

**ADANA SCIENCE AND TECHNOLOGY UNIVERSITY  
GRADUATE SCHOOL OF SOCIAL SCIENCES  
DEPARTMENT OF MANAGEMENT INFORMATION SYSTEMS  
ENTREPRENEURSHIP PROGRAM**

**THE FACTORS AFFECTING THE FINANCIAL PERFORMANCE: EVIDENCE  
FROM THE AVIATION INDUSTRY**

**Caner YILDIRIM**

**MASTER'S THESIS**

**ADANA / 2018**

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**Supervisor**

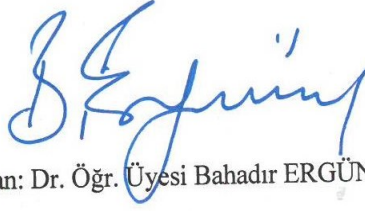
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**ADANA / 2018**

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## DECLARATION

### DECLARATION

I hereby declare that this master's thesis titled as "THE FACTORS AFFECTING THE FINANCIAL PERFORMANCE: EVIDENCE FROM THE AVIATION INDUSTRY" has been written by myself in accordance with the academic rules and ethical conduct. I also declare that all materials benefited in this thesis consist of the mentioned resources in the reference list. I verify all these with my honor.

24/12/2018



Caner YILDIRIM

**ABSTRACT****THE FACTORS AFFECTING THE FINANCIAL PERFORMANCE:  
EVIDENCE FROM THE AVIATION INDUSTRY****Caner YILDIRIM****Master Thesis, Department of Management and Information System****Supervisor : Asst. Prof. Dr. Bahadır ERGÜN****December 2018, 69 pages**

In this thesis study it was aimed to reveal the internal determiners of the profitability of the leading aviation companies of the world. The data set consists of the financial ratios of the 12 aviation companies between 2009-2016. The logistic regression method was employed in the analysis part. While operating profit margin, net margin, return on asset and return on equity were used as dependent variables, current ratio, inventory turnover, receivables turnover, payables period, asset turnover and debt ratio were chosen as the independent variables. According to the results, holding other independent variables constant, it can be asserted that the increases in the average current ratio, inventory turnover and debt ratio levels also increase the probability of having negative values of dependent variables, and other independent variables had an opposite effect on the dependent variables.

**Keywords:** Financial Performance, Profitability, Financial Ratios, Logistic Regression, Aviation Companies.

**ÖZET****THE FACTORS AFFECTING THE FINANCIAL PERFORMANCE:  
EVIDENCE FROM THE AVIATION INDUSTRY****Caner YILDIRIM****Yüksek Lisans Tezi, Yönetim Bilişim Sistemleri Anabilim Dalı****Danışman: Dr. Öğr. Üyesi Bahadır ERGÜN****Aralık 2018, 69 sayfa**

Bu tez çalışmasında dünyanın önde gelen havayolu şirketlerinin karlılıklarının içsel belirleyicilerinin ortaya koyulması amaçlanmıştır. Veri seti 12 havayolu şirketinin 2009-2016 yılları arasındaki finansal oranlardan oluşmaktadır. Analiz kısmında lojistik regresyon metodu kullanılmıştır. Faaliyet kar marjı, net kar marjı, aktif karlılığı ve özsermaye karlılığı oranları bağımlı değişken olarak kullanılırken bağımsız değişkenler cari oran, stok devir hızı, alacakların dönüşüm hızı, ödeme süresi, aktif devir hızı ve borçluluk oranları olarak seçilmiştir. Analiz sonuçlarına göre diğer değişkenler sabitken ortalama cari oran, stok devir hızı ve borçluluk oranlarında gerçekleşen artışların bağımsız değişkenlerin negatif değerler alma olasılığını artırdığı, diğer bağımsız değişkenlerin ise bağımlı değişkenler üzerinde tersi bir etkiye sahip olduğu ileri sürülebilir.

**Anahtar Kelimeler:** Finansal Performans, Karlılık, Finansal Oranlar, Lojistik Regresyon, Hava Yolu Şirketleri.

## FOREWORD

The concept of financial performance has been a popular research field for the financial literature in terms of profitability. Considering that the main goal of the firms is to maximize shareholders' wealth, profitability is a tool to achieve this. The profitability of a firm plays a role that cannot be ignored in keeping the firm in competition. Therefore, examining the factors that determine the level of a firm's profit provides useful tips in its strategic planing and decision-making processes.

The aviation industry is one of the most important and fastest growing sectors in the world. The aviation industry is considered to be the prominent sector for its significant contribution to the increase in economic development and employment.

Therefore, the principal purpose of this research is the determination of main factors in the profitability of the aviation sector. It was aimed to make the internal profitability dynamics of the world's leading airlines more understandable with the findings of this thesis.

I owe particular gratitude to my supervisor Assist. Prof. Dr. Bahadır ERGÜN for his valuable guidance and contributions. I would like to thank Assist. Prof. Dr. Ahmet ÖZCAN from whom I received opinions during the process, to Prof. Dr. Hatice DOĞUKANLI, who shared her valuable feedback on the thesis. And finally I also would like to thank Res. Asst. Avni Ürem ÇÜRÜK for his invaluable contributions to this thesis study.

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**ABBREVIATIONS**

<b>ROE</b>	: Return on Equity
<b>ROA</b>	: Return on Assets
<b>ICAO</b>	: International Civil Aviation Organization
<b>IATA</b>	: International Air Traffic Association
<b>LCC</b>	: Low Cost Carriers



## CHAPTER 1

### INTRODUCTION

#### 1.1. Included of the Study

The transportation and logistics sector have been a field which has not lost its significance with the rise of globalization and consumption therefore it has been studied by many researchers both in the private sector and in the academic context. The aviation industry, which is a sub branch of the sector, has its own characteristics; with its special infrastructure and communication system requirement, the use of advanced technology tools and equipment, qualified human power, both national and international property through its legislations; is an important sector that is open to innovation and development, which even affects countries policies.

Because of the dynamic, multi-layered and open to improvement structure of the aviation industry, entrepreneurship has become a concept that must be taken into consideration. With its important position in the global market, investigating the aviation industry financially and putting out the profitability of the companies will provide useful results to predict the opportunities and risks under the concept of entrepreneurship. This has been the main motivation behind this study.

Financial performance can be defined as a process in which the results of policies and activities are evaluated financially. In the studies carried out on sector-specific basis, examining the financial statements of the companies operating in the field, comparing the ratios and searching for meaningful results is a popular method applied in finance field. Although the factors affecting financial performance are generally similar, it is necessary to make separate examinations in order to reach the appropriate factors affecting the performance for the specific characteristics, taking into account the sector dynamics.

In this study, the factors affecting financial performance in the aviation industry were examined using logistic regression in the light of the data obtained from the financial statements belonging to the 12 leading airlines around the world and the results were tried to be interpreted from the point of view of finance and entrepreneurship.

At the following content of this thesis, in section two, “Concept of performance” has been explained, afterwards business performance and financial performance

concepts were introduced. In section three, the aviation industry has been presented through its history. The following section four, is the chapter where the econometric analysis conducted in order to find the internal factors affect the financial performance of the aviation industry. Finally, our findings and commentaries have been gathered up in section five which is the conclusion chapter.



## CHAPTER 2

### THE CONCEPT OF PERFORMANCE

In order to understand the concept of “performance” it is important to manifest its various and numerous definitions in the literature, to classify them and to summarize them in the most common sense. The various definitions of performance can be split into two groups, objective accomplishment oriented definitions and broader definitions.

Objective accomplishment oriented definitions generally describe performance as the level of accomplishment of the predetermined objective(s). From a more detailed point of view, performance stands for the fulfillment of an imposed task evaluated according to the predetermined standards such as exactness, completeness, expense, and velocity. According to Frich Kohlar, the term “performance” generally explains partial or complete conduct of activities of an organization in a given time regarding cost efficiency and management responsibility (Sadat, 2016, p.8). It gives information about the organization’s general accomplishment, circumstances and accordance. It is commonly expressed as completed level of a work according to predetermined objectives (Akal, 2000, p.2). Accordingly, performance is characterized as an appraisal of all the efforts made to accomplish business objectives (Gülcü and Coşkun, 2004, p.90). In other words, being defined as the indicator of created worth and efforts displayed in order to accomplish the objectives, performance can be described as the level of achievement of these objectives. Performance also takes a role in measuring the level of achievement by comparing predetermined objectives and accomplished results (Güngör, 2014, p.44). Finally, performance is a qualitative or quantitative description about the extent of what an individual, a group, or an organization is capable to achieve the planned objective (Baş, 1991, p.13).

Broader definitions generally described “performance” in terms of its relations with the management or the overall organization. In this sense, performance is defined as the financial position of business, the safety of investment, and the assessment of risk (Yeniay, 2017, p.8). It is also defined as a measure of access level to established standards. From an organizational point of view, performance management is defined as a management system that uses the performance knowledge to control the creation of goals, to allocate resources according to priorities, to ensure that applied policies

achieve the specified goals, and to positively affect corporate culture and corporate systems and processes.

Finally, in the most general sense, performance can be defined as a concept, which depends on accomplishment level of the objectives, as an assessment of the efforts displayed, and as a management system, which includes a broad process from deciding the objectives to their cost-effective implementation.

## **2.1. Business Performance**

Businesses are established for specific purposes. The main task of the persons responsible for the management of a business is to guide and manage the process of achieving these objectives. A number of definitions have been made in the literature on business performance. Some definitions are traditionally objective based, in other words, explaining performance in terms of a company's ability to reach its goals with the least effort, in the shortest period, and for the least cost. However, there are other definitions, which are seeking to answer newly emerging aspects of 'success' of a company, explaining the success not only with profit, but also with customer satisfaction or other aspects beyond the traditional thinking. In brief, the definitions of business performance can be divided into two: effort-profit approach, which is more short-term and simple, and image-satisfaction approach, which is more long-term and complicated. Some of the definitions categorized in this regard are mentioned in the following paragraphs:

Perceptions of businesses performance show a constantly evolving and changing process from day to day. In this process, concepts of performance that are losing importance, or newly created concepts that are gaining importance have emerged. Briefly, this progress can be clarified as a change from the conventional management approach targeting the maximum production and profits with the minimum cost, to a management approach that targets the organization of the future concentrating on different measures such as customer's satisfaction, quality, innovation etc to be able to compete (Zerenler, 2005, p.4).

### **2.1.1. Traditional Definitions**

Traditional definitions are more company/institution based, simple, and quantitative. However, they might fall short for the long-term objectives of the company



in this increasingly competitive business world. In this sense, there are definitions explaining the purposes, tasks, objectives, achievement, success, and operation.

In this process, the main task of business management is to realize the goals and tasks of the organization at the best and the most successful level possible. What is best or most successful is determined by management performance understanding (Akal, 1996, p.88). Business management uses performance criteria, which are the main source of information in determining business performance and level of achievement. Performance is evaluated in terms of efficiency, effectiveness, quality, profitability and value creation in the enterprises (Güngör, 2014, p.45). The existence and continuity of businesses as well as the existence of their governments depend on the validity and accuracy of this understanding.

Every business is set up to perform specific purposes and tasks. In addition to general purposes such as profit making, serving the community and maintaining assets, there are also special aims and expectations such as to grow and develop, to become a national and international business, to be innovative and to assume social responsibility (Can, 2001, p.15). The assessment of all the efforts to achieve business objectives can be clarified as the business performance (Akal, 2000, p.2).

Businesses are set up to accomplish particular objectives and tasks independent from difference of the area of the goods or services they produce. It's clear that for businesses there are many methods to have high performance. The methods can be listed as the practicing modern management and production techniques and new technologies, education and training, improved working conditions, and performance measures also help to the achievement of the business (Akal, 2000, p.65).

Operational performance can be expressed as the ability to reach its goals by using the operating authority's scarce economic resources effectively and efficiently. In this sense, the performance of a business system can be specified as the output of a given time period or the result of working (Şimşek, 2007, p.175). Operational performance can be defined as the output or results of an operator as a result of a specific time period (Yıldız, 2010 p.206). This outcome ought to be seen as the level of performance of the business purpose or task.

### **2.1.2. Complex Definitions**

Complex definitions look beyond the effort-profit axis. They are more complicated in terms of evaluating or examining performance with regards to its relation to other emerging functions, styles, methods, and social aspects influencing the business. In this category, there are definitions examining the performance with its relations to other domains in the business, such as management, functioning, culture, customer, and adaptation to emerging

Performance areas in businesses are discussed and evaluated from various angles. In a firm, planning and budgeting processes, technological infrastructure, financial structure, market share analysis, legal relationships and company image etc. are closely related to the firm's performance. The control function of business management includes determining performance targets, measuring performance, comparing achieved performance with targets, calculating variances between measured performance and targets, and making various decisions to remove these deviations (Gökbulut, 2009, p.37).

Performance in a business culture is a quantitative and qualitative description of where the worker or business can reach the intended target or in other words what they can achieve. Performance, which is understood as the quality of functioning in terms of business, is also related to management quality in terms of management (Kabakçı,2007, p.81-82).

From another point of view, business performance is a versatile indicator of how well an organization can use its resources, how well it can respond to customer requests and expectations, and how well it can adapt to innovations (Kurgun and Akdağ, 2013, p. 155-176).

Corporations/institutions in national level need to have a fairly sound financial structure and credibility in order to be able to achieve sustainable performance in this competitive environment, to compete with each other and with giant global companies.

## **2.2. Financial Performance**

The definitions about financial performance need to be both traditional and complicated, since it has obvious targets, quantitative nature, and direct effects on future activities and even the existence of a company. Therefore, defining of financial performance needs to be handled as a whole. Following definitions are either

traditionally handling the financial performance as profit-target model, or defining it concerning its complicated influences on other domains of function in an entity.

Financial performance is linked to the behavior of performing economic activity. In other words, financial performance is interested in the level, which economic targets are being or have been succeeded. In addition, financial performance can be described as a process during which the outcomes of a firm's policies and operations are evaluated in financial terms. It is preferred to use management's monetary situation for a given time and also preferred to compare same companies operating in the same sector or to compare sectors at all (Sadat, 2016, p.7).

The concept of financial performance is defined, in the simplest terms, as a symbol of operational profitability. In cases where profitability is assessed as a measure of financial performance, the analysis of capital cost minimization and the performance of efforts to find capital cost will guide (Kabakçı, 2007, p.89). Financial performance shows how an entity uses its assets to generate revenue and cash. Besides, the financial performance of an operator is closely related not only to the company but also to some non-business persons or institutions (Çam, 2008, p.56).

The good financial performance of a business provides flexibility to improve the long-term perspective. If a business is in financial hardship, it becomes difficult to deal with any other issue besides this problem. It is also difficult to keep up with the competitive conditions before the financial balance is achieved. Failure to achieve financial equilibrium will also prevent competition. Financial performance is directly related to the reputation of a business and is also used as the most important criterion that reveals its reputation. For this reason, many conscious businesses want to achieve good financial performance and strive for it. In the capital market, financial performance should be in a good level for businesses to capitalize on appropriate terms and to carry on their activities in the long term (Bayram, 2006, p. 55-56). Financial performance shows how well a business is performing, whether the business is adequate to meet its needs, and where the business plan is.

Financial performance is the process of assessing the efforts of the enterprises to realize the financial targets that they set and this enables the determination and applicability of the new targets by determining the effectiveness of the operator in achieving its objectives. The ability to serve the purpose of financial performance depends on reliable, accurate data being taken as basis through an effective information system. In other words, financial performance is measured by using financial indicators

such as profitability, return, efficiency, economic value added, determination of deviations between target and actual. Financial performance measurement plays a role in the effective functioning of decision making, planning and control functions and also contributes to making strategic decisions against rapidly changing market conditions (Güngör, 2014, p.47).

The financial position of an entity is affected by the economic sources it controls, its financial structure, its cash assets, the strength of its financial position and the changes in the conditions it is in. Information about the company's profitability affects the financial position, as well as information to estimate cash-generating capacity using its available resources. Therefore, it is compulsory for the firm to make a financial analysis of the firm to ensure that the audit function is actively carried out in addition to the decision making and planning of the firm. For this reason, the performance of managers or business analysts at the beginning of their responsibilities must be accurately assessed and interpreted carefully and their results should be interpreted carefully so that their financial performance is measured, evaluated and interpreted, as well as being responsive in their principal responsibilities (Acar, 2003, p.21).

It depends on the ability of the operator to maintain his / her existence and ability to cope with growth, that is, on the power of competition. The ability of a business to detect its competitiveness in a healthy manner requires that its financial performance be measured and analyzed (Acar, 2003, s.21-33). They work on the performance they are aiming for and the performance standards set in their review and research on business performance and financial performance. Keeping the standards high is motivating but also important (Kabakçı, 2007, p.84). The good financial performance leads to an increase in the organization's reputation. Financial performance is the easiest and most critical element of business benchmarking. Entities that are in financial competition want to improve financial performance.

### **2.3. Importance of Measurement for the Businesses**

The interest on performance measurement has multiplied in recent years, due to the advance of methods. Every item in the company must be measurable. It is difficult to achieve the growth of the company in the absence of a successful measurement.

The increasingly globalized and competitive conditions in recent years have led to the need for an efficient performance measurement system that can be used in company operations and financial decisions. Performance measurement and supervision are of vital importance in terms of businesses that have to operate under the pressure of intense competition today. A business can monitor the implementation of its plans through performance metrics and determine when those plans fail and how they can be improved.

The ability of businesses to cope with intense competition depends on their ability to increase their performance and sustain this increase. Companies that want to gain competitive advantage constantly look for what is the next “important” step, so they need an enterprise performance management system. An enterprise performance management system can be described as a technological solution that combines methodology, process and performance indicators into a single enterprise application. In the performance system, the company’s existing situation is analyzed and its strategic objectives are determined. In order to reach these targets, necessary resources are acquired and targets are put into practice. Combining the resources, targets, plans and putting them into practice necessitates a measurement system, to analyze, observe, intervene if necessary and complete the process.

Taking into consideration the basic principle that “something cannot be measured cannot be controlled and something cannot be controlled cannot be managed,” performance measurement in businesses is the most important part of the control function of the management. The control function aims to determine performance targets, to measure, to compare measured targets with performance achieved, to investigate the causes of the identified differences. In this context, measurement of business performance has vital importance in creating competitive advantage to businesses (Yıldız, 2011, p.11-28).

An organization can monitor the implementation of its plans through performance metrics and determine when those plans fail and how they can be improved. Decision makers have to find the most appropriate option– among sometimes conflicting ones –that performs different objectives, while using an enterprise’s successful outputs such as cost, production, workforce, and supervision by performance measurement and evaluation (Can, Tuncer and Ayhan, 2001, p.15).

Performances of individuals, institutions, enterprises, teams or groups are evaluated by units of measurement. The main benefits provided by the performance

measurement are to keep the system under control, to ensure organizational development, to give early warning signals for possible problems and to improve the ability to adapt to changing conditions (Güngör, 2014, p.45). By the measurements made, the past is assessed, and investment and financing decisions are made for the future. This measurement is also used to assess resource utilization and manager performance. The success and continuity of an enterprise are assessed by this measurement (Yeniay, 2017, p.8).

In business, performance appraisal measures the degree of achievement of predefined goals and the efforts shown and contributes to planning, decision making and implementation processes. In other words, performance metrics help businesses determine their success or failure levels to survive (Güngör, 2014, p.46). When this valuation is made, the financial ratios obtained from the balance sheet, income statement, cash flow statement and operating capital change tables (Akkaya, 2004, p.15-29) produced by the accounting system are used.

Measurement is vital for the performance of an organization, which brings financial success as an outcome. In this point, the success of financial performance and its measurement gains importance.

## **2.4. Financial Measurements**

### **2.4.1. Financial Performance Measurements**

When evaluating business performance, the use of appropriate criteria is of highest importance for investors and business managers, as well as for other stakeholders of the business. Today, although there are certain performance criterias that measure the success of a firm, the financial performance measures that are based on the firm value and taking into account the elements that create value, are at the forefront in terms of value-based management philosophy (Gökbulut, 2009, p.2). Financial analysis needs to be looked at in order to better understand the historical performance analysis. The biggest concern for companies when making their plans is to create value in the future. It is necessary to recognize the basic values of the firm and to stock the products. (Grant, 2010, p.59).

It is also important for evaluating past work and seeing the shortcomings of the business manager and determining the factors affecting performance, controlling these factors and organizing them according to goals of the business, establishing their future

goals on more realistic bases and reaching the targets in a timely and more efficient way. The most well-known and preferred ones of traditional financial measurement tools are; Return on Equity (ROE), Return on Asset (ROA), Operating Profit Margin, and Net Profit Margin(Gökbulut, 2009, p.38-40).

As a part of business performance, financial performance gives information about how firms use their invested capital to have income. It is always used as a measure of the whole situation of the firm for a given time interval and it may be preferred to compare familiar entities in the similar industry or to compare sectors. There are two different ways to categorize the financial performance's measurement; first way is the analysis of accounting knowledge and second way is the market value. The first one uses each year's financial statements as source of knowledge so there are lots of financial ratios initiating performance aspects (Gruian, 2011, p.263).

The main purpose of measuring financial performance is to inform of the decision makers about the financial situation and development of the operator. Performance measurement through financial analysis is beneficial in making management and investment decisions for the future of the managers and in evaluating the investment preferences of the investors in determining the credit worthiness of this company to the lending institutions (Özgülbaş, 2001, p.32). For this reason, financial performance measurement results are important not only for businesses, but also for partners, employees, lenders and investors. As can be seen, the financial performance results of an entity are important both to the business owners or managers and creditors. In addition, investors in public enterprises are closely interested in the financial performance results of an enterprise.

In financial performance measurement, the main objective is to take into account the financial position of the operator and the relevance of the required data through its development. They perform performance measurement with financial analysis to help them make management and investment decisions for the future, determine the credit worthiness of the business manager, and evaluate investment options related to the investor business (Özgülbaş, 2015, p.32).

For the responsibility of measuring and analyzing the financial performance to be successful, it is necessary to have information about which data exactly reflects of the business performance, how they can be obtained, and how this obtained data must be assessed (Acar, 2003, p.21-22).

### **2.4.2. Financial Analysis**

Complex and large amounts of data contained in the financial statements resulting from the operations of the operator are extremely difficult to understand in order for the managers and investors to be able to evaluate them. It is important for businesses and investors to make this information available and more easily understandable. Financial analysis made to determine the financial performance results in more meaningful results and this information is evaluated and compared with the results of past period and sector average (Yılmaz, 2011, p.6). In this way, both business managers and non-business interest groups are informed about the departure and other status of the business and it becomes even easier to make a decision about the company. The basis for the performance measurement of the financial statements analysis is the management skill of the operator.

Management skill shows the extent to which an operator has reached pre-determined goals within the economic conditions it is in. The objectives of the business can be both together, such as achieving a certain profit and growth at a certain level. To measure the performance, it is essential to consider the financial analysis as a separate category and the management skill of the management (Berk, 1995, p.57). The performance of an enterprise is determined by responding to questions within a broader dimension of their financial structure and capital structure. This phenomenon can only be achieved through measurement, interpretation and evaluation.

As an example of the relation between financial analyses and financial performances, it can be mentioned that a number of financial analyses needs to be done for determining the financial performance in the enterprises. In accordance with the goals of relevant persons of the business, financial analysis is examining, interpreting and evaluating of one or more periods of financial statements and relationships with both each other and the whole by utilizing various analysis techniques considering the conditions in which the business exists. (Akdoğan and Tenker, 2001, p.515). Financial analysis can be foreseen by examining the future financial situation under the current circumstances by evaluating the fund provided by the operator for internal or external financing or for future funds (Yılmaz, 2009, p.37). In this way, the strengths and weaknesses of the company will be revealed and realistic forecasts about the future will be made.



In another view, purpose of financial analysis is to find answers to some questions for the enterprise and to ensure that the business is evaluated in the financial aspect. The financial statements of the employer are used in financial analysis (Asunakutlu, 1993, p.287-288). The analysis of financial statements consists of examining the changes in the items in the financial statements, the relationships between the items and the trends they showed over time in order to find out if an operator's financial situation and development in the financial direction is sufficient (Akgüç, 2002, p.240). By comparing the items included in the financial statements of the operator with other companies operating in the same sector or industry averages, the current situation and future of the operator can be interpreted. Financial analysis broadly encompasses an analysis of basic and additional financial statements, while narrowly including analysis of balance sheets and income statements, which are also referred to as primary financial statements (Arat, 2005, p.75).

As the conclusion of this part, it can be stated that the main objective of performance measurement studies is to calculate the current situation of the enterprises, where they should be and the most suitable point they can reach. Businesses evaluate key business performance and financial performance in line with this objective.

In the performance measures used to evaluate the firm's operating results, determining the allocation of resources and how they are to be used by managers plays an active role. The most appropriate measure is to obtain shareholder value through dividend surplus that exceeds the expected return ratio.

There is a need for a holistic performance measurement and evaluation system for successful management in large scale and global operations. Firms have to evaluate performance in many dimensions. In order to perform business management duties, it must receive accurate and timely information on business performance. Measurement and control systems are the basic management tools that meet these requirements in a healthy manner. Performance measurement and control systems can only provide this contribution when it is available in the appropriate environment and with appropriate methods.

## **2.5. Maximization Of Profit Or Wealth?**

Fundamental point of any sort of economic action acquires profit. Profit is a way to identify if a business is efficient or not (Paramasivan and Subramanian, 2009, p.6-7).

The aim of the business is to create value for the customer first and secondly to make a part of this customer value in the form of profit so as to create value for the company. Profit equals revenue over existing costs to be distributed to company owners (Grant, 2010 p.35-37). While profitability is more a relative concept, profit is a more concrete concept. Although profit and profitability are related concepts, they are actually two different terms. Namely, to the contrary their similar characteristics, they have a separate role in the business environment (Tulsian, 2014, p.19)

Profit and profitability characterize the economic efficiency of micro-economic level production, depending on the other indicators used to measure the economic performance of the business: labor productivity, production quality, production costs, etc. From these, labor productivity has the highest effect on profit and profitability. It leads to profit growth by increasing production volume on the one hand and reducing the cost per unit of production on the other (Geamanu, 2011, p.116-118)

From a traditional point of view, one of the most common ideas in the firm's traditional theory is the maximum level of profit. Most microeconomics textbooks show profit maximization as the main goal of the firm (Lee, 2014, p.1-11). Traditionally it has been stated that the purpose of any business is to earn a profit, this necessary for the organizational success, survival and progress. Firms want to make a profit when looking at a short term in a financial year but profit is a long term goal (<https://keydifferences.com/difference-between-profit-maximization-and-wealth-maximization.html>, 2015).

The vast majority of businesses are considered to have the main goal of profits. Even in a sole-owned small company, the goal is to manage profitably and increase the wealth of the owner. The shareholders of large capital corporations also expect companies to profit when they invest in companies and increase the value of their investments. But the main purpose is to maximize shareholder well-being. Profitability is not the main objective but one of the most important ways to maximize shareholder well-being. Moreover, there is a widespread assumption that the firm will grow as profitability increases (Janga and Park, 2011, p.1027-1030).

Profitability is one of the most synthetic indicators used to express the efficiency of the economic and financial activities of the enterprise, all the production means used and the labor force, respectively, at all stages of the economic cycle (procurement, production, sales). One of the most important forms of economic efficiency is profitability. Regardless of the nature of the economic activity and the resources used,

the economic effects ultimately result from the acquirement of an enterprise (Geamanu, 2011, p.118-120).

The concept of financial performance in terms of profitability has been a popular field of research for the finance literature. Although the main objective of the firms is to maximize the shareholders' wealth, profitability is one of the vital tools to achieve it.

It is often said that the most important result of company activity is profit in terms of company ownership. This is only partially true. While companies have stated that they are making high profits from the side, they have to pay large debts in the future. Profits may be high but cannot be distributed to shareholders. As a result, accounting profit is not synonymous with financial performance. (Gurian, 2011, p.263). While making improvements on company management, it is important to increase the company's shareholders' financial characteristics. The objective of the firm, and in this way of all administrators and representatives, is wealth maximization of the owners for whom it is being worked. The wealth of corporate proprietors is estimated by the offer cost of the stock, which thusly depends on the planning of profits, their extent, and their risk (Gitman, 2002, p.14).

The wealth maximization of shareholders, including the latest innovations and developments in the business world, is accepted in the literature as one of the modern approaches. The wealth of shareholder wealth or those who are interested in business is considered as wealth. Maximization of wealth is more than to maximize the profit, due to the basic purpose of the business is to increase the firm value or shareholders' wealth under this concept. (Paramasivan and Subramanian, 2009, p.6-7). Wealth maximization aim at increasing the value of the stakeholders.

However, wealth maximization is something else, it is the capacity of a company to increase its common stock in terms of market value. Therefore profit maximization and wealth maximization are two different issues that should not be confused, but the first one having the priority for any single company. (<https://keydifferences.com/difference-between-profit-maximization-and-wealth-maximization.html>, 2015).

## **2.6. Entrepreneurship And Profitability**

Entrepreneurship entered into the literature of the economics starting from the eighteenth century and showed its effects in the direction of realizing technological

developments. The concept of entrepreneurship is a verb which derives from the French “entreprendre” and “unternehmen” in German and which means “to undertake” in Turkish. According to this expression, an entrepreneur is the person who organizes, manages, takes risks and undertakes responsibility for an enterprise (Arıkan, 2004, s.45).

As per its relation to profits, entrepreneurship is wider and it not only considers profit, but also takes 'growth' into consideration, which is accepted as the main difference between a manager and an entrepreneur. In this respect, relevant definitions and important perspectives are as follows.

In the literature, it is seen that the concept of entrepreneurship is examined by different authors from different perspectives. Very different definitions have been made about the concept of entrepreneurship, which has long been used both in economics and in the business literature. In the previous studies, it was attempted to explain this concept mainly by handling subjects such as risk, supply of capital, and coordination of production factors.

In economic theory the role of entrepreneur was explained by Richard Cantillon in the early 18<sup>th</sup> century. Cantillon explained that in a parcel procurement process, he could afford to buy a higher price for his differences in demand, and that such arbitrage would balance the competition market. Describing the entrepreneurial concept, he described it as people who benefited from this unrealized profit opportunity (Landström, 2005, p.25-30).

Entrepreneurship began to get widespread acceptance at the beginning of the 20th century as a key function in modern economic debates. The concept of entrepreneurship, which was defined from a very broad perspective, was examined from an economic point of view (Kiviluoto, 2011, p.16).

According to Knight (1964), one's entrepreneurship is not to be regarded as a production factor equal to the others, because it is by no means identical to measurable or varying rates and marginal predicates. He is an entrepreneur who defines all of those who want to remove their risks.

Kirzner (1973) describes entrepreneurship as follows; although it is important to generally improve the economy in all human actions, the economy must be cautious of opportunities as it may have an element that cannot be analyzed in terms of maximization or efficiency criteria.

Schumpeter, on the other hand, emphasized the innovative and dynamic nature of the entrepreneur as one of the main building blocks of human resources in economic development and saw the entrepreneur as the person who would create change in society (Croitoru, 2002, 137-146).

According to Venkataraman (1997) although it is limited to the fact that we cannot produce cumulative information for the future of entrepreneurship, entrepreneurship is described as a tremendous commitment, a great interest and an exciting field of work with significant and profound intellectual problems.

Entrepreneurship is the creation of new business resources. Entrepreneurship is seen as a series of events in the creation of an organization, while entrepreneurs are described as persons with certain characteristics and qualities (Gartner, 1989, p.47).

Whether it is defined or measured, profits are fundamental to any firm. However, the promise of profits is seldom found in any definition of entrepreneurship, when it is said that the word of profit is explicitly included in many businesses. The aspects that separate entrepreneurs from managers of the small businesses are the pursuit of profit and the pursuit of growth (Carland et al, 1984).

Profiting is not only about business itself, but also for the society. Profit is necessary for the business survival. Companies need to make a profit in order to continue their future. Drucker recommended that a firm must have at least eight goals (marketing, innovation, human resources, financial resources, physical resources, productivity, social responsibility and ultimate profits) and should be committed to supporting it. When the real profit is reached, the remaining paradise is the cost of the company's first seven goals (Drucker, 2002, p.25-32).

A pure distinction between profit and loss was made by Venkataraman (1997). When the profit level is not at a sufficient level, the entrepreneur is actually a loss. This also applies regardless of the relationship of the entrepreneur to the competitors. He explained that while explaining profit, there are many variables at acceptable profit levels, which must be taken into consideration by firms. Hence, if the levels of profit are apparently low, the entrepreneurship proposed in the literature can hardly be evidence for profit (Venkataraman, 1997, p.119-130).

## 2.7. The Profitability Ratios

It is difficult to determine whether the profits of the operating results of the enterprises are sufficient to be determined only by the information on the financial statements. These tables only show how much profit the operator has made during a certain period of activity. Profitability ratios are used to determine whether profitability of business operations is sustainable. It is one of the main objectives of the business as an increasing factor to grow the businesses when they are profitable regarding the purpose of existence. Shareholders and investors are the relevant parties closely interested in revenue generation capacity and sustainable profitability of the business. For this reason, profitability indicators, the means of measuring the efficiency of business resources, are the most widely used financial performance indicators.

When evaluating the indicators obtained via profitability ratios, the economic conjuncture, seasonal changes and investments should be considered as a whole. The weakest aspect of profitability indicators is the lack of reliable results of inter-enterprise comparisons as a result of differences arising from different accounting practices such as depreciation method, book value method, revaluation method (Güngör, 2014, p.128).

From the widely used indicators of profitability, the profit share, the return on assets and the return on equity each evaluate the success in business activities from different perspectives. For example, while an asset profit indicator indicates the return of assets used by an entity, equity profitability focuses solely on the investment made by shareholders (Kolb and Rodriguez, 1996, p.35). Since the main objective of investing in countries where market economy exists is to make profits, it is very important to determine the relationship between the profits obtained and the capital invested in the company by the firm owners (Akgüç, 1998, p.62).

Profitability ratios are used to determine the extent to which an entity has used its equity, foreign resources and assets efficiently, and whether it is profitable in the activities it performs as a whole. These ratios may be said to provide important information in evaluating managers' abilities because it is a demonstration of how efficient the management of the business (Kamil and Ban, 2010, p.45).

Profitability ratios are used to measure the success achieved by an entity's activities and to assess whether an adequate profitability has been achieved (Aydın, 2008, p.55).

When the profitability ratios are evaluated, the decision of proficiency in other words if it is high or low is given based on the rates of other companies in the same industry or based on the rates of the previous year (Önce, 2013, p.138).

Profitability ratios are used to measure the ability of the firm to obtain returns from the sales made by the firm, from all the investors in the firm and from the equity sources that the investor has risen in the firm (Kılıç, 2012, p.92). By making profitability analysis; the development trend is determined by comparing the current period profitability ratio of the business with the results of the previous period. Thus, the performance of business policies is measured to show how effectively the business is managed (Arat, 2005, p.121).

Profitability ratios are used to understand the productivity of the companies in their operations and to assess whether there is sufficient profitability. Within the field of the study, profitability ratios were explained through “Return On Assets”, “Return On Equity”, “ Net Profit Margin” and “ Operating Profit Margin” (Yeniay, 2017, p.10).

### **2.7.1. Return on Assets (ROA)**

The return of the assets (ROA), also referred to as the profitability of the assets, indicates the resource supplied by the owner, and the extent to which the business assets are profitably used (Karapınar and Ayıkoğlu, 2013, p.258).

The calculation of the return on assets is as follows;

$$\text{ROA} = \text{Net income} / \text{Total Assets}$$

ROA is an essential measure of the effectiveness with which an organization distributes and deals with its assets. It varies from ROE in that it measures benefit as a level of the cash given by owners and creditors as instead of just the cash given by owners (Higgins, 2012, p.41).

The Return On Assets measures the productivity of the assets that companies own. The rate at which companies make use of their profits to generate profits from their investments in their working capital and fixed asset items is the asset profitability rate (Merkit, 2004, p.76). This rate shows what percent of the 1 TL asset is profitable. At this rate, the company has information about how effectively its assets are used (Ercan and Ban, 2005, p.46).

This ratio, which is mentioned in the analysis of the profitability situation with the success rate of the management, is an important financial indicator. As the rate of

return on assets increases, the profitability rate will also increase (Demirkol, 2006, p.128). It is beneficial to evaluate the increase in the share of the ratio with the past year rates and the target rates, as well as positive for the business and managers (Demirarslan, 2007, p.37).

The indicator of return on assets is used to determine whether the business assets are used efficiently, including money and financial investments, and to measure the return rate of the investment made to the current and fixed assets. This ratio is increasing in line with the profitability of sales or the high turnover rate (Stickney and Roman, 1994, p.274-276).

The high level of active profitability indicates that business assets are created with added value and therefore corporate resources are used effectively. It is important for funds to generate added value from the shareholders and for new investment decisions and interest groups that provide a return on capital cost.

This ratio is also the result of multiplication of the company's profit share and the asset turnover rate. Return on assets, should be considered carefully, especially in the analysis of the profitability of the companies that use foreign financing sources to a large extent and this use changes from year to year. In the analysis of profitability, evaluating this ratio alone that gives different results depending on the financing method can cause wrong interpretations (Kaderli, 2006, p.93). This ratio is calculated in order to determine the assets, how profitable the investments are used to the business. The company that owns all the assets is a ratio that indicates whether it is an efficient use by management. It is always preferred to be higher and higher as it is at all profitability ratios. The firms' assets are essentially the sources that have been presented to the company management in order to carry out their primary activities. Effective use of these resources is one of the most important factors that increase the profitability of the company. Resources that are idle or not used by the company management should be determined by the company management and excluded from the company assets. In today's market conditions where competition is at the top level, a firm cannot show tolerance for inefficient use of assets for a long time (Kılıç, 2012, p.94-95).

As previously stated, a firm must obtain a return on its cost of capital from its assets in order to create value. From this point of view, it comes as a performance criterion that shows the profitability of the asset, how effectively the company's resources are being used and how well they fit into the company's goals (Brealey and Myers, 2003 p.828-829).



### 2.7.2. Return on Equity (ROE)

Return on equity is another measurement tool of the financial performance of the company as well as a measure of the profitability of the unit of the funds that the partners left to the company as a fund source. The return on equity indicator should be compared to the opportunity cost of the capital, risk-free interest rates and alternative use of investment. Investors who are in a higher return expectation than the eventual alternatives are also testing managerial success with this indicator (Güngör, 2014, p.131). ROE measures the success of the use of the shareholder's capital to generate profit for the company paying investors (Grant, 2010, p.46).

It is important to analyze the profitability in order to measure the success of the management. The criterion of this success is the increase in shareholder value. This is a traditional measure of performance, the main difference from the profit figures per share, which takes into account the paid-up capital, is to take into account all of the common equity of the company they provide. Return on equity, in that point, is used to measure the profitability of the funds invested by the partners in the business. This ratio is accepted as the measure of business success (Akgüç, 1998, p.65). It shows the rate of equity efficiency as well, based on measuring the returns of shareholders (Saeed, Zarei and Esfahani, 2012, p.217).

The formula of return on equity (ROE) is stated as;

$$\text{Return on equity} = \text{Net income} / \text{Shareholders' equity}$$

It is unlikely that businesses will be able to make profits immediately after their establishment. Therefore, it would also be wrong for investors to expect a profit for a certain period of time. However, the growth of the business or new investments should be perceived as a new business. For this reason, the company will require a certain amount of time to make a profit. This process can vary between sectors. (Akgüç, 2002, p.429).

Since the efficiency measure of a company's own capital is important, ROE is so effective. This is a measure of the earnings per dollar of capital invested or, equivalently, the percentage of investors who return to ownership (Higgins, 2012, p.41).

Return on equity figures in the divider when calculating the ratio of the company is important that reflect the actual equity. The equity of a company is the positive difference between net assets and debt. For this reason, if mistakes are made in the valuation of assets, or if the net asset sum is incorrectly calculated, it may seem to be

too much or missing from an owner's equity (Öztiñ,2002, p.42). Moreover, inflation can be effective on this rate. It is because the numerator and denominator that make up the rate are not affected in the same way from inflation. While the net profit for the period is directly affected by the inflation, it can follow the inflation from behind because of the relative static nature of the capital within the equity. In this case, the rate may tend to grow over time and may decrease in the years of capital increase (Çabuk and Lazol, 2000, p.207). This ratio reflects the extent to which the funds allocated to the business are used effectively and efficiently (Lazol, 2005, p.79). This ratio is an important indicator in the analysis of the profitability situation with the achievement level of the management of the company (Akdoğan and Tenker, 2007, p.671).

If this ratio, which is considered to be the success criterion of the firm, is high, it indicates that the equity capital is used efficiently and economically. Companies with high profitability have high funding powers. This ratio is called as the capacity of equity. Provided that all other conditions are the same, in order to increase the profitability of a firm's own capital, the profit margin needs to raise. And it is necessary to accelerate the transfer of equity or develop both in positive direction (Akgüç, 1998, p.64). However, the fact that the rate of return on equity is much higher than normal indicates that the equity of the enterprise is inadequate and that the enterprise benefits from foreign resources in large measure. The low rate of return on equity suggests that self capital is more than business volume and therefore cannot be used efficiently (Ömürbek and Kınay, 2013, p.343-363).

As a conclusion rate of equity is important since it measures the profitability of the funds invested by the partners in the business. Additionally, it is accepted as the measure of business success. Therefore, ROE is an effective measurement.

### **2.7.3. Net Profit Margin**

The net profit margin measures the percentage of each sales dollar remaining after all costs and expenses have been deducted. The costs and expenses can be listed as interest, taxes, and preferred stock dividends (Gitman, 2002, p.64). At the same time, the net profit margin ratio, which provides information on pricing, cost structure and production efficiency, is used as an important indicator in measuring the operational performance (Aras, 1996, p.148). Net income or net profit, is the well-known "bottom line" defined as total revenue less total expenses (Higgins, 2012, p.15). A high net profit

margin is good for company data. If the output is low, the result is that a low profit is obtained from the sales.

The net profit margin is calculated as follows:

