probability, profitability and uniqueness of the product. However, the results of both theoretical and empirical studies are not always definite.

In part 2.2.1 to 2.2.8 below internal factors or determinants of capital structure selected for this study, the bases of section are due major in terms of its effect internally for the capital structure choices and also common factors that are analyzed based on previous research, to understand more the relationship and its impact on firm's value with corresponding theories of capital structure these are: firm size, profitability, tangibility, growth opportunities, liquidity, leasing and non-debt tax shield.

2.2.1 Profitability

There are no consistent theoretical predictions on the effects of profitability on leverage. From the point of view of the trade-off theory, more profitable companies should have higher leverage because they have more income to shield from taxes. The free cash-flow theory would suggest that more profitable companies should use more debt in order to discipline managers, to induce them to pay out cash instead of spending money on inefficient projects. However, from the point of view of the pecking-order theory, firms prefer internal financing to external. So more profitable companies have a lower need for external financing and therefore should have lower leverage.

Most empirical studies observe a negative relationship between leverage and profitability Bratlie and Jotne(2012) cited (Rajan and Zingales ,1995), (Huang and Song,2002),(Booth et al, 2001), (Titman and Wessels ,1988), (Friend and Lang,1988) and (Kester,1986).

In these study, profitability is proxied by return on assets (defined as earnings before interest and taxes divided by total assets).

2.2.2 Tangibility

It is assumed, from the theoretical point of view that tangible assets can be used as collateral. Therefore, tangibility lowers the risk of a creditor and increases the value of the assets in the case of bankruptcy. As Booth et al. (2001) state: The more tangible the firm's assets, the greater its ability to issue secured debt and the less information revealed about future profits. Thus a positive relation between tangibility and leverage is predicted. Several empirical studies confirm this suggestion (Bratlie and Jotne,2012) cited such as (Rajan and Zingales ,1995) and (Friend and Lang,1988) .

On the other hand, for example (Huang and Song ,2002) cited by Dung Thi Thuy Tran (2014) however experience a negative relation between tangibility and leverage.

However, the result of (Titman et al,1988) provide not support for an effect on leverage ratio arising from collateral value of asset.

2.2.3 Firm Size

From the theoretical point of view, the effect of size on leverage is ambiguous. As Bratlie and Jotne (2012) cited (Rajan and Zingales ,1995) claim, larger firms tend to be more diversified and fail less often, so size (computed as the logarithm of sales) may be an inverse proxy for the probability of bankruptcy. If so, size should have a positive impact on the supply debt. However, size may also be a proxy for the information outside investors have, which should increase their preference for equity relative to debt.

Although empirical studies do not provide us with clear information. Some authors find a positive relation between size and leverage, for example (Huang and Song ,2002) cited by Dung Thi Thuy Tran(2014), on the other hand, some studies report a negative relation, for example (Kester,1986), (Kim and Sorensen,1986) &(Titman and Wessels ,1988). Moreover, the results are very often weak as far as the level of statistical significance is concerned.

In most research paper, firm size has become a control variable in financial market even though it is not uncommonly among the significant variables. According to Dung Thi Thuy(2014) cited (Friend and Lang ,1988) the impact of firm size to debt ratio is expected to be positive. Larger firms are possible to be differentiated and not easy to obtain bankruptcy since a larger firm has higher flexibility in planning capital structure (Rajan and Zingales ,1995).(Gruber and Warner ,1977) also stated that the direct bankruptcy costs increase when firm value decreases and large firms tend to be more diversified which in turn resulting in large firms expected to be highly leveraged.

The trade-off theory expects firm size and debt ratio has positive relationship due to large firms tend to borrow more loan than small firms due to small firms are afraid of high level of debt. Similarly, Ong, Sia, Tan,Teo and Wong(2016) cited (Al-Sakran,2001),(Hovakimian and

Tehranian ,2004) provide empirical that the relationship between firm's size and debt ratio is positive. They explained that if size of the firm increases, the needs of debt financing will also increase. Ong, Sia, Tan,Teo and Wong(2016) cited (Eriotis, Vasiliou and Ventoura-Neokosmidi ,2007) suggested that large firms tend to be more diversified and direct cost of issuing debt or equity is lower. This result corresponds with the trade-off theory. Balla and Mateus (2002) did another study about the capital structure and they found that there is direct relationship between firm size and debt ratio.

But still some researchers had proved that negative relationship between firm size and debt ratio According to Ong, Sia, Tan,Teo and Wong(2016) cited (Wahab and Ramli ,2013), they stated that larger firms show less asymmetry of information due to the large firms is monitored by analysts. So, these firms possibly may spread information respond to market sensitivity and are not as much of rely on leverage compared with small firms as they choose equity financing. (Suhaila,M.K.,Mahmood,W,M.W.,&Mansor, W.,2008) explained that firm size has negative relationship with debt ratio and because of larger firms have a lesser amount of demand for debt than smaller firms.

2.2.4 Liquidity

Liquidity ratio is usually used to measure the liquidity of a firm by using current asset and current liabilities. It can use to measure the ability of the firm to fulfill its short term obligation Ong, Sia, Tan,Teo and Wong(2016) cited (Wahab and Ramli ,2013).Liquidity can either positively or negatively given impact on capital structure based on different research review.

The positive relationship between liquidity and leverage was supported by trade off theory. The rationale behind the positive effect of liquidity on leverage is when the firms had many illiquid assets, they tend to reduce their probability of default, so they choose to reduce the debt or borrowing Ong, Sia, Tan,Teo and Wong(2016) cited (Sibilkov,2009). Ong, Sia, Tan,Teo and Wong(2016) cited (Putek ,2014) conclude that liquidity is positive and significant to total debt. They found that high liquidity firms prefer using cash invest in long term investment and finance short term debt.

On the other hand, negative relationship between liquidity and leverage was supported by Pecking Order theory. The rationale behind is that current asset able to use by the firms to finance their operation, thus there is no urgent for firms search for external financing Ong, Sia, Tan,Teo and Wong(2016) cited (Wahab and Ramli,2013). Ong, Sia, Tan,Teo and Wong(2016) cited(Niu ,2008) stated that firms tend to form the liquid reserves from retained earnings account instead of raised for external funds for leverage sources. Hence liquidity is negatively related to leverage. Ong, Sia, Tan,Teo and Wong(2016) cited (Lipson and Mortal ,2009) and (Udomsirikul, Jumreornvong & Jiraporn ,2011) also found that the firm with more liquid in equity, will tends to carry less debt because they prefer to raise equity rather than debt.

2.2.5 Leasing

Leasing is a contract that authorized the lessor to retain the ownership of the asset and the lessee enjoys the services of the asset over a stipulated period of time. In return the lessee pays the rental for the particular asset to the lessor. The two main elements in the cost of leasing is the risk in ownership and the liquidation value. Basically, there are two types of leases named operational lease and capital lease. The type of lease affects the balance sheet and leverage ratio of the firm (Bratlie and Jotne, 2012).

As per the previous study conducted by Bratil and Jotne(2012) cited(Gavazza ,2011) were studied the commercial aircraft leasing market to analyze the impact of the liquid assets on the cost of external financing. According to him, more liquid assets decrease the cost of external financing and this makes the leasing more attractive. The reason behind this is that more liquid assets are more redeploy able and are also less specific, especially in aircrafts. In airline industry, more than half of the aircrafts are leased and the active secondary market makes aircrafts liquid assets. As per the findings of the study, if an aircraft is more liquid it has the high probability to be leased on an operational lease (Bratlie and Jotne ,2012).

The second market plays an important role as airlines trade aircrafts to adjust their productive capacity. Airlines expand and acquire aircrafts in a case when positive demand shock affecting profitability and in a case of negative shock they sell aircrafts. From these statements, it can be stated that leasing helps to efficiently locate the capital goods. It also facilitates carriers to transfer some risk to the operating lessors. Lessors bear the aircraft ownership risk through their knowledge, economies of scale, geographic regions and diversification of the aircrafts (Bratlie and Jotne ,2012).

As per Bratlie and Jotne (2012) cited (Gavazza ,2010) high-volatility airlines lease aircrafts and low-volatility airlines own aircrafts. The reason behind this is adjustment of the capacity more frequently in case of high volatile airlines and that's why they value leasing aircrafts more than low volatility airlines. As per their analysis, aircrafts which are leased are less inactive as compared to the aircrafts which are owned by the airlines. Under the using condition, leased aircrafts have higher capacity utilization as compares to owned aircrafts.

2.2.6 Growth opportunity

It is measured as the percentage change in total dollar sales, it can also measure as the ratio of capital expenditures to assets.

According to the pecking order theory taken the future of the firm more in to account. Managers would look into the future and keep a low level of debt, since they will avoid using new equity offerings to finance new investments. Equity offerings are lowest in the pecking order and could signal that the stock is overpriced. This leads to a negative relationship between growth opportunities and leverage Bratlie and Jotne(2012) cited(Frank and Goyal,2009) .

The trade-off theory that firms expects with more investments opportunities have less leverage because they have stronger incentives to avoid underinvestment and asset substitution that can arise from stockholder-bondholder agency conflicts Bratlie and Jotne(2012) cited (Frank and Goyal, 2011). This is supported by Myers (1977) and Jensen and Meckling (1976), which argue that managers of highly levered firms have stronger incentives to engage in underinvestment and asset substitution. Previous study result by Bratlie and Jotne(2012) cited (Rajan and Zingales ,1995) shows that a negative relationship between growth and leverage ratio. Bratlie and Jotne(2012) cited(Gaud, Hoesli, and Bender ,2005) also found that growth firms are less levered than the non-growth firms, which they conclude is caused by that growth firms prefer equity to debt to avoid bankruptcy in accordance with pecking order theory.

2.2.7 Non debt tax shield

With debt the company can pay less tax, because of the interest which provides a kind of shield against tax Myers(1986). The main goal is to create the highest value for the company. To do this a company can use debt. The tax shield ensures that the company need to pay less tax due to interest that has to be paid. When less tax must be paid a higher amount of cash flow remains. Based on the cash flow the company can be valued. Hence, with a higher amount of debt the cash flow of the companies' increases the value due to the tax shield which is created by using debt instead of equity Koert te Nijenhuis (2013) cited (Hillier, D. J., Ross, S. A., Wester field, R. W., Jaffe, J., & Jordan, B. D.,2010).

Nevertheless, (Titman and Wessels ,1988) state that depreciations and investment deductions can be seen as alternatives for the tax advantages of using debt. Therefore, with those non debt options a company does not need debt to pay less tax. With the presence of the non-debt tax shield, debt is not necessary to obtain tax advantages Koert te Nijenhuis (2013) cited (De Jong and van Dijk ,2007). The non-debt tax shield reduces the tax benefits of leverage. Another advantage is that companies do not need to make costs for borrowing and the risk of distress declines by not using more debt Koert te Nijenhuis (2013) cited (Deesomsak, R., Paudyal, K., & Pescetto, G. ,2004). The depreciation and amortization declines the amount of profit, which leads to lower tax payments. Therefore, non-debt tax shield is a good variable to measure the influence of tax advantage on leverage. Koert te Nijenhuis (2013) cited (De Miguel & Pindado ,2001) found that a firm with a higher non debt tax shield has a lower amount of leverage. This is in line with what was found in the article of (De Haan & Hinloopen ,2003), where depreciation was negatively related to bank loans. The same applies for interest payments. If a company already has a lot of non-debt tax advantages it is not necessary to borrow more money to decline the amount of tax, which has to be paid.

Previous studies by De Jong (2002) cited by (Koert te Nijenhuis ,S2013) also show that there is a negative relationship between the variable non debt tax shield and leverage ratio also the effect was significant. But the result found by (Titman et al,1988) do not support an effect on leverage ratio arising from non-debt tax shield.

2.3 Capital structure/Leverage/ Debit to equity ratio and firm performance

The traditional theory of capital structure postulates that debt capital is cheaper than equity and that as such a company can increase its value by borrowing up to a reasonable limit. This shows that an optimal level of leverage or gearing ratio exists. It also asserts that there exists a significant relationship between leverage and firm performance value in a firm. The theory also postulates that there exist a negative relationship between leverage and performance.

On the contrary, the Modigliani and Miller (M&M) theory postulates that capital structure or leverage has no significant impact on firm's performance.

(Gharaibeh,2015) cited (Chittenden F., G. Hall and P. Hutchinson ,1996) in his works argued that, financial leverage had a positive effect on the firm's return on equity provided that earnings' power of the firm's assets exceeds the average interest cost of debt to the firm. Robert Oginda(2011) cited (Taub ,1975) also found a significant positive relationship between debt ratio and measures of profitability. Robert oginda(2011) cited (Nerlove ,1968,Baker 1973 , Petersen and Rajan ,1994) also identified positive association between debt and profitability but for industries.

However, some studies have shown that debt has a negative effect on firm profitability. Robert Oginda(2011) cited (Fama and French ,1998) for instance argue that the use of excessive debt creates agency problems among shareholders and creditors and that could result in negative relationship between leverage and profitability.

2.4 Guiding Principle of Capital structure Decision

A financial manager has to plan the pattern of capital structure for the firm in such a way that owner's interest is maximized. Accordingly, that pattern of capital structure should be chosen which may minimize cost of capital and maximize value of the stocks. Broadly speaking, there may be three fundamental patterns of capital structure in a new concern. These are: financing of capital requirements exclusively by equity stock; financing of capital requirements by equity, preferred stock; and financing of capital needs by equity, preferred stock and bonds.

While choosing a suitable pattern of capital structures for the company, a financial manager should keep into consideration some fundamental principles. These principles are militant to each other Rakom(2011) cited (Srivastava ,2003).

2.4.1 Cost Principle

Cost principle is the first guiding principle for making decision on type of capital structure to choose among other types of the structure. According to this principle, ideal pattern of capital structure is the one that tends to minimize cost of financing and maximize earning per share (EPS) Rakom(2011) cited (Srivastava,2003).

2.4.2 Risk Principle

As known, business firms operate in risk prone working environment. Risk principle suggests that such a pattern of capital structure should be planned so that the company does not run the risk of bringing on a bankruptcy with all its difficulties and losses Rakom(2011) cited (Srivastava,2003).

2.4.3 Control Principle

The designing of capital structure in a business firm considers control principle. While designing appropriate capital structure for the company and for that matter choosing different types of securities, a finance manager should also keep in mind that controlling position of residual owners remains undistributed Rakom(2011) cited (Srivastava,2003).

2.4.4 Flexibility Principle

According to flexibility principle, the management should strive toward achieving such combinations of securities that management finds it easier to manage sources of funds in response to major changes in need for fund. Not only are several alternatives open for assembling required funds but also bargaining position of the corporation strengthened while dealing with suppliers of funds Rakom(2011) cited (Srivastava,2003).

2.4.5 Timing Principle

Timing is always important in financing and more particularly in a growing concern. The principle is sought to be adhered to in choosing the types of funds so as to enable the company to seize market opportunities and minimize cost of raising capital and obtain substantial savings.

Depending on business cycles, demand of different securities oscillates. In time of boom, when there is all-round business expansion and economic prosperity; investors have strong desire to invest. It is easier to sell equity shares and raise ample resources. However, in periods of depression, bonds should be issued to attract money because investors are afraid to risk their money in stock which is more or less speculative. Thus, timing may favor debt at one time and common stock (preferred stock) at other time Rakom(2011) cited (Srivastava,2003).

2.5 The Target or Optimal Capital Structure

Firms should first analyze a number of factors and then establish a target capital structure. This target might change over time as conditions change, but at any given moment, management should have a specific capital structure in mind. If the actual debt ratio is below the target level, expansion capital should generally be raised by issuing debt, whereas if the debt ratio is above the target, equity should generally be issued.

Capital structure policy involves a trade-off between risk and return using more debt raises the risk borne by the stockholders. However, using more debt generally leads to a higher expected rate of return on equity. Higher risk tends to lower a stock’s price, but a higher expected rate of return it raises. Therefore, the optional capital structure must strike a balance between risks and return so as to maximize the firm’s stock price.

2.6 Commercial Aviation in Africa:(A brief overview on Development, Challenges prospects and benefits)

2.6.1 The African airline industry development

The African airline industry has experienced rapid growth over the past decade, passing through turbulent phases that came in the aftershock of the 2009 financial crisis. Intra-African air travel has also undergone continuous growth mainly driven by recent increase in regional trade and cross investments among African countries (AFRAA,2014). At least five recent developments with respect to the African aviation industry can be observed.

Firstly, the aviation market has increasingly consolidated over the past ten years. Flight Stats (2013) highlights that in recent years, there has been route consolidation in the Intra-African air transport sector with a number of low frequency and small aircraft routes having been abandoned as compared to 1994. Thus, compared to 1994 levels, intra-African traffic routes flown have gone down from 1,088 in 1994 to 719 in May 2013. This development has been driven by the building of hubs by five carriers (Egypt Air, Royal Air Morocco, South African Airways, Ethiopian Airlines and Kenya Airways), accounting for around 80 percent (2012) of all scheduled capacity within Africa.

The development has resulted in an uneven geographical distribution of intra-African air passenger traffic, which is limited to a few key routes, predominantly linking the African large and medium cities to hubs in Ethiopia, Kenya, Morocco and South-Africa as well as with capital cities on other continents (Otiso, K. M., Derudder, B., Bassens, D., Devriend, L., Witlox , 2011) & (Neuenburg and Bourne ,2012). With respect to regional distribution of air traffic, it is argued that while Eastern and Southern Africa have successfully established a strong air transport industry, Central and Western Africa have been less successful (Ranganathan and Foster ,2011). The latter is characterized by a less developed hub system, smaller and in some cases, negative growth, which is partly attributed to the collapse of major carriers.

The second major development has been the collapse of numerous airlines which have either ceased operations or reorganized under bankruptcy protection. Examples include Air Afrique which ceased operations in 2002, Nigerian Airways and Ghana Airways in 2004 and Cameroon

Airlines in 2008 (Tchouamou Njoya,2012). Liberalization and years of mismanagement have been put forward as reasons for the failure of these and other airlines Tchouamou Njoya cited (2012) cited (Amankwah,Amoah and Debrah, 2013).

Thirdly, new market entry has been accelerating over the past years. In fact, despite the market consolidation by the major airlines and collapse of some airlines, the number of African-based carriers has more than doubled since 1994 to 70 carriers, according to (Flight Stats,2013). Increases in frequency and in seat capacity have been identified as well. Flight Stats (2013) outlines that average frequency has increased by 1.3 flights per day whereas average capacity of seat per flight has grown from 91 in 1994 to 103 in May 2013.

Additionally, the low cost sector has developed rapidly in recent years. In fact, while many African airlines remain state owned, air traffic growth in the region is now coming from low cost carriers (LCCs) Tchouamou Njoya(2012) cited (Amankwah-Amoah and Debrah,2009). These airlines avoid the traffic rights problems by setting up multiple subsidiaries. OAG (2012) states that the contribution of LCCs in market shares to and within Africa grew by 6 percent points over the last decade.

The report highlights that LCCs' year on year percentage growth rate is currently averaging 16 percent versus full service carriers' of only 5 percent. According to CAPA(2013), the LCC sector has grown since 2001 from 0.3 percent of total capacity to 12 percent each for internal and external traffic in 2012. However, due to political and regulatory intervention and external competition African LCCs have not been able to achieve the expected savings. Tchouamou Njoya(2012) cited (Heinz and O'Connell ,2013) investigate the applicability of LCCs in Africa and conclude that full-service network carriers and regional carriers are the most prominent and stable business models in the African market.

Finally, there has been increasing private sector participation in the African aviation sector. Hence, the industry has seen a new breed of private carriers operating largely in the domestic and regional markets (Schlumberger and Weisskopf ,2014). Private participation in airports in Africa is not widespread. However, though public provision of airport facilities and services remains dominant, some countries have in recent years embarked on airport privatization

(Janecke,2010). Countries such Côte d'Ivoire, South Africa, Ghana, Nigeria and Botswana have successfully attracted private investors in their main airports.

These developments are most likely due to the relaxation of regulatory restrictions and the emergence of a more business friendly environment in Africa.

2.6.2 Challenges of Commercial airline industry in Africa

Africa accounts for just 2% of the world's air transport traffic in terms of passenger kilometers flown, despite this, the continent has the highest accident rate, with African carriers representing 23% of the western built jet hull losses in 2010, which is a manifestation of the ongoing issues (IATA ,2010). This has contributed in forcing many passengers to switch to international carriers as Ethiopian Airlines CEO stated that 80% of the African traffic is flown by non-African carriers (Dunn,2012) while in Nigeria the situation is considerably worse as 98% of its traffic is carried by non-African carriers (Thomas,2013). Research by (O'Connell and Warnock and Smith,2012) revealed that Egypt air's overall share of international trips to/from Egypt just marginally increased from just 13.3% in 2007 to 15.7% by 2009, many of the passengers were Egyptian residents, indicating the difficulty in attracting foreign passengers to travel with African based carriers. This scenario has compressed the output of the continent as Airport is data computes that 80% of Africa's capacity is carried by just 20% of the domiciled carriers. The African environment presents a unique set of challenges that are unique to its environment that principally include high costs, poor aircraft utilization and sparse demand.

African carriers face higher costs than their counterparts in other parts of the world. Fuel for example needs to be transported over long distances as a quarter of countries on the continent are land-locked the problem aggravated by poor infrastructure. The fleet size of most of the African carriers lack sufficient scale to negotiate favorable rates with fuel suppliers, while the practice of fuel hedging is not endorsed leaving African airlines exposed to volatile price fluctuations. Distribution is another constraint again to Africa as low internet and credit card penetration rates force airlines charged more by travel agents (Chingosho ,2009) states that commission payable to travel agents is typically about 7% of the ticket price. Furthermore, African service providers such as airports and navigational service providers are typically government-owned monopolies and consequently are all higher in Africa than the rest of the world, landing a 200-ton aircraft for example in Johannesburg and Nairobi is around $2,500 and $1,500 respectively, while London Heathrow is considerably less at $500(IATA ,2010). African carriers have some of the oldest fleet in the world with 80% of all aircraft registering over an age of 10 years or older, this in-turn triggers higher associated maintenance costs, increased fuel consumption, poor reliability and increased downtime. Aircraft utilization rates in Africa remains among the lowest in the world with rates averaging just 6.9 hours per day compared to Europe with 9.9 (Chingosho,2009), this is attributable to poor scheduling, night flying restrictions, extended downtime of aging aircraft and a shortage of flight and maintenance personnel. African airlines also operate to the most destinations per aircraft when compared to other carriers across the globe. This is a reflection of poor aircraft usage with too many destinations being served by too few aircraft based on the need of state-owned airlines to be present in more markets than their fleet sizes can accommodate, often as a matter of ‘market presence’ coupled with national pride. Another focal challenge that African airlines must overcome is sparse demand, specifically on intra-African routes. This is a direct result of high airfares on the continent, which are a general symptom of the general lack of competition on intra African routes as well as the inequality of income across the continent as air travel remains a luxury – even leisure travel is deemed inelastic (elasticity of 0.53) (Abrahams, 2002); (Chingosho,2009) ;(Irandu,2006) ;(Schlumberger ,2010) ;(Samul ,2012). This sparse demand on African routes can be seen in the continent's low load factors at 69.7% in 2010, which positions it at bottom of the world’s league table, while the world’s average rests at 75.2% (IATA,2010). Despite such challenges, the potential of the African aviation market has never been in doubt, but the continent’s carriers have so far struggled to tap this opportunity. To understand the potential for growth of air transport in Africa, it is important to develop a picture of the continent's main economic and social characteristics.

In Africa, there is clearly a partial alignment between size of population, economy and air traffic. In general, countries with large populations and economies or small but rapidly growing populations and economies, represent an opportunity for the development of strong domestic (and/or international) networks (Chingosho,2009).

Despite projections that traffic will grow at a rate of 5.4 percent a year over the next two decades, airline industry stakeholders have effected little fundamental change in addressing the problems facing African aviation, according to International Air Transport Association (IATA) regional head of member and external relations for Africa and the Middle East Adefunke Adeyemi. While international passenger numbers in Africa should triple to 300 million by 2035, excessive red tape, high costs and lack of air liberalization remain serious concerns (Aviation Africa 2017 conference in Kigali) Net post-tax profit margins showed gains all over the world except in Latin America in 2015and in Africa, which saw net profit margins fall around 5 percent in 2015 and 3 percent in 2016.

Net losses for African airlines totaled about $500 million in 2013, but projections for the four years up to the end of 2017 showed annual losses of more than $750 million. Industry EBIT margins hit positive territory in 2010-11, before moving decisively negative in 2012, and projections called for a fall to between 3 and 4 percent in 2015-17.

However, Adeyemi said the right policies for Africa could lead to an extra 35 million passengers compared with baseline forecasts, bringing the total toward 350 million in 2035 and more than tripling the 2015 figure of around 100 million passengers.

Competitiveness affected the ability to deliver value. According to Adeyemi Seychelles, Cape Verde and South Africa ranked highest on the continent for quality of air transport infrastructure, citing recent World Economic Forum global competitiveness data. Speaking with **AIN** on the sidelines of the conference, Girma Wake, chairman of Rwanda air and former Ethiopian Airlines CEO, cited the cases of South African Airlines and Kenya Airways as prime examples of the failure of African governments to nurture airline growth. "It's good for the governments to push change. But they [themselves] should also change," he said. "They should stop interfering in the airlines" performance, carefully select company CEOs, and leave the airlines to manage themselves, instead of micro-managing them. That's one problem. "The other is for the government to say, 'Look. I have given you the freedom. But there's no more money.' Because today [governments] are pumping money, the airlines do not feel responsible to cover their own costs. That is why 90 percent of African airlines are losing, because they know they have fallback government funding. “Wake added that sub-Saharan African countries are not ready for private airlines. “First of all, a private man will never make money, so why should he [invest]?” he said. “There is no control on traffic rights. That’s one area where they kill an upcoming carrier. They just say ‘No traffic rights unless you pay.’ And then you lose,” he said. “If it is completely made free, and there is no nationality issue, and people can move around, and operate from wherever they choose, then things will change.”

The other big challenge is availability and raising adequate finance, because of the capital-intensive nature of the business, raising adequate finance is one of the major challenges facing Africa’s aviation sector. Local banks frequently lack the necessary resources or are fearful of the risk involved and the leasing solutions or Export Credit Agencies used elsewhere are often ill-adapted to an African context. Though airlines may use the services of aircraft leasing companies, these are rare in Africa, meaning that raising adequate financing is a huge task for the Continents’ many airlines. Most local banks lack the capital to provide long-term acquisition finance for such expensive equipment and even those that do not treat small African airlines as very high risk and charge excessive interest rates.

The most common way around aircraft financing difficulties has been through export credit agencies (ECAs) in the aircraft manufacturer countries. However, ECAs generally only finance 85% of the total cost of an aircraft. Furthermore, ECAs financing is usually provided by international commercial banks who have little appetite for financing the remaining 15%. DFIs are therefore the perfect fit for financing such shortfalls as they have more appetite for high-risk, high economic and social impact projects. The involvement of DFIs is all the more appropriate given the economic and social benefits generated by the aviation industry. According to IATA, airline development has reduced real air transport prices by about 60% over the last 40 years generating an annual consumer surplus of somewhere between USD200 – 300 billion (IATA, 2011). But this does not mean that airlines have been profitable: IATA’s studies show that the industry has averaged net margins of 0.1% over the same period mainly because of excessive regulations, fragmentation and commodification of airline services.

Airline industry continues to grow, the failure rate of airlines has been very high in Africa, with southern Africa being the hardest hit. To survive, airlines should therefore identify critical success factors to overcome challenges and thereby improve the financial performance in a sustainable way (Brandt, 2016).

2.6.3 Prospects of Aviation industry in Africa

One of the brighter side, the main ingredients needed to boost the aviation sector have been apparent for the last decade, i.e economic growth and rapid urbanization. The future also appears to be promising: IHS Economics estimates that Africa's GDP will grow by around 4.5% between 2014 and 2034, exceeding the global average of 3.1%. Likewise, forecast growth in the Continent's passenger traffic and cargo traffic by 5.7% and 6.9%, respectively, over the same period would outstrip global averages of 4.9%, and 4.7%, respectively(Boing,2015).

Such economic growth and urbanization are key drivers of demand for air transport and developing the sector is crucial for sustaining the current high economic growth rates and poverty reduction measures. The developmental attributes of the aviation sector encourage Development Financial Institution (DFIs) to intervene in the sector by providing appropriately structured funding. Supporting airlines with low profitability does mean that DFIs are reckless lenders. Airlines have solid, liquid assets in the form of aircraft which can be used as collateral and easily redeployed to different geographic markets. Moreover, because of the multiplier effects and positive externalities that airlines create, governments are willing to help them in times of crisis. DFIs' expertise in dealing with airline market failure and cyclicality is well-suited to structuring deals in line with the needs of specific airlines and they have a major role to play in developing the sector.

2.6.4 The benefits of Aviation industry for Africa

Aviation industry generate wider economic benefits by boosting regional connectivity, foreign direct investment, trade and tourism, It is a key factor in connecting a country to the global economy .It provides greater opportunity for travel and tourism .It connects firms to larger potential sales market ,to more efficient supply chain and to greater investment opportunities .It helps to improve productivity levels, to the benefit of the nation economy .More over it is advantageous in the following specific area

1.Fastest means of Transport:

Air transport operate in a very high speed than any other transport means. People can reach the destination in a very less time.

2.Suitability:

It is suitable to carry passenger who want lot of comfort and convenience, passenger can save lot of time. light and valuable goods like diamonds, gems etc can be transported. Also, Vegetables, fruits can be transported from one country to another.

3.Vital during emergencies:

It is very vital during emergencies. When there are floods, earthquakes etc foods, medicine and another requirement can be supplied to victims with the help of helicopters. Also the people can be air lifted, if the situation so demands.

4.Efficent service

Air transport, especially, the international airline provides highly efficient service to its customers. They are highly regular and reliable.

2.7 Research gap

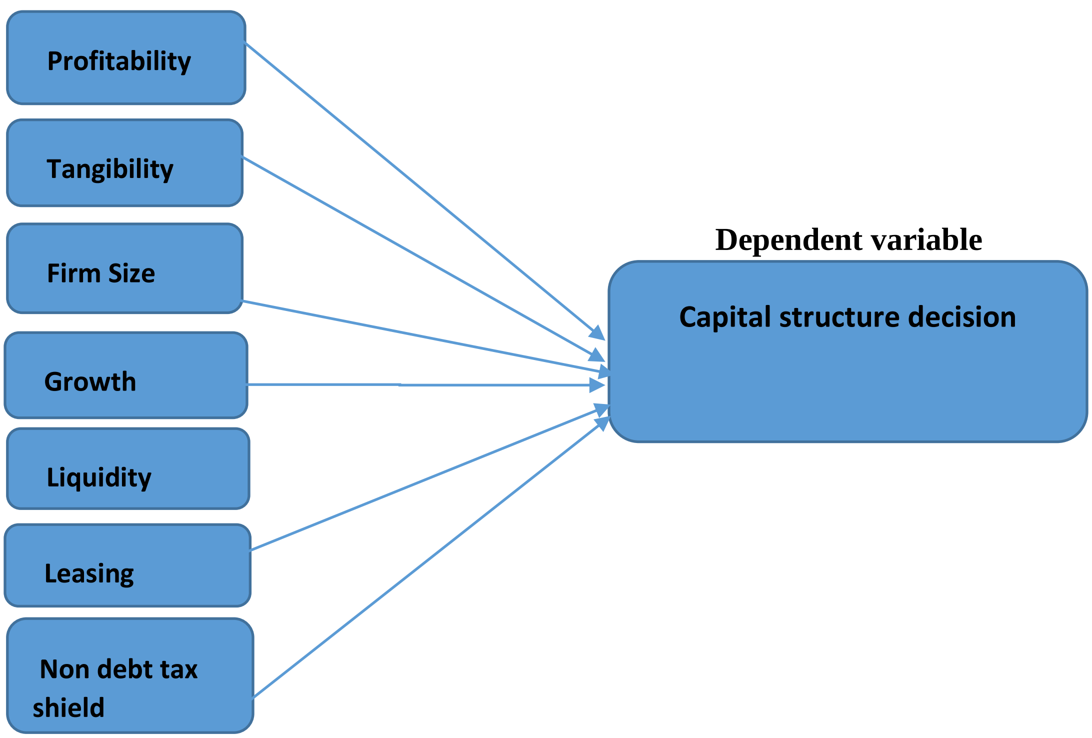
In Summery considering the relevance of capital structure on performance of a firm as stated above deferent scholars theorized ,investigate on the determinates of capital structure decision but most of studies involved on first world big airline firms like the determinants of capital structure in airline industry by (Bratlie, E.K. & Jotne, A., 2012);(Fadi M.,2017) and (Ionela T,2014) .Other theories and studies more involved on manufacturing and financing sector, little on Airline firms in developing countries thus in service industries like aviation sector not enough specially Africa aviation sector, most studies in relation to the factors affecting on the performance of African aviation mentioned safety related issue ,old aircrafts, corruption, mismanagement ,inefficiency ,cost, market and so on such as the determinants of profitability in Sub-Saharan African airlines by (Fikre M.,2015),Analysis of Capital Structure the case of Wegagen Bank Share Company in Addis Ababa by (KassahunT.,NahomA.,&Sintayhu A.,2011),Key Challenges facing air transport in Africa by (Abraham S.,2002); The emergence of low-cost airlines in Africa a preliminary analysis of internal and external drivers by (Amankwah-Amoah, J., Debrah, Y., 2009) ;Air transport in Africa toward sustainable business models for African airlines, Journal of Transport Geography by (Heinz, S., O'Connel, J. F., 2013) are some of the study focused to airline in Arica but capital structure and its impact on the performance of aviation not properly investigated, no sufficient empirical study regarding capital structure determinates focusing to African Airlines as far as the knowledge of the researcher and that still a gap in literature regarding African aviation carriers .

2.8 Conceptual framework and Hypothesis

Factors that can determine the capital structure of airline firm at micro level (firm specific factors) has been observed above and same reviewed the empirical results such as profitability, tangibility, firm size, growth, liquidity, leasing, non-debt tax shield and accordingly below, under fig 2.1 presents the conceptual frame work of this study.

Fig 2.1 Conceptual frame work on determinants of capital structure decision

Independent variables (firm specific factors)



Source: Compiled by the researcher

CHAPTER THREE

RESEARCH DESIGN AND METHIODOLOGY

INTRODUCTION

This chapter present briefly the general frame work about how this particular study was done, the choice of appropriate research method, the methodology adapted and applied. The method is adopted with the aim of expressing ,analyzing the relationship and influence of internal factors on capital structure of major airlines in Africa, specifically to show the relationship and influence between firm size, liquidity, profitability, collateral value of asset, lease, growth opportunity, liquidity and non-debt tax shield on leverage (debt to equity ratio) of major airlines in Africa .To do the analysis as a tool econometrics was used ,which helped to apply regression, test the significance of each variables and show the co relationship between economic variables .This research used most recent 16 years annual data which start from the year 2002-2017,in addition other official publication also used in order to describe the qualitative data, then based on the theories and the findings of the literature in the previous two chapters, variables were defined ,developed in order to check, investigate and answered the stated research questions and the formulated hypothesis.

The chapter ordered and present first the research design in section 3.1, followed in section 3.2 population and sample, in section 3.3 data collection approach (sources of the data and data collection instruments), in section 3.4 Model specification, in section 3.5 data analysis, finally in section 3.6 the limitation of the data sources, sample and instruments used for data analysis.

3.1 Research Design

In this study quantitative research approach used because quantitative research is helpful to test hypothesis, measure variables and to cross check the collected data either consistent with the hypothesis or not. The other reason this study focused on quantitative research type is due to the nature and objectives of the study, as its aim is to examine the influence, relationship between dependent variable leverage ratio and independent variable (firm size, liquidity, profitability and tangibility, growth, lease, non-debt tax shield).Moreover, quantitative research type is quite easy if compared with qualitative type of research and it can provide an exact value to measurement, it is more flexible, can take large sample and free of human judgment. Quantitative data also help to run the tests and determine whether independent variables are significant to the dependent variables, generally quantitative research type is in line with this study. But depends on the situation qualitative research type also used for those secondary data can't quantified and important for this particular study.

To do the analysis the study used mainly explanatory research type due to the fact that it is appropriate to address the objectives of the study. Explanatory approach is preferred and applied as a key tool in this study because it go beyond simple description and more fit to answer for this types research questions that need answer to the problem, beside it is helpful to show the effect of independent variable on dependent variable leverage ratio of Airlines, In addition as required descriptive research type also used to analyze qualitative secondary data found in magazine, publication of management decision, official news, video recordings and pictures (Dr. Abebaw K.,2017) .

As a strategy the study followed archival research type using panel data form, use of administrative records and documents as the principal source of data like financial statement figures from annual report and other publication. Although the term archival has historical connotations, it can refer to recent as well as historical documents (Mark S.,Phlip L. and Adrian T.,1989). This is because these data were originally collected for a different purpose, the administration of the organization. However, when these data are used in an archival research strategy they are analyzed because they are a product of day-to-day activities (Hakim ,2000). They are, therefore, part of the reality being studied rather than having been collected originally as data for research purposes. Moreover, an archival research strategy allows research questions which focus upon the past and changes over time to be answered, be exploratory, descriptive or explanatory research method.

The study used panel data as it is advantageous in that the sample size can be increased and the potential of the multi-collinearity problems can be reduced. It is a dataset in which the airlines behavior is observed over a time period and across entities. Panel data also helps in controlling the variables that cannot be observed or monitored (Torres and Reyna,2007).

3.2 Population and sample

The target population for this study was major commercial airlines both fully Government owned, partially Government owned and privately owned originating from Africa. Major in terms of profitability, market share, quality service, have good safety record, good international network connectivity, high number of passengers transported, and from the top ten rank among African Airlines based on various international organization chooses as published in the official website of ICAO, IATA, AFRA and SKYTRAX organizations (Fikre M,2015). Thus based on the criteria of the sample (using purposive sampling method) the study were including the following five major African airlines; Ethiopian Airline, Kenya Airways, South African Airways, Air Mauritius, and Com air. These airlines have been selected because the data required for this study available in their website and also major and the leading(best) airlines in Africa .Airlines with data missing on relevant variables for any year of the period under review were excluded as this affects the process of data analysis, Airlines with observed outliers extreme and unique observations of any variables were excluded, as such values could bias the results, airlines bankrupt, closed or sold to third party were excluded from this study. To conduct the study, the secondary data was mainly taken from the selected samples airlines audited financial statements and used panel data approach (both time serious observation and across airlines entities), thus sixteen-year data from year 2002 -2017 was taken with a total observation of 80 (5 airlines*16-year data). Customarily more than 10% of observations from the total population is recommended and well enough to operate the regression techniques accordingly 5 airlines from the top ten airlines were selected. Even if it is advisable to include more data for a better representation due to in accessibility and some financial statements were missing from the official website of the airlines the observation was limited in to five major and best airline with 80 observations (5*16 years data).

3.3 Data collection Approach

3.3.1 Sources of the data

To measure and test the seven independent variable including profitability, collateral value of asset(tangibility), growth opportunity, firm size, leasing, liquidity and non-debt tax shield, secondary data was used mainly that was mined from the annual audited financial statement of the selected five major airlines in Africa for the period 2002 -2017. Data published on their respective official airlines website or online on the internet were taken, in addition qualitative secondary data found on magazine, newspapers, various publication and reports by international organization like ICAO, IATA, AFRA, SKYTRAX, Air craft manufactures forecasts were also used. Airlines not post their financial statement officially and the required data missed from the official financial statement weren't taken in to consideration for this research purpose.

3.3.2 Definition of variables and data collection instruments

Operational definition of Variables

In this part it was explained how the variables for the research questions derived and calculated that was the independent variable developed based on the literature and text books. The independent variables for this particular study are collateral value of asset(tangibility), firm size, profitability, liquidity, growth opportunities, leasing and non-debt tax shield and these variables were regressed and tested to find out the relationships and its influence on the dependent variable leverage ratio. To clarify the relation between the independent and dependent variables, firm size was used as control variables.

Dependent variable

The capital structure of a company consists of a mixture of equity and debt, used to finance assets, operations and future growth of a firm. But the choice of debt to equity not easy as it is affected and determined by different factors, as a result this study was focused and investigated how different determinants influence the mix of debt to equity or leverage of a firm i.e dependent variable. Moreover, measuring the ratio of debt to equity help to identify the firm's ability to meet the financial obligation. Therefore, the dependent variable is leverage, which is measured or defined as:

LEV = (Interest bearing debt /Total Asset) ……………………………..(1)

Debt to Equity selected as a dependent variable because it will help to show the overall scope and financial capabilities of the airline.

Independent variable

1.Profitability: The first research question indicates the influence of change in the overall profitability on the capital structure of a firm. This variable usually defined as:

PRO = EBIT / Total sales t,………………………………………………………...(2)

According to similar literatures this variable measured same as above (Bratlie and Jotne,2012) cited (Frank and Goyal,2009) & (Titman and Wessels,1988) but other scholars measure with slightly different way. Based on the literature in chapter two, firms with good capital structure could have minimal expense as a result could earn more profit likewise firm with good profit used the opportunities to establish optimal capital structure of the firms. Firms earn more profit can expand and increase the value of the firm using their own profit. Profitable firm has indirect relationship with leverage of the firm. Thus leverage (capital structure) and profit has indirect relationship each other which implies in the process of increasing firm value firms prefer using their own profit and save expense incurred for interest of debt and also avoid risk of bankrupt.

2.Colaterial value of asset (CVA): The second research question was the influence of collateral value of asset on capital structure of the airlines. This variable defined as:

CVA = NVFA/ Total Asset ……………………………………………………......(3)

Were, NVFA indicate the net value of property plant and equipment after subtraction of depreciation.

CVA (collateral value of asset) usually a proxy for tangibility, it measures the availabilities of company's asset and helps as a collateral for firms to find external financial sources thus it affects the financial leverage of the airlines. Same applied under studies by (Bratlie and Jotne,2012) cited (Rajan et al,,1985)& (Frank et al,2009) .

It is easier for companies to obtain loan when the loan is covered with collateral value of asset. The assets provide as collateral for the given loan, therefore the lender is more secure as the money of the loan will be received back (Bratlie and Jotne) cited (Chen and Jiang ,2001).

3.**Firm size**: The third research question was firm size and its impact on capital structure of a airlines. This variable use as a control variable in this study. The variable firm size defined as:

SZE = Ln (total sales)……………………………………………………………..(4)

Sales uses as an indicator for firm size instead of total assets, because some firms only have a few assets, but a lot of valuable staff, which are not included in the assets, (Ong, Sia, Tan, Teo & Wong ,2016). Firm Size represent the level of operation of a firm (Bratlie og Jotne ,2012) ;(Frank et.al, Rajan et al,1995) & (Titman ,1988) also use sales when calculating size since it helps to measure company operation. Logarithm has been used to rescale the data in order to indicate a better normal distribution for this variable. Sales also use as an indicator as it helps to measure company operation.

According to the literature in chapter two, firms size has a positive influence on sales or revenue same on profitability of the firm and corresponding capital structure of the firm.

4.Grwoth opportunity: Another independent variable that affect the capital structure of a airlines was growth opportunity, which is the percentage change of dollar of sales. Growth opportunity of the airlines defined as:

GRO = (Total Sales (t)/ Total Sales (t-1))-1 ………………………………………..(5)

Growth measured as logarithm of change in total asset and also measured as a percentage change in total sales at annual base but for this study the percentage of change in total sales applied at annual base. Growth has a negative relationship with leverage with the assumption of growth firms prefer equity to debt to avoid bankruptcy in accordance with the peeking order theory. Studies by (Frank and Goyal ,2007) cited by (Bratlie and Jotne,2012) also they found a negative relationship between growth and leverage. Capital structure thus has an important role for growth of the airlines indirect way.

5. Liquidity: Liquidity also another variable that was used to determine the capital structure of the airlines.

Liquidity is defined as:

LIQ = Current asset /Current liability…………………………………………….....(6)

The expectation is that firms with more liquidity will have less debt to equity ratio(leverage) according to the peaking order theory, it assumes firms first utilize its own internal resource that reserve from retained earnings before acquiring external sources, same shown under studies by De Haan and Hinloopen (2003) cited by (Koert te Nijenhuis ,2013).

6. Leasing; Leasing was another major variable that affect and determine the capital structure the airlines especially for capital intensive firm like airline. Leasing can be defined as:

LEA = Operational Leasing Expense/Total Sales t……………………………......(7)

Leasing gives a picture of the leasing policies of the company. The focus is on the operational leasing cost because this is one of the ways in which the airlines can leverage without stating the same in accounted liabilities (Bratlie og Jotne ,2012). Most airline firms trend shows they operate by leasing aircrafts from aircraft manufacturers and rental firms and it cover major part of the capital expenditure. To run the operation of airline by acquiring aircrafts with 100% is very difficult, hence depends on the demand of sales firms lease aircrafts as a result leasing cost is major cost component of the firm which implies it affects the total sales and with the increasing expenses, it enhances the profit earning capacity of the business. Thus firm's debt to equity ratio (leverage) of a firm depended on its expenditures like leasing.

7.Non debt tax shield: The last variable used in this study was non debt tax shield

Non debt tax shield of a company is measured as the depreciation and amortization divided by the total assets of the companies (Deesomask et al., 2004).

NDT = depreciation and amortization t/Total Asset….…………………………….....(8)

To test the relation between the tax advantages and leverage this variable is a good proxy. The non-debt tax shield was also used by (De Miguel & Pindado ,2001) & (De Haan & Hinloopen ,2003) cited by (Koert te Nijenhuis,2013). The expected result is the non-debt tax shield is negatively related to leverage.

Table 3.1 Data producing (collection) instruments for dependent and independent variable.

Variables	Proxies	Measurement of Variables	Sources
Dependent Variable			
Leverage	LEV	Interest bearing debt /Total Asset	Annual Report
Independent Variables			
Firm Size	SZE	Ln(Totalsales) or Natural logarithm of sales.	Annual Report
Liquidity	LIQ	Total current asset/Total current liability	Annual Report
Profitability	PRO	EBIT / Total sales t	Annual Report
Collateral value of asset (Tangibility of asset)	CVA	NV fixed asset/ Total Asset	Annual Report
Growth	GRO	Total Sales (t)/ Total Sales (t-1)}-1	Annual Report
Leasing	LEA	Operational Leasing Expense/Total Sales	Annual report
Non debt tax shield	NDT	Depreciation and Amortization/total asset	Annual report

Sources: (Drake, P. P. and Fabozzi, F. J. ,2010);(Goyal,2009); (Titman and Wessels,1988), (Rajan et al,1985)&(Frank et al,2009) cited by (Bratlie og Jotne ,2012)

3.4 Model specification

Econometrics is a tool used to estimate economic variables, testing economic theories, evaluating and implementing government and business polices (Wooldridge ,2009), to analyze and test the impact of the seven independent variables on the dependent variable leverage ratio, it is appropriate to use econometric tool for this study. As a model based on the discussion in the previous chapter, fixed effect regression model was used to analyze and test the collected panel data, which is a common way of conducting econometric analysis. Eviws version 8 statistical software application applied to test the impact of each independent variable on dependent variable, to find out answer for the research question and meet the stated objectives of the study. The fixed effect model for seven independent and one dependent variable was presented in order to capture the effect of profitability, size of the firm, collateral value of asset(tangibility) of the airline, liquidity, leasing option and non-debt tax shield by the airlines in the industry on the capital structure of the airline accordingly:

The model represented by:

LEVti=βo+β1PROti+β2CVAati+β3Ln(SZE)ti+β4LEZti+β5LIQti+β6GROti +β7NDTti + Ut

Where;

LEVti = the leverage (Debt to equity ratio) measure of firm i at time t;

β_o = The intercept;

PROti = Profitability of the airline i at a time t;

CVAti =Collateralize value of assets (CVA) of the airline i at a time t;

Ln SZEti = Logarithm of total sales of airline i, represent firm size at a time t;

LEZti= Operational Leasing Expense/Total Sales of airline i at a time t;

LIQti= Liquidity of the airline I at a time t;

GROat = Growth opportunity of the airline i at a time t;

NDTat= Non debt tax shield by the airline i at a time t;

Ut = represent the error term of the airlines at time t

Source : Own researcher model compiled from deferent source

Thus the model above shown the leverage of the firm depends on the determinant factors like PRO, CVA,.LEZ,LIQ, GRO, NDT and Ut which capture the unobservable variables that can affect the result of this study.

3.5 Data Analysis

The aim of this section was to summarize how the data analysis done, it includes specific statistical procedures(method), the way the variables measured and presented, the analytical model, the data coding, the data monitoring, the data verification and testing then decision criteria applied in accordance with the proposed objectives and the type of variables.

Accordingly, as mentioned above in the research design section, quantitative research method was selected to analyze the data for this particular study. There are many reason for quantitative method was selected for this particular type of study, the first reason was because quantitative method is appropriate for studies relies on secondary data type and quantitative analysis techniques such as graphs, charts and statistics allow us to explore, present, describe and examine relationships and trends within our data. the second reason was because it is appropriate to show the effect(influence) of one variable (independent) over the other variable (dependent) using computer based analyzing software like Excel, Eviews, SPSS and others (Mark S., Philip L., AdrianT,2009). The other reason was quantitative research method helps to test hypothesis, hence for this study as a method quantitative method selected for analysis to test the hypothesis and statically to show the significant of each determinant variables over the dependent variables leverage ratio, then based on the outcome generalized for the population of the topic under study.

To analyze the data collected using financial measures (formulas) were summarized in table 3.1 above including other secondary sources, multiple regression analysis applied, which is appropriate to test the hypothesis, show the effect of one variable over the other. In addition to that in order to describes the results of multiple regression analysis the well-known statistical tools were applied including figures, tables, ratios and other inferential statistics.

To determine the degree of significance and impact of firm specific determinant factors on firm leverage ratio, for this study fixed cross sectional effect model estimation technique was used apart from random effect model. Since the number of cross sectional unit is smaller than the parameters in the above model equation, random effect estimate is not appropriate.

In addition to capture unobserved effects of different airlines a fixed cross-sectional effect was specified in the estimation because adjusted R2 value and Durbin-Watson stat value increases with the use of cross-sectional fixed effect model other than random effect model. Likewise, the Huasman test was applied to choose between fixed and random effect models. Similarly, different diagnostic tests were also applied in order to confirm no model specification problem and the estimators fulfill the assumption of OLS regression or to test the estimators are the true estimate or representation of the target population of this study, in econometric words to test the estimator are either BLUE or not BLUE.

To do the above activates Eviews software version 8 applied for the model stated in section 3.4.2, hence the data was coined first to use application in a way appropriate to plug the variables in to the Eviews version 8 software and form the equation that will drive interrelation ship of the variables and provide the statistical outputs. To test the statistical significance of the estimator a 10 per cent level of significance was considered, therefore if p-value was 0.10 (one-tailed test) or p-value 0.05 (two-tailed test) the estimated coefficient was significant but if p-value not 0.10 (one-tailed test) or p-value not 0.05 (two-tailed test) the estimated coefficient was considered as statistically insignificant. Generally, the study was follow the below criteria in the decision process of the statistical values.

3.5.1 Criteria for Decision Making

***R*-Squared:** In a multiple regression model, this is the proportion of the total sample variation in the dependent variable that is explained by the independent variable. The closer the R^2 is to 1 or 100% the better the goodness of fit. The R^2 lies between zero and one, because sum of square error cannot be greater than sum of square total. A value of R^2 that is nearly equal to zero indicates a poor fit of the OLS line (Wooldridge ,2009).

Adjusted R-Squared: A goodness-of-fit measure in multiple regression analysis that penalizes additional explanatory variables by using a degrees of freedom adjustment in estimating the error variance.

T-Statistic: The t-statistic is used to test a single hypothesis about the parameters in a regression model. When the calculated t-value is less than the tabulated t-value, the parameter is not statistical significant and vice versa. It is the ratio of the estimated parameter to the estimated standard error (Wooldridge ,2009).

F-Statistic: A statistic used to test multiple hypotheses about the parameters in a multiple regression model. This statistic tests the null hypothesis that all the regression coefficients are equal to zero. If the $F_{cal} > F_{0.05}$(tab), we reject the null hypothesis and accept the alternative hypothesis vice-versa (Wooldridge ,2009).

P-Value: The probability value helps in accepting or rejecting the null or alternative hypothesis. If the P-value is less than or equal to 0.01 (1%) we reject the null and accept the alternative hypothesis at 1% level of significance. If the p-value is less than or equal to 0.05 (5%), we reject the null and accept the alternative hypothesis at 5% level of significance and if the p-value is less than or equal to 0.10 (10%), we reject the null hypothesis and accept the alternative hypothesis at 10% level of significance.

Durbin-Watson (DW) Statistic: this is a statistic used to test for first order serial correlation in the errors of a regression model under the classical linear model assumptions (Wooldridge ,2009). It assists in specifying the right combination of the explanatory variables (Gujarati ,2009)

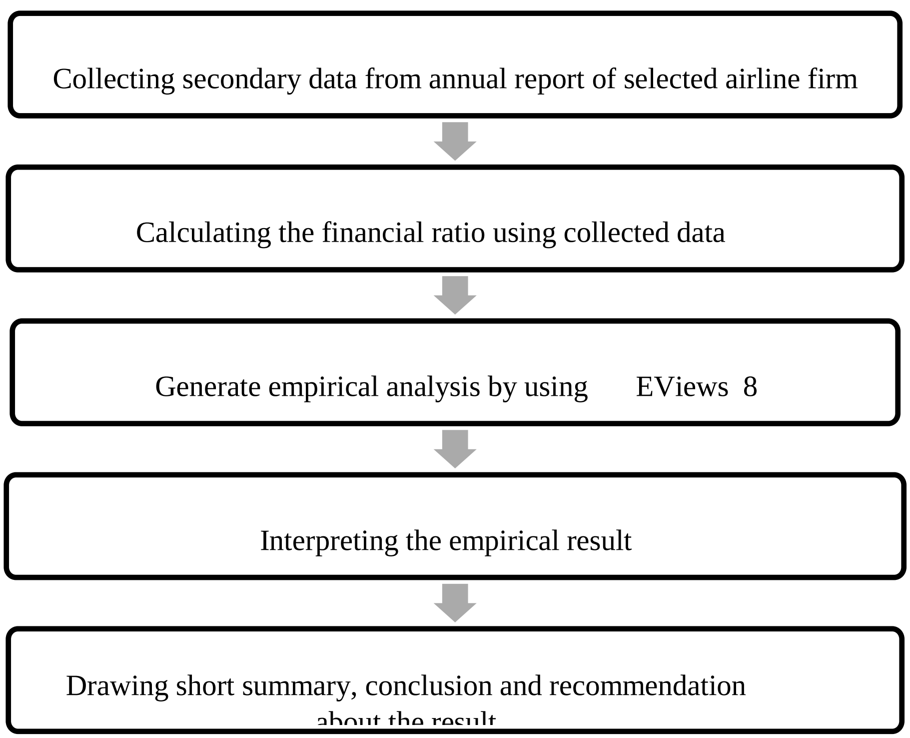
In summery the flow chart fig 3.1 below more clearly shows the step to be followed as a guideline while analyzing the data and performing this research topic.

Multi-collinearity test: It is a test to identify either exact linear relationship among the explanatory variables exist or not (Brooks,2008). It assisting in identifying the real impact of each independent variable, X on the dependent variable Y. If the correlation between the independent variable greater than 0.07 per (Kennedy ,2011) it said to be high multi-collinearity problem exists between the independent variable X.

Heteroscedasticity test: Used to test to identify either the error terms are homoscedastic or heteroscedastic, per (Brook,2008) if the probability F statistics of observed R-square of the white test in excess of 5% then there is no heteroscedasticity problem.

Normality test : A test used for checked the normality of the data distribution .Per (Brook,2008) if kurtosis of 3 or close to 3 said to be the data is normally distributed in addition if the Jarque -bera test for the model greater than 5% it said to be the error terms are normally distributed.

Figure 3.1: Data Processing flow chart



Source: Developed by the researcher.

As the above flow chart indicate the data collected was processed using Eviews version 8 statistical software thus based on the method and model stated above analyzed. Then in the next chapter 4 the empirical facts were interpreted, discussed, finally draw conclusion and recommendation in chapter 5 based on the facts analyzed and interpreted.

CHAPTER FOUR

DATA ANALYSIS, FINDINGS AND DISCUSSIONS

INTRODUCTION

Chapter three presented the research method adapted for this study accordingly based on the framework in the previous chapters in this chapter the result and analysis of the data taken from the selected major Airline in Africa presented .The study use the most recent balanced panel data ,where a time series segment covering sixteen years from the period 2002-2017 financial statements and a cross section segment considered five major airline in Africa, namely Ethiopian Airlines ,South African Airlines ,Kenya Airways ,Com air and Air Mauritius. This chapter is organized into five sections. Section one presents descriptive statistics, section two correlation analysis, section three model specification, section four tests for the classical linear regression model assumptions and section five analysis of results.

4.1 Descriptive statistics

Table 4.1 below shown the summarized descriptive statistics of dependent and independent variables. As it can be seen from the table the total observation was 80 (5 major African airlines*16 years of annual financial statement data). Beside the descriptive statistical value of mean median, standard deviation, the maximum and minimum value of the dependent and independent variables presented respectively. Ended the value given in the table provide overall description about the data applied for the subject under study by using the models appropriate for the given data. In addition, the statistical values in the table also play as a toll for data screening roll.

Table 4.1: Descriptive statistics for dependent and independent variable aggregate value:

	LEV	SZE	PRO	LIQ	GRO	LEA	CVA	NDT
Mean	0.43	19.94	0.05	0.87	0.13	0.21	0.52	0.07
Median	0.35	21.74	0.05	0.88	0.11	0.10	0.54	0.06
Maximum	0.90	24.83	0.40	1.66	0.55	1.11	0.76	0.22
Minimum	0.14	12.49	(0.40)	0.30	(0.22)	0.03	0.20	0.01
Std. Dev.	0.22	4.16	0.10	0.33	0.15	0.23	0.11	0.04
Observations	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00

Source: Own computation from major Airline financial statements data.

Table 4.2: Descriptive statistics for dependent and independent variable individual Airlines value:

MEAN VALUE								
AIRLINE	**LEV**	**PRO**	**NDT**	**LIQ**	**SZE**	**LEA**	**GRO**	**CVA**
ET	0.46	0.07	0.05	1.14	23.35	0.08	0.24	0.56
SA	0.76	0.01	0.05	0.68	23.72	0.11	0.08	0.40
KQ	0.36	0.08	0.12	0.86	17.98	0.55	0.18	0.53
MO	0.24	0.02	0.09	0.72	12.84	0.24	0.05	0.55
CM	0.31	0.05	0.07	0.94	21.83	0.06	0.10	0.52

Source: Own computation from major Airline financial statements data.

Based on the result summarized in the above table 4.1 and 4.2 both dependent and independent variables statistical value discussed as follows.

Leverage mean value: Measured as LEV (IBD/TA), it describes the aggregate mean value of the selected major African airlines and have on average more debt to equity ratio for the last 16 years, meaning that the major African airiness on aggregate used marginally more equity than debt to finance their asset, simply it means 43% of the total asset or operation of the major African airlines on average were financed by debt and 57% by equity. From the total sample, the mean of LEV was with a minimum of 14% and a maximum of 90 %. The statistical mean value of leverage was skewed to the left the justification is statistical median score value was 35% somehow far from its statistical mean sore value 43% .Observing each individual airline statistical mean values the South African Airways leverage variable alone was nearly two times of Ethiopian airlines, more than two times Kenya and Com airways and three times higher than Air Mauritius which reveals that South African Airways had using high debt during study period which was the main factor that forced the airline request subsidy from South African Government (SA annual report, 2004) and due to that currently also proposed to liquidate at all. Followed by Ethiopian airlines leverage level came to the second highest leverage mean value .The implication of this high leverage ratio is that the high burden of debt demand the government of Ethiopia like that of South African Airways provide support in the form of profit tax relief and the other implication of high debt might be point out that currently the shareholder of Ethiopian airline i.e the government of Ethiopia proposed selling of some equity share to external investors to gain equity as well as more efficiency this measurement by the government of Ethiopia was one of the indication to gain equity and gain efficiency beside at long run aiming to protect the airline from bankruptcy , ended there are different factors also contributing for the government decision to sell out equity of the airline to external investors but one of the major factor tempting for this decision for capital structure change for this airline was the level of debt incremental highly costing the airline .When we look to Kenyan airways with a few difference from Ethiopian airlines the leverage was high during the study period. Air Mauritius has small debt to equity ratio compared to the four mega airlines selected for this study. The aggregate standard deviation statistical value of LEV was 22% which specifies that the leverage level variation between the selected airlines was somehow different, same also explained above. The result implies that these airlines leverage level was varying which implies that there is existence of difference between the airlines level of optimization of debt to equity ratio using the internal factors. The aggregate average leverage of major African airlines was also little bit higher as compared to industry average for the same period which stood at 20%.

Discussion on the descriptive statistical value of explanatory variables:

Growth(GRO) :Its overall statistical mean value was 13%,with minimum and maximum value (22%) and 55% respectively ,the descriptive value of growth was skewed the left but the skewness was marginal comparing to leverage as can be seen the statistical median score was 11% and the statistical mean score was 13% , the negative minimum score value implies that there was worse time in that the major African airlines growth were on risk but ignoring the fluctuation ups and downs as the nature of the industry is highly volatiles the overall mean value of the major African airlines average growth for the last 16 years was shows 13% growth and compared to the industry average 4.60% still it shows more than double from the industry achievement on growth perspective .The main reason its growth was higher than the industry according to the literature as indicated in chapter two of this study partially because of a good economic growth ,investment ,trade and tourism were radically growing in Africa better than any time ever in the last 16 years which in fact the achievement of the economic growth in the sectors it demand high Air transport services. The standard deviation of this variable was 15% it implies that there was variation among major African airlines with respect to growth. When we observe individually the data condemns that on average Ethiopian airlines average growth for the last 16 years was the highest and it was two times of Com Air and Kenyan airways and three and four times of South African airways and Air Mauritius respectively.

Profitability (PRO): The aggregate statistical mean score value of major African airlines profitability was 5% with minimum 40% and maximum value of 40 %. Profitability hasn't been tilted since no deference with the median as it was 5% and the mean was also 5%. Its standard deviation was 10% , which implies that between the selected airlines there was a difference on average generating profit ,profitability has an inverse relationship with leverage ,and the fact also show that leverage level mean value was higher 43%.This indicate that even if the major African airlines mean value of profitability shown on aggregate positive value it is very low level in terms of profitability compared to the industry average 2.09 which was one of the cause or reason for high debt acquired by these airline to finance their operation rather than financing from the profit earn from own activity.

Collateral value of asset (CVA) : The mean score value of the input factor CVA was 52% with minimum and maximum value of 20% and 76% respectively ,it implies that on average from the total asset the tangible asset was more than the intangible asset. The skewness of CVA was also marginal to the right as the median score was 54% comparing to the mean score 52 %. Its standard deviation was 11% in that the airlines tangible asset difference among major African airlines also have little difference. When we see the individual airline CVA mean value even if the difference was marginal the data output shown Ethiopian airlines CVA with 16 year mean score was highest, followed by Air Mauritius, Kenya Airways, Com air and South African airways respectively. When comparing the relationship between CVA and leverage, theories and studies in similar industry point out that often CVA has a positive relationship with Leverage however the data shows that there is mismatch between the fact and the trained for the selected major African airlines study for the last 16 years observation .Meaning that the leverage level of airline with high CVA score is less comparing with less CVA score with high mean value of leverage and this was in line with the peaking order theory, for example comparing to Ethiopian airlines and South African airlines ,Ethiopian Airlines leverage mean was 46% with CVA mean 56% mean score ,while South African Airways mean leverage score was 76% with mean value of CVA 40% for the last 16 year , as a result the impact on aggregate mean outcome of the data was shown a negative relationship between the leverage and CVA input variable .This fact shows that partially there is deferent strategic implementation of the input factor CVA in return to optimizing leverage level among the major African airlines Air lines .

Size (SZE) as observed above in the table the explained(dependent) variable leverage have moderate variation it was 19.94% but when we came to the explanatory variable size have a relative high variation it was 4.16 than the rest of variables with minimum value of 12.49% and maximum 24.83%,the high standard deviation 4.16 simply indicate there was variation regarding to size (SZE) between the airlines in the sample period .Its median sore was 21.74 and higher than the mean value 19.94 implies that the variable size was marginally skewed to the right, size was measured by natural log of sales value and its mean value is 19.94%. Compared to the industry the mean value of size is low, size have a positive relationship with leverage the data also confirm that leverage ratio still higher 43% score value and closer to 50% of the capital structure of the major African airlines.

Liquidity (LIQ); Liquidity measured as a ratio of current asset to current liability has an inverse relationship with leverage. Its statistical mean value was 87% with minimum 30% and maximum value of 166 %. The skewness of this variable was slightly to the right with median score value 88%. Liquidity has standard deviation of 36% which implies that the liquidity among the selected airline have a difference but the aggregate mean value still show the selected major African airlines have a moderate acceptable liquidity level.

Non debt tax shield(NDT): The mean value of the explanatory variable NDT was 7% with minimum and maximum value of 1% and 22 % respectively. The relationship of NDT with leverage was negative it implies that the airlines use non debt tax shield to maximize the value of the shareholder than using debt tax shield and was prefer non debt tax shield since debt is riskier and costly than non-debt tax shield. Its standard deviation score was 4% it implies that there was a marginal difference among the major African airlines on applying NDT in determining leverage.

Lease (LEA) : Its mean score value was 21% with minimum and maximum value 3% and 111% .Lease has a negative relationship with leverage .Its standard deviation was 23% it implies that there was some variation between the airlines regarding to lease financing policy .This variable also negatively skewed to the left with median score 10% and mean score 21% .The relationship with leverage was negative indicate that airlines was using lease as a financing means in place of debt financing to diversify and avoid or minimize the risk of debt and maximize value of the airline by minimizing cost of debt .

4.2 Correlation Analysis

To test the correlation between the variables the parson correlation coefficient was used as per (Brook,2008), correlation between two variables measures the degree of linear association between them. Values of the correlation coefficient are always ranged between positive one and negative one. A correlation coefficient of negative one indicates that a perfect negative(inverse) association between the two variables, while a correlation coefficient of positive one indicates that a perfect positive(direct) association between the two variables. A correlation coefficient of zero on the other hand indicates that there is no linear relationship between the two variables (Brooks ,2008).

The most widely used bi-variant correlation statistics is the Pearson product movement coefficient, commonly called the Pearson correlation. The result of the correlation analysis is shown in table 4.3. It indicates that leverage has a positive relationship with size and a negative relationship with profitability, growth opportunity, net debt tax shield, liquidity, collateral value of asset and lease. Regarding to multi-collinearity issue as per (Kennedy,2008), if the correlation coefficient value above 0.7 multi-collinearity existed among the independent variables but as can be shown in table 4.3 below there is no variable with correlation coefficient above 0.7 hence per (Kennedy ,2008) in this study no multi-collinearity issue was detected. Table 4.3 below provides the Pearson's correlation matrix for the variables used in the analysis.

Table 4.3: Correlation Matrix

Covariance Analysis: Ordinary

Date: 01/04/19 Time: 09:48

Sample: 2002 2017

Included observations: 80

Correlation	LEV	PRO	NDT	LIQ	SZE	LEA	GRO	CVA
LEV	**1.000000**							
PRO	**-0.296111**	**1.000000**						
NDT	**-0.455236**	**0.196685**	**1.000000**					
LIQ	**-0.305703**	**0.336131**	**-0.097191**	**1.000000**				
SZE	**0.600014**	**0.001823**	**-0.479865**	**0.154105**	**1.000000**			
LEA	**-0.276597**	**0.145902**	**0.570326**	**-0.104084**	**-0.433251**	**1.000000**		
GRO	**-0.167216**	**0.177194**	**0.085835**	**0.345985**	**0.172999**	**0.261644**	**1.000000**	
CVA	**-0.289947**	**0.145406**	**0.206050**	**-0.184942**	**-0.246369**	**0.105091**	**0.002403**	**1.000000**

Source: Own computation using major African airlines financial statements data.

Based on the table 4.3 above the correlation between explained variable leverage and explanatory variable size have positive relationship with value 0.60. This implies that leverage was increased as the input variables size increased. To the opposite the explanatory factor variable profitability(PRO), the explanatory factors growth opportunity(GRO), collateral value of asset (CVA), liquidity(LIQ), non-debt tax shield (NDT) and lease(LEA) was inversely correlated to dependent variable leverage with value -0.29, -0.16.-0.28, -0.30, -0.45 and -0.27 respectively.

4.3 Model Diagnostic test

The aim of model diagnostic test is that to test and contain statistically significant explanatory variable and to test either the classical linear regression model assumptions violated or not, thus if the data fits the basic assumptions of classical linear regression model it is confirmation for the acceptability of the regression result since it enhance the reliability of the regression input and output at hand .Based on these aim the common diagnostic test was done ,accordingly below each of the tests are presented as follows.

4.3.1 Multi-collinearity test

The basic aim of testing multi-collinearity is that to test the situation where there is either an exact or approximately exact linear relationship among the explanatory variables (Brooks ,2008).According to (Kennedy ,2011) the variables to be valid the correlation result between two variables shouldn't be greater than 0.7, If the multi-collinearity problem occurred the estimates of the sample parameters become inefficient and causes large standard errors, which makes the coefficient values and signs unreliable. It also hides the real impact of each variable on the dependent variable (Brooks,2008). High degrees of multi-collinearity can result in both regression coefficients being inaccurately estimated, and difficulties in separating the influence of the individual variables on the dependent variables. In addition, multiple independent variables with high correlation add no additional information to the model.

When we look at table 4.3 in this study no any variable correlation matrix exceeds 0.7 between the independent variables, the maximum correlation observed was 0.57 between lease and non-debt tax shield and fairly low correlation among variables except between lease and non-debt tax shield. Thus there is no problem of multi-collinearity in this study which confirm the reliability of the regression analysis.

Table 4.4 Correlation matrixes of independent variables

Covariance Analysis: Ordinary

Date: 01/06/19 Time: 03:29

Sample: 2002 2017

Included observations: 80

Correlation	SZE	PRO	NDT	LIQ	LEA	GRO	CVA
SZE	1.000000						
PRO	-0.001823	1.000000					
NDT	-0.479865	0.196685	1.000000				
LIQ	0.154105	0.336131	-0.097191	1.000000			
LEA	-0.433251	0.145902	0.570326	-0.104084	1.000000		
GRO	0.172999	0.177194	0.085835	0.345985	0.261644	1.000000	
CVA	-0.246369	0.145406	0.206050	-0.184942	0.105091	0.002403	1.000000

Source: major African airlines financial statements data using Eviews8 application.

4.3.2 Autocorrelation:

The assumption of autocorrelation is that the covariance between the error terms over time is zero. It is assumed that the errors are uncorrelated with one another. If the errors are correlated with one another, it would be stated that they are “auto correlated” or that they are serially correlated (Brooks ,2008). To confirm either there is auto correlation or not the Durbin Watson test(DW) rule for autocorrelation was applied in this study and the null hypothesis being there is no autocorrelation. Having 80 observation with 7 independent variables the regression result of DW as shown in table 4.4 below was 1.715356. The relevant critical lower and upper values for the test are dL= 1.360 and dU=1.620 respectively. The values of (4 - dU = 4- 1.620 = 2.380), and (4-dL=4-1.360 =2.640) as it can be seen in the below figure for DW test demarcation the DW test result fall in the non-rejection region between dU and dL, thus it indicates there was no evidence of auto correlation problem in this study.

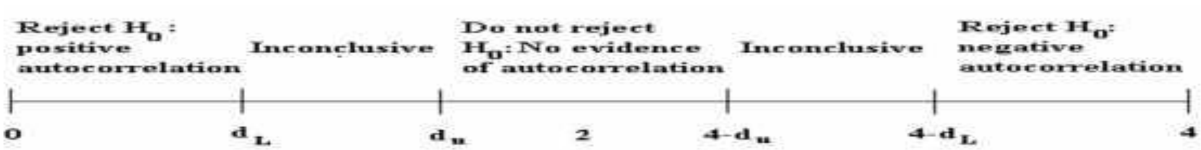
Table 4.5: Regression result of Durbin-Watson test

Cross-section fixed (dummy variables)

R-squared	0.801866	Mean dependent var	0.425375
Adjusted R-squared	0.769815	S.D. dependent var	0.220884
S.E. of regression	0.105975	Akaike info criterion	-1.513750
Sum squared resid	0.763684	Schwarz criterion	-1.156446
Log likelihood	72.55001	Hannan-Quinn criter.	-1.370497
F-statistic	25.01842	**Durbin-Watson stat**	**1.715356**
Prob(F-statistic)	0.000000		

Source: Own computation using major Airline financial statements data.

Figure 4.1: Rejection and Non-Rejection Regions for Durbin-Watson Test



	1.360	1.620	**1.715**	2.380	2.640	

Source: Own computation using major African Airline financial statements data.

4.3.3 Tests for Heteroscedasticity

The basic assumption of this test is that the error terms are homoscedastic, in other word assumed that the error terms have constant variance. If the error terms have no constant variance in this case said to be have heteroscedastic problem and the presence of heteroscedasticity makes the standard errors too big or too low and hence any inferences made could be misleading. There are different methods to test heteroscedasticity but the most popular method is the white's test. According to (Brook ,2008) if the probability of F-statistics, Observed R-square, and Scaled explained SS of the heteroscedastic white test result is in excess of 5% then there is no heteroscedastic problem. However, if one of these three fails then there is existence of heteroscedastic problem. Thus for this study the whit's test of heteroscedasticity applied in order to confirm either these test assumptions were violated or not. Accordingly, as shown in table 4.6 below, both the F-statistic and Chi-Square versions of the test statistic gave the same conclusion that there is no evidence for the presence of heteroscedasticity, since the p-values were in excess of 0.05, i.e the P value was 0.31 in both cases. The third version of the test statistic, scaled explained SS, which as the name suggests is based on a normalized version of the explained sum of squares from the auxiliary regression, also gave the same conclusion that there is no evidence for the presence of heteroscedasticity problem, since the p-value was considerably in excess of 0.05 that was 0.43. Thus the null hypothesis that the variance of the error term is constant (homoscedastic) not violated and should not be rejected.

Table 4.6 Heteroscedasticity Test: White

Heteroscedasticity Test: White

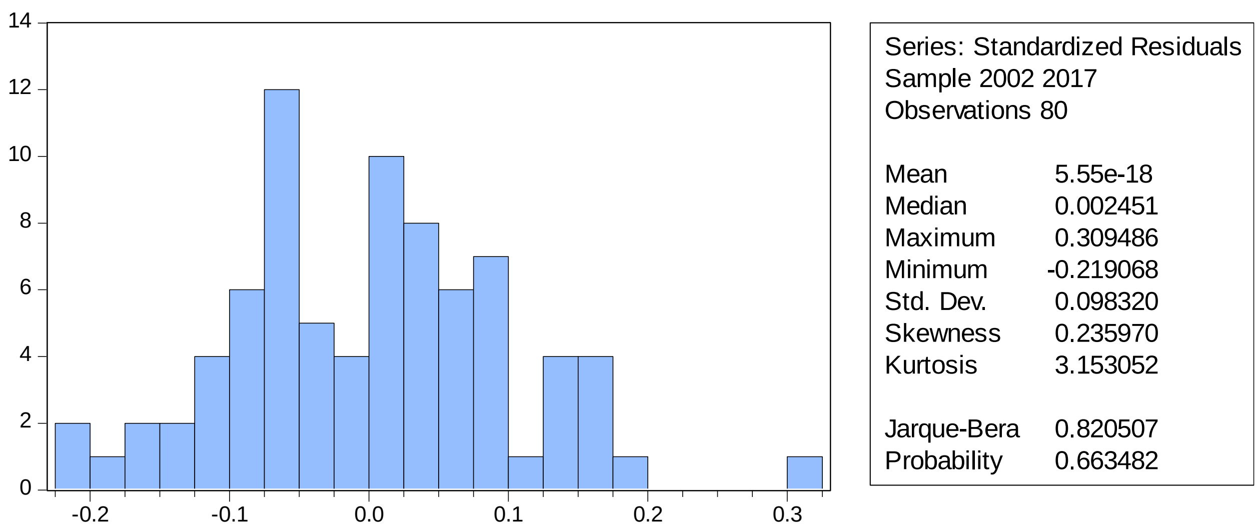
F-statistic	1.190882	Prob. F(7,72)	0.3190
Obs*R-squared	8.301292	Prob. Chi-Square(7)	0.3068
Scaled explained SS	6.944422	Prob. Chi-Square(7)	0.4347

Source: Own computation using major African Airlines financial statement data.

4.3.4. Normality test

The assumption of the normality test is the mean of the residuals is zero. According to (Brook ,2008) the normality of the data can be checked with the popular Jarque-Bera test statistic and its corresponding kurtosis. Kurtosis measure the skewness of the data at hand, the data distribution either it can be skewed to the left or to the right. kurtosis with value 3 highly preferred and the bell shaped is the standard .The null hypotheses is that with 5% significant level we failed to reject the null hypotheses Ho where there is no problem of normality .In short if the P-value of the test greater than 5% we do not reject the null hypotheses and we said the data is normally distributed and the kurtoses of 3 or closer to 3 we said the data have normal distribution .Accordingly in this study based on Fig 4.2 below the P value was of 0.66 it implies that the p-value for the Jarque-Bera test for the model is greater than 5% which indicates that the errors are normally distributed. In addition, the kurtosis was 3.15 it indicates close to 3 which is also acceptable and confirm the data was normally distributed.

Fig 4.2 Normality test for residuals (results from Eviews 8) using financial statement data



Source: Own computation using major airline financial statement data.

4.4. Model Specification Test

To run regression using panel data according to (Brooks ,2008) there are broadly two classes of panel estimator approaches available, that can be employed in financial research. These are fixed effects models and random effects models. Both approach outcome has similarity with slight deference. According to Gujarati (2009) if T (the number of time series data) is large and N (the number of cross-sectional units) is small, there is likely to be little difference in the values of the parameters estimated by fixed effect model and random effect model. Hence, the choice here is based on computational convenience. Since the number of time series (i.e. 16 years) is greater than the number of cross-sectional units (i.e. 5 airline companies) the fixed effect model is preferred. The simplest types of fixed effect model allow the intercept to differ cross sectional but not over time, while all of the slope estimates are fixed both cross-sectional and over time.

4.4.1 Fixed Effects model: The fixed-effects model controls for all time-invariant differences between the individuals, so the estimated coefficients of the fixed-effects models can't be biased because of omitted time-invariant characteristics. Thus the goal of fixed effect model is to eliminate the unobservable factors, moreover fixed effect model widely thought to be a more convincing tool for estimation of citreous paribus (other factor constant) effects and if the cross entity observation is less than the time serious observation. One side effect of the features of fixed effects model however is that they can't use to investigate time-invariant causes of the dependent variables (Brooks ,2008).

To determine either the fixed effect model efficient or not a redundant fixed effect test is recommended (Brooks,2008), accordingly the redundant fixed effect model result was presented below in table 4.7.

Table 4.7 results of test of redundant fixed effect model

Redundant Fixed Effects Tests

Equation: Untitled

Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	15.039511	(4,68)	0.0000
Cross-section Chi-square	50.700521	4	0.0000

Source: Own computation using major African airlines financial statement data.

As it can be observed above the p value of fixed effect test was 0.0000 it implies that there is significant at 1% level of statistical significance hence the fixed effect model was employed for this study.

4.5 Result of regression analysis

So far in this chapter analysis was done regards to descriptive statistics, correlation coefficients, model diagnostic test and model selection testes. Now the final section of this chapter presented the empirical econometric regression result regarding to the subject of this study i.e the effect of firm specific factors on leverage ratio of major African airline. Thus table 4.9 below report the regression results between the dependent variable Leverage (LEV) and the independent variables; profitability, liquidity, growth opportunity, collateral value of asset, lease, size, net debt tax shield as follows.

Table 4.8 Regression result using panel fixed effect model between leverage dependent variable and seven firm specific independent variables.

Dependent Variable: LEV

Method: Panel Least Squares

Date: 01/06/19   Time: 05:49

Sample: 2002 2017

Periods included: 16

Cross-sections included: 5

Total panel (balanced) observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.340356	0.470544	-0.723325	0.4720
PRO	-0.271567	0.129491	-2.097190	0.0397
LIQ	-0.103969	0.054215	-1.917704	0.0593
GRO	-0.208606	0.102962	-2.026044	0.0467
CVA	-0.010342	0.147399	-0.070166	0.9443
LEA	-0.069306	0.095263	-0.727522	0.4694
SZE	0.048091	0.021976	2.188369	0.0321
NDT	-0.593918	0.380860	-1.559413	0.1235

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.801866	Mean dependent var	0.425375
Adjusted R-squared	0.769815	S.D. dependent var	0.220884
S.E. of regression	0.105975	Akaike info criterion	-1.513750
Sum squared resid	0.763684	Schwarz criterion	-1.156446
Log likelihood	72.55001	Hannan-Quinn criter.	-1.370497
F-statistic	25.01842	Durbin-Watson stat	1.715356
Prob(F-statistic)	0.000000		

Source: Own computation using major African Airlines financial statement data.

4.5.1 Analysis and evaluation on the regression out put

Based on the criteria of decisions presented in the methodology section of this study below a detail analysis and discussions presented to evaluate either the regression result in line with the standard criteria or not. Therefore, R-squared result, adjusted R-squared result. T test, P value, F stat and DW statistic value of table 4.9 evaluated as follows.

R-Squared value: As indicated in table 4.9 above the R-squared value was 80%, it implies that the proportion of the total sample variation in the dependent variable that is explained by the independent variable was 80% and the remaining 20% was not explained by the model. The decision rule was that the closer the R^2 is to 1 or 100% the better the goodness of fit. The R^2 lies between zero and one. A value of R^2 that is nearly equal to zero indicates a poor fit of the OLS line (Wooldridge ,2009). Thus the conclusion is the R –squared value was close to 100% i.e was 80% thus have better goodness of fit.

Adjusted R-Squared value: The adjusted R-squared as indicated in table 4.9 was 77% it measures the goodness of fit after penalizes additional explanatory variables by using a degrees of freedom adjustment in estimating the error variance. This value indicates that collectively the change in firm specific factors explain 77% of the dependent variable leverage. Hence it can be said the variables firm specific factors was a good explanatory variable to determine the leverage ratio of major airlines in Africa and the remaining 23% was determined by other factors not included in this model and still it confirm the goodness of fit.

T-Statistic value: The T-Statistic value t-statistic is used to test a single hypothesis about the parameters in a regression model. When the calculated t-value is less than the tabulated t-value, the parameter is not statistical significant and vice versa. It is the ratio of the estimated parameter to the estimated standard error (Wooldridge ,2009). This explained more in section 4.5.2.

F-Statistic value: The joint F statistical probability of this study was 0.0000 and the statistic tests criteria the null hypothesis that all the regression coefficients are equal to zero. If the $F_{cal} > F_{0.05}$(tab), we reject the null hypothesis and accept the alternative hypothesis vice-versa (Wooldridge ,2009). Based on the decision criteria the probability of F stat 0.0000 confirm that overall or jointly the model was reliable and valid and statistically also significant (Wooldridge ,2009).

P-Value: The decision rule is if the P-value is less than or equal to 0.01 (1%) we reject the null and accept the alternative hypothesis at 1% level of significance. If the p-value is less than or equal to 0.05 (5%), we reject the null and accept the alternative hypothesis at 5% level of significance and if the p-value is less than or equal to 0.10 (10%), we reject the null hypothesis and accept the alternative hypothesis at 10% level of significance (Wooldridge ,2009).

Accordingly, the P value of independent variables, profitability (PRO) with P value 0.0397, growth(GRO) with P value of 0.0467 and Size (SZE) with p value 0.0321 respectively was significant at 5% significant level and the variables Liquidity(LIQ) with P value 0.0593 was significant at 10% significant level but the remaining variables lease (LEA), collateral value of asset (CVA) and net debt tax shield (NDT) was insignificant with coefficient value 0.4694 ,0.9443, 0.1235 respectively.

Durbin-Watson (DW) Statistic: It assists in specifying the right combination of the explanatory variables (Gujarati ,2009). It also tests to identify serial correlation problem (Wooldridge ,2009). Based on the test in section 4.3.2 of this chapter the DW test result was 1.71 and confirm there was no auto correlation problem thus it can be concluded that the explanatory variables combination was right for this study.

4.5.2 Analysis of the regression output and hypothesis testing

This part focuses mainly on the results of the regression analysis for the selected input variables for this study that have an impact on airline leverage ratio in light of the hypotheses developed in chapter three section 3.4.1 , the research objectives and research question developed in chapter one section 1.3.2 and the theory summarized in chapter two of the literature review .The selected input factors was Profitability, liquidity, Size, Growth, Collateral value of asset, lease and non-debt tax shield with the dependent variable leverage ratio and discussed one by one as follows:

Hypothesis 1: There is a negative and significant relationship between profitability and leverage ratio.

- **Findings;**

Profit: The regression result as indicated in table 4.8 confirm there was a negative relationship between profitability and leverage ratio. It implies that when profit before interest and tax increase by 1%, leverage ratio decrease by 0.27 percent, other factors remain constant, in other word as the profit of the major African airlines firms increase demand of debt less and decrease. The coefficient of profitability has a P value of -0.0397 and statistically significant at 5% statistical level which confirm also the airlines profitability has high impact on determining leverage ratio. Thus the regression output affirms the hypotheses one in that there was a negative relationship between profitability and leverage ratio as value was -0.27 and significant relationship as the P value was 0.0397 at 5% statically significant level.

- **Appropriate capital structure theories rational for the findings;**

Theoretically the peaking order theory is in line with the output of variables profitability and leverage, according to this theory high profitable firms use their own resource from their own equity before acquire the external financing or debt because firms get advantage of information asymmetry, thus the low-cost source of financing is equity than debt.

- **Other researcher's findings;**

Other empirical findings on previous studies like (Rajan and Zingales,1995);(Huang and Song,2002);(Booth et al.,2001);(Titman and Wessels,1988);(Friend and Lang,1988) and (Kester,1986) cited by Bratlie og Jotne(2012) and Dung Thi Thuy Tran(2014) also were found a negative relationship between leverage ratio and profitability and in line with the findings of this study .

Hypothesis two –There is a positive and significant relationship between tangibility(CVA) and leverage ratio.

- **Findings;**

Collateral value of asset (CVA): The result of collateral value of asset was - 0.01 it implies leverage and CVA has a negative relationship. The implication is that as CVA increase by 1 % leverage decrease by 0.01 %, other factors remain constant. The result of the variable CVA deviate from the expectation in the hypothesis two. Thus reject the hypothesis in that CVA and leverage has a positive relationship. The assumption behind hypothesis two was that high ratio of fixed-to-total assets mean large collateral for the debtors and should therefore indicate lower risk and lower interest payments. This also supported by the tradeoff theory.

- **Appropriate capital structure theories rational for the findings;**

The hypothesis was developed based on the tradeoff theory in that when the firm have high collateral asset can borrow easily at lower cost hence the higher the value of collateral asset the higher the debt level. Since the result shown was negative relationship between tangibility and leverage it was in line with agency cost and peaking order theory rather than the tradeoff theory.

- **Other researcher's findings;**

The study findings by (Huang and Song ,2002) cited by Dung Thi Thuy Tran(2014) found CVA and leverage was negatively correlated but most studies result like (Bratlie og Jotne ,2012);(Rajan et.al ,1995); *(*Gaud et.al ,2005);*(*Frank et.al ,2007) and (Oftedal & Sorhus ,2011) shown a positive relationship between CVA and leverage .(Booth et al. ,2001), (Huang and Song ,2002) and (Grossman & Hart ,1982) argue for a negative relationship between tangibility of assets and leverage using agency costs and pecking order theory. Firms with lower levels of collateral (tangible assets) have higher agency costs for managers consuming excessive perquisites than firms with higher levels of collaterals. Firms with high levels of debt will be more closely monitored, and this reduces the excessive use of perquisites from managers. Since the monitoring costs in general are higher for firms with less collateral, they might decide to have a higher level of debt for reducing the consumption of perquisites. The pecking order theory implies therefore a negative relationship between collateral value of assets and leverage. Thus the result of this study supported by the peaking order and agency costs theory even though the expected result different from the hypothesis.

Hypothesis 3-There is significant and positive relationship between firm size and leverage

- **Findings;**

Size (sze) : The result of table 4.8 shown the coefficient of size was 0.04 and positively related with leverage ratio same as expected and statically significant at 5% significant level and in line with the hypothesis three in that there is positive and significant effect on leverage because the P value of the coefficient was 0.0321.The value of the coefficient 0.04 implies that a 1% increase in size will result 0.04 percent increase in leverage ratio and statistically significant at 5% level .This result is consistent with trade of theory in that larger firm have lower business risk thus will be more stable than small firms so they have high leverage.

The result and the hypothesis was agreed. As explained above the positive relationship between size and leverage meet, also the effect was significant hence size was the determining factor for leverage.

- **Appropriate capital structure theories rational for the findings;**

The appropriate theory for positive relationship is supported by the trade-off theory. Trade-off theory argues that increasing firm size will decrease the risk of default. This will induce firms to increase their debt tax shields because of the low bankruptcy costs.

- **Other researcher's findings;**

Previous empirical findings in this regard also affirm size and leverage has a positive relationship like studies by Bratlie og jotne (2012) ,Rajan et.al (1995), Psillaki et.al (2009), Gaud et.al (2005) , Frank et.al (2007), Dung Thi Thuy Tran and Oftedal & Sorhus (2011) also found a positive relationship between debt ratio and size .

Hypothesis four: There is a significant and negative relationship between growth and leverage.

- **Findings;**

Growth: The input variable growth result was -0.20, it implies that there is negative relationship between growth and leverage ratio. Other factors remain constant as the airlines growth increased by 1%, leverage ratio decrease by 0.20 percent. The coefficient of growth has a P value of 0.0467 and statistically significant at 5%.

The result of the variable growth as shown in table 4.8 was negatively related with leverage with coefficient of -0.20 thus it supports the hypothesis. This implies that firms have high growth opportunity were demand less debt or firms having large growth opportunity were borrowing less.

- **Appropriate capital structure theories rational for the findings;**

Theoretically the result of the regression confirm the agency cost theory, the cost associated with this agency relationship is likely to be higher for firms in growing industries, debt for growing firms can be risky in which firms may loss flexibility in their choice of future investments. And therefore the expected future growth should thus be negatively related to debt levels.

- **Other researcher's findings;**

Other empirical findings on previous studies by Rajan et.al (1995), Gaud et.al (2005), Frank et.al (2007) and Oftedal & Sorhus (2011), Dung Thi Thuy Tran (2015) also find a negative relationship between debt ratio and growth prospects. Hence, this study finding was in line with previous studies. And also in line with the agency cost theory.

Hypothesis Five: There is a significant and negative relation between liquidity and leverage ratio.

- **Findings;**

Liquidity: The expected result and relationship with leverage was negative or inverse relationship. The regression result as indicated in table 4.8 also was -0.10 with P value 0.0593 which confirm there is a negative relationship between liquidity and leverage ratio. It implies that when liquidity of the airlines increased by 1%, leverage ratio decrease by 0.10 percent, other factors remain constant. The coefficient of liquidity has a P value of 0.0593 and statistically significant at 5% statistical level which confirm also the airlines liquidity has high impact on determining leverage ratio.

Same as the hypothesis the regression outcome also has negative coefficient value -0.10 it implies that there is a negative relationship between liquidity and leverage ratio and has significant impacts as the P value is 0.0593 at 10% statically significant level.

- **Appropriate capital structure theories rational for the findings;**

Theoretically the result of the regression confirms again the peaking order theory, it assumes firms first utilize its own internal resource that reserve from retained earnings before acquiring external sources.

- **Other researcher's findings;**

Other empirical findings on previous studies like (Bratlie og Jotne ,2012);(Lipson and Mortal ,2009);(Udomsirikul, Jumreornvong & Jiraporn,2011) & (De Haan & Hinloope,2003) also found that the firm with more liquid, will tends to carry less debt because they prefer to raise equity from internal source rather than debt from external sources.

Hypothesis six: There is a significant and negative relationship between leasing and leverage ratio.

- **Findings;**

Lease (LEA): The result shown there was a negative relationship between lease and leverage ratio because as indicated in table 4.8 lease has -0.06 coefficient value but statistically it was insignificant at 1, 5% and 10% significant level since the P value was 0.4694. The implication is as leasing by the airline firms increase by 1 % significant level leverage decrease by 0.06 percent other factors remain constant. The impact of change of lease on leverage however wasn't statistically significant.

The result of this study partially support the hypothesis in that lease was negatively related with leverage ratio but not significant as expected in other word lease was moderately determining the leverage ratio.

- **Appropriate capital structure theories rational for the findings;**

Theoretically the result of the regression confirms the peaking order theory, it assumes firms utilize first less costly and risky source of financing like leasing option before acquiring riskier sources like debt financing.

- **Other researcher findings;**

Other empirical findings like studies by (Gavazza ,2010);(Bratlie og jotne ,2012) also found that there is a negative relation between leverage and also significant result .And the finding of this study also in line with others researcher findings except the significant.

Hypothesis Seven: There is significant and negative relationship between Non debt tax shield and leverage ratio;

- **Findings;**

Non debt tax shield (NDT): As indicated in table 4.8 the coefficient result of NDT was -0.59 and P value was 0.1235 this result implies that there is a negative relationship between the variable NDT and leverage ratio**.** Meaning that a 1% increase in NDT results 0.59 percent decrease in leverage but statistically insignificant or has moderate impact as the P value not statically significant at 1%,5% and 10% significant level.

The expectation of leverage with NDT was a negative relationship same the result also confirms a negative coefficient value -0.59. However, it wasn't statically significant in determination of leverage.

- **Appropriate capital structure theories rational for the findings;**

The trade-off theory predicts higher leverage when a firm is forced to pay higher taxes on its earnings. The higher the taxes firms pay, the higher the value of debt tax shields firms can gain this was suggested by (Myers ,1984). Furthermore, non-debt tax shields such as accounting depreciation, depletion allowances, and investment tax credits have been found to have a negative influence on leverage because they act as substitutes for the benefit of debt financing coming from interest tax shields (De Angelo & Masulis,1980). Hence the appropriate theory for non-debt tax shield is the tradeoff theory.

- **Other researcher's findings;**

Previous empirical findings also affirm non debt tax shield and leverage has a negative relationship like studies by (Koert te Nijenhuis ,2013);(Dung Thi Thuy Tran,2013) &(De Miguel & Pindado ,2001) found that a firm with a higher non debt tax shield has a lower amount of leverage.

Table 4.9 Summery of the current study result and previous researcher result.

Firm specific Internal factors	**Hypothesis**	**Current study result**	**Previous study result**	**Applicable theory**
Profitability of the firm	- Significant	- Significant	-/+ Significant	Peaking order theory
Tangibility (collateral value of asset)	+Significant	- Insignificant	+/- Significant	Peaking order theory
Firm size	+ Significant	+ Significant	+ Significant	Trade off theory
Growth opportunity	- Significant	- Significant	- Significant	Agency cost theory
Liquidity of the firm	- Significant	- Significant	- Significant	Peaking order theory
Operating lease	- Significant	- Insignificant	- Significant	Peaking order theory
Non debt tax shield	- Significant	- Insignificant	- Significant/Insignificant	Trade off theory

Sources: The current and earlier study result.

CHAPTER FIVE

SUMMARY, CONCLUSTION AND RECOMMENDATION

5.1. Summary

Understanding the determinants of capital structure is important in order to setup optimal capital structure of the airlines so as to remain stable, profitable and keep the financial health right. This study was therefore conducted to find answer and test for the formulated hypothesis focusing on internal factors determine the capital structure of major airline firms in Africa with support of empirical data. Accordingly, to meet the research objectives seven firm specific internal factors which are growth opportunity, collateral value of asset, lease financing, non-debt tax shield, liquidity, firm size and profitability were selected. Then to carry out the study based on the scientific research method the literature part was presented which focuses on the theoretical foundation and empirical findings of similar studies by other researchers more important the gap need to be addressed was identified and the research frame work also developed. In the other phases of this study the research design and methodology of the study was selected and the data for five major airlines found in Africa were extracted from their audited financial statement with a total of 16 years the period 2001-2017. Finally, the extracted data was analyzed and tested using the frame work of linear regression model assumption. To analyze and respond to the proposed research question descriptive statistics, diagnostic tests, model selection, regression result analysis and test of the hypothesis have been done using evwius 8 statistical package.

Summary of the empirical findings

The mean leverage value of the major African airlines were high which entails that on average the debt of these airlines were high. Regrading to internal factors affecting the capital structure; profitability, firm size, liquidity and growth opportunity were significantly affect leverage but the effect of lease financing, collateral value of asset and non-debt tax shield on leverage were insignificant. The correlation between leverage and profitability, liquidity, growth opportunity, leasing and non-debt tax shield were negative except size were positively correlated. The most frequently and applicable theory in this study was the peaking order theory, moderately the agency cost theory and the tradeoff theory also were applicable in this study.

5.2. Conclusion

With the objectives of examining the factors determining the capital structure of major airline in Africa, the researcher made detail analysis and attempted to provide answers for the research questions and test the hypothesis. The findings also sheds light on some of the determinants that most affect the capital structure of major African airlines thus the study adds value to the literatures by empirically linking the internal determinant factors with capital structure. In conclusion based on the current empirical findings the number one internal factors determining leverage was profitability;

- **The study result validate that profitability is the number one factor determining the capital structure of these airlines,** also it comply with other most previous empirical findings in that profitability and leverage has significant and negative relationship. The applicable theory from the alternatives capital structure theory in the process of decision of leverage is the peaking order theory, in that the behavior of major airline first provide priority for internal source of financing before borrowing from outside financing sources. Therefore, the conclusion is profitability is the number one factor and the peaking order theory is the applicable theory that the airlines have to be considered.
- **The second important internal factors determining leverage was firm size**; The current empirical study asserts firm size has been important input factor on the decision of leverage in that airlines having large size relatively were used more debt .The result shown size has significant effect on leverage .Same as the current result of this study the previous empirical result by other researcher also affirm size has significant impact on leverage .The conclusion is therefore firm size is another main important factor in determining the leverage of the major airline firms in Africa .The most applicable theory regrading to the variable firm size and leverage are the tradeoff theory .
- **The third key internal factor determining leverage was liquidity**; Per the current empirical result liquidity and leverage ratio were inversely related and in line with the

previous empirical findings and the impact was also significant. Thus the conclusion is liquidity is another determining factor of leverage for the major African airlines. The applicable theory for liquidity and leverage are the peaking order theory.

- **The fourth internal factor determining leverage was growth opportunity** The result shown growth and leverage ratio were inversely related and in line with the previous findings and the impact was also significant.as can be observed from the result growing airlines avoid debt. Thus the conclusion is growth opportunity is also one of the main determining factor for the major African airlines. The applicable theory need to be address during setup of the capital structure for growth and leverage is the agency cost theory.

Overall this research provides a more comprehensive study on the determinants of firm specific internal factors on the capital structure of major airline in Africa and most findings in literature and the findings of this study also in line. Thus based of the findings the managers (policy makers) of the airlines can develop appropriate strategy to locate optimally the capital structure of the airlines in order to keep the airlines financially healthy and sustainable in the industry.

5.3 Recommendation

Based on the findings and conclusion of the study the following recommendations were forwarded:

Major African airlines must focus on the main internal determinants of the capital structure and must align it with their strategy so that the financial healthiness of the airlines can be maintained and the airlines can be sustainable in the industry. As the findings condemns, it is recommended that the major focus area should be profitability, liquidity, growth opportunity and firm size.

- Major African airlines recommended to use internal financing from the profit earned than using external financing to run the operation and investments since profitability is significant and negatively correlated with leverage. The policy makers, CFO and CEO deciding on the capital structure of the airline should be certain that utilizing the internal sources efficiently before considering outside sources of financing for optimal set up of the airlines capital structure and increment of the overall value of the airlines.

- The high incremental in dollar sales signaling high demand in the market and also assure the strength of the airlines in the industry in addition size is significant and positively correlated with leverage. Therefore, major African airlines with large dollar sales recommended to use external financing in addition to internal financing for a better future growth and development. Thus the decision makers should be focused on the size of the airlines in terms of change in dollar sales while structuring the financing mix of the airlines.
- Growing African Airlines should be focus on developing and utilizing internal financing capacity for a better growth since growth is significant and negatively correlated with leverage. It is not recommended for growing airlines with imperfect market in which profitability is uncertain, less developed infrastructure on Airports, and stiff regulation between the countries to consider debt on priority than using own equity to finance the operation or investments. Therefore, it is suggested major African airline having growth opportunity to provide priority for internal sources of funds than financing from external sources of fund for a better growth and stability in the industry. Again it is recommended the decision makers of the airlines to focus on the growth opportunity of the airlines while determining the capital structure.
- The major African airlines with good liquidity position should be certain to finance the operation by using own internal sources than outside sources of funds since it is less risky and less costly, beside liquidity is significant and negative correlation with leverage. Thus it is recommended the decision makers to focus again on internal financing and on the determining factor liquidity during the arrangement of the capital structure.
- Finally, the most frequently theory applicable in this study was the peaking order theory therefore major African airlines recommended to use the peaking order theory as a guide line while determining the capital structure. Less frequently the agency cost theory and the tradeoff theory also applicable thus major African airlines also suggested to use these theories while determining the capital structure.

5.4 Direction for further research

The study mainly focused on seven internal factor determining the capital structures of major airlines found in Africa ,nevertheless all internal factors didn’t include in this study for some reasons ,few of the remaining internal factors were age of the airlines(experience), ownership structure ,good will of the airlines ,ratings by rating agencies, management quality ,most importantly the macro(external factors) determining the capital structure didn’t included such as inflation rate, fuel price ,airlines regulation and air transportation rules effect ,industry competition, currency fluctuation effect, GDP ,political stability ,peace and order and others qualitative factors also are determining factors while locating the optimal capital structure of these airlines and recommended to be included and studied in the future by other researchers interested in the area of the topic due the fact that external macro-economic factors and the remaining firm specific factors also can be key driving factor in determining the capital structure and enhance the firms value.

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APPENDICES

Appendix–I:Tests for the Multi-Collinarity.

Covariance Analysis: Ordinary

Date: 01/06/19 Time: 03:29

Sample: 2002 2017

Included observations: 80

Correlation	SZE	PRO	NDT	LIQ	LEA	GRO	CVA
SZE	1.000000						
PRO	-0.001823	1.000000					
NDT	-0.479865	0.196685	1.000000				
LIQ	0.154105	0.336131	-0.097191	1.000000			
LEA	-0.433251	0.145902	0.570326	-0.104084	1.000000		
GRO	0.172999	0.177194	0.085835	0.345985	0.261644	1.000000	
CVA	-0.246369	0.145406	0.206050	-0.184942	0.105091	0.002403	1.000000

Source: Own computation from major African Airline financial statements data using Eviews8

Appendix-II: Regression Results For Determinants of capital structure major Airline of Africa .

Dependent Variable: LEV

Method: Panel Least Squares

Date: 01/06/19 Time: 05:49

Sample: 2002 2017

Periods included: 16

Cross-sections included: 5

Total panel (balanced) observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.340356	0.470544	-0.723325	0.4720
PRO	-0.271567	0.129491	-2.097190	0.0397
LIQ	-0.103969	0.054215	-1.917704	0.0593
GRO	-0.208606	0.102962	-2.026044	0.0467
CVA	-0.010342	0.147399	-0.070166	0.9443
LEA	-0.069306	0.095263	-0.727522	0.4694
SZE	0.048091	0.021976	2.188369	0.0321
NDT	-0.593918	0.380860	-1.559413	0.1235

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.801866	Mean dependent var	0.425375
Adjusted R-squared	0.769815	S.D. dependent var	0.220884
S.E. of regression	0.105975	Akaike info criterion	-1.513750
Sum squared resid	0.763684	Schwarz criterion	-1.156446
Log likelihood	72.55001	Hannan-Quinn criter.	-1.370497

F-statistic	25.01842	Durbin-Watson stat	1.715356
Prob(F-statistic)	0.000000		

Source : Major African Airline Financial statement result using eviws 8 .

Appendix III: Heteroscedasticity test

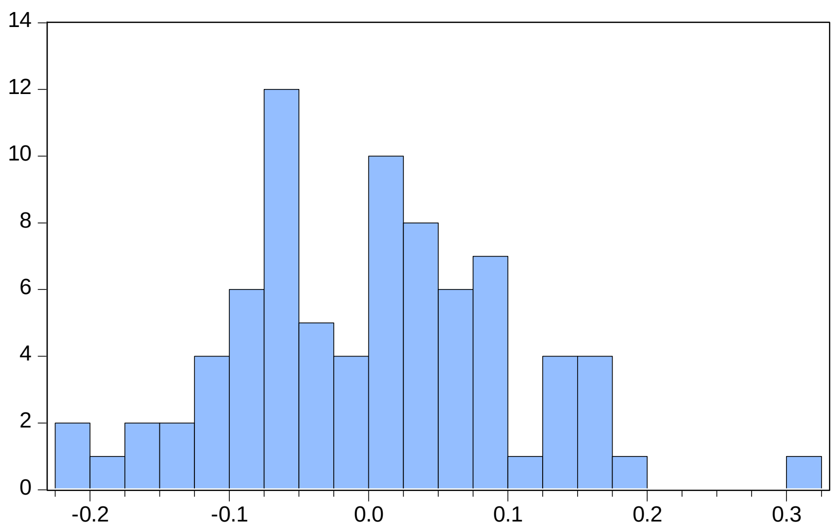
Heteroscedasticity Test: White

F-statistic	1.190882	Prob. F(7,72)	0.3190
Obs*R-squared	8.301292	Prob. Chi-Square(7)	0.3068
Scaled explained SS	6.944422	Prob. Chi-Square(7)	0.4347

Source: Own computation from major African airline financial statements data using Eviews8

Appendix VI: Normality test

Normality test for residuals (results from Eviews)

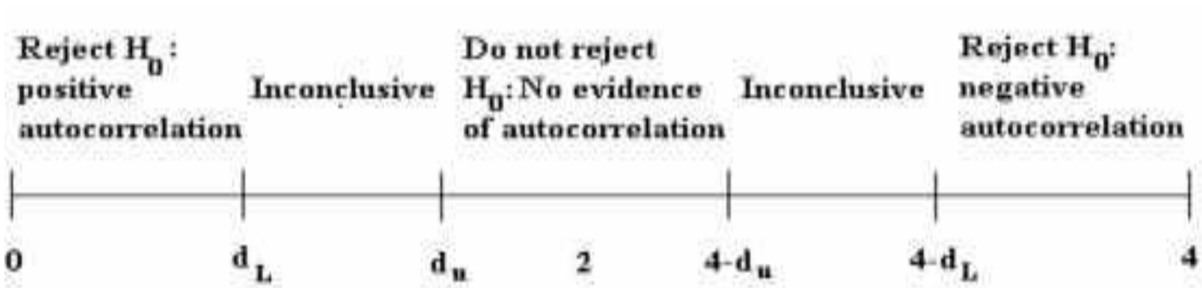


Series: Standardized Residuals
Sample 2002 2017
Observations 80

Mean	5.55e-18
Median	0.002451
Maximum	0.309486
Minimum	-0.219068
Std. Dev.	0.098320
Skewness	0.235970
Kurtosis	3.153052
Jarque-Bera	0.820507
Probability	0.663482

Source: Own computation from major African airline financial statements data using Eviews8

Appendix V: Durbin-Watson test



	1.360	1.620	**1.715**	2.380	2.640	

Regression result of Durbin-Watson test

Cross-section fixed (dummy variables)

R-squared	0.801866	Mean dependent var	0.425375
Adjusted R-squared	0.769815	S.D. dependent var	0.220884
S.E. of regression	0.105975	Akaike info criterion	-1.513750
Sum squared resid	0.763684	Schwarz criterion	-1.156446
Log likelihood	72.55001	Hannan-Quinn criter.	-1.370497
F-statistic	25.01842	**Durbin-Watson stat**	**1.715356**
Prob(F-statistic)	0.000000		

Source: Own computation from major African airline financial statements data using Eviews8

Appendix IV: Summery of data used for the study

YEAR	AIRLINE	SZE	PRO	NDT	LIQ	LEV	LEA	GRO	CVA
2002	ET	21.68	0.05	0.04	0.98	0.57	0.08	0.11	0.59
2003	ET	21.76	0.05	0.05	1.56	0.45	0.08	0.13	0.41
2004	ET	21.95	0.08	0.05	1.36	0.45	0.08	0.21	0.59
2005	ET	22.19	0.09	0.05	1.19	0.47	0.06	0.27	0.59
2006	ET	22.41	0.05	0.05	1.05	0.43	0.06	0.25	0.57
2007	ET	22.65	0.04	0.05	1.18	0.36	0.08	0.28	0.53
2008	ET	22.94	0.07	0.04	1.44	0.33	0.07	0.34	0.43
2009	ET	23.23	0.12	0.04	1.59	0.29	0.09	0.33	0.43
2010	ET	23.55	0.10	0.03	1.66	0.26	0.09	0.38	0.41
2011	ET	23.93	0.02	0.03	0.96	0.49	0.08	0.47	0.56
2012	ET	24.24	0.03	0.04	1.02	0.51	0.07	0.37	0.59
2013	ET	24.37	0.07	0.04	0.98	0.55	0.06	0.14	0.65
2014	ET	24.56	0.08	0.04	0.97	0.54	0.06	0.21	0.63
2015	ET	24.62	0.10	0.05	0.61	0.59	0.07	0.06	0.67
2016	ET	24.72	0.13	0.06	0.79	0.53	0.09	0.10	0.67
2017	ET	24.83	0.07	0.06	0.84	0.50	0.11	0.12	0.64

2002	SA	23.34	(0.06)	0.02	1.09	0.68	0.10	0.26	0.24
2003	SA	23.52	0.03	0.03	0.39	0.78	0.10	0.19	0.61
2004	SA	23.45	0.01	0.05	0.50	0.88	0.10	0.03	0.46
2005	SA	23.45	0.06	0.03	0.78	0.67	0.10	0.00	0.54
2006	SA	23.45	0.03	0.06	0.64	0.72	0.12	0.00	0.53
2007	SA	23.56	(0.04)	0.05	0.79	0.66	0.15	0.11	0.46
2008	SA	23.72	(0.04)	0.05	0.94	0.66	0.16	0.13	0.38
2009	SA	23.73	0.04	0.04	0.89	0.64	0.11	0.04	0.39
2010	SA	23.56	0.05	0.05	0.92	0.59	0.13	(0.14)	0.41
2011	SA	23.61	0.05	0.06	0.94	0.65	0.09	0.06	0.38
2012	SA	23.84	(0.06)	0.04	0.69	0.84	0.07	0.26	0.45
2013	SA	23.96	(0.04)	0.04	0.55	0.84	0.08	0.25	0.46
2014	SA	24.08	(0.08)	0.04	0.47	0.89	0.09	0.12	0.36
2015	SA	24.09	0.17	0.06	0.41	0.84	0.10	(0.01)	0.27
2016	SA	24.05	(0.01)	0.04	0.40	0.86	0.15	0.01	0.20
2017	SA	24.08	(0.02)	0.06	0.41	0.88	0.10	0.01	0.20
2002	KQ	17.04	0.26	0.19	1.06	0.14	1.11	0.44	0.44
2003	KQ	17.13	0.24	0.17	0.67	0.17	1.02	0.55	0.55

2004	KQ	17.25	0.15	0.20	0.74	0.15	0.84	0.53	0.29
2005	KQ	17.56	0.16	0.16	0.79	0.26	0.50	0.36	0.42
2006	KQ	17.78	0.15	0.14	1.05	0.25	0.30	0.25	0.53
2007	KQ	17.89	0.25	0.13	1.30	0.26	0.20	0.09	0.56
2008	KQ	17.92	0.30	0.13	1.38	0.35	0.19	0.03	0.54
2009	KQ	18.09	(0.30)	0.14	0.88	0.30	0.23	0.19	0.50
2010	KQ	18.07	0.06	0.22	1.00	0.48	0.65	(0.01)	0.49
2011	KQ	18.27	0.07	0.07	1.06	0.15	0.74	0.20	0.58
2012	KQ	18.49	0.03	0.07	1.34	0.49	0.64	0.26	0.58
2013	KQ	18.20	0.40	0.05	0.92	0.40	0.60	(0.06)	0.54
2014	KQ	18.48	(0.04)	0.05	0.39	0.35	0.72	0.07	0.55
2015	KQ	18.40	(0.40)	0.07	0.41	0.78	0.76	0.04	0.50
2016	KQ	18.55	(0.04)	0.01	0.40	0.90	0.15	0.04	0.72
2017	KQ	18.59	(0.01)	0.12	0.30	0.34	0.15	(0.03)	0.76
2002	MO	12.79	0.05	0.09	0.35	0.18	0.13	(0.01)	0.72
2003	MO	12.72	0.07	0.09	0.34	0.19	0.16	(0.01)	0.72
2004	MO	12.75	0.05	0.06	1.01	0.21	0.36	0.03	0.57
2005	MO	12.86	0.08	0.06	1.09	0.21	0.15	0.11	0.50

2006	MO	12.94	0.02	0.06	0.94	0.28	0.17	0.09	0.44
2007	MO	12.93	O.00-	0.06	1.02	0.30	0.18	0.02	0.47
2008	MO	12.83	0.13	0.04	1.41	0.22	0.21	0.14	0.55
2009	MO	12.74	(0.03)	0.22	0.87	0.34	0.27	(0.09)	0.46
2010	MO	12.49	(0.03)	0.08	0.49	0.25	0.35	(0.22)	0.66
2011	MO	12.73	0.05	0.09	0.56	0.27	0.28	0.27	0.64
2012	MO	12.73	(0.07)	0.09	0.44	0.23	0.29	0.00-	0.64
2013	MO	12.74	0.01	0.10	0.48	0.29	0.30	0.01	0.62
2014	MO	12.94	0.01	0.11	0.56	0.30	0.25	0.22	0.58
2015	MO	13.03	(0.04)	0.11	0.47	0.20	0.24	0.10	0.51
2016	MO	13.08	0.04	0.10	0.64	0.16	0.24	0.05	0.44
2017	MO	13.12	0.05	0.08	0.88	0.26	0.22	0.03	0.33
2002	CM	20.97	0.01	0.05	1.66	0.22	0.06	0.10	0.40
2003	CM	21.04	0.01	0.05	0.87	0.23	0.10	0.06	0.38
2004	CM	21.11	0.03	0.05	1.19	0.28	0.10	0.07	0.45
2005	CM	21.26	0.06	0.05	1.06	0.22	0.09	0.14	0.48
2006	CM	21.40	0.07	0.08	1.25	0.28	0.08	0.13	0.40
2007	CM	21.52	0.08	0.09	0.84	0.23	0.07	0.11	0.51

2008	CM	21.71	0.04	0.08	0.81	0.25	0.06	0.18	0.53
2009	CM	21.84	0.04	0.07	0.87	0.21	0.05	0.12	0.47
2010	CM	21.83	0.05	0.08	0.76	0.21	0.06	(0.01)	0.49
2011	CM	22.00	0.03	0.08	0.94	0.19	0.06	0.16	0.55
2012	CM	22.15	0.00-	0.07	0.59	0.24	0.08	0.14	0.58
2013	CM	22.41	0.07	0.07	0.95	0.46	0.06	0.23	0.57
2014	CM	22.56	0.07	0.08	0.91	0.48	0.03	0.14	0.56
2015	CM	22.50	0.06	0.10	0.72	0.45	0.04	(0.07)	0.58
2016	CM	22.51	0.07	0.07	0.87	0.51	0.04	0.01	0.64
2017	CM	22.53	0.11	0.08	0.76	0.51	0.04	0.02	0.71

Source: Own computation from financial statements of major airlines in Africa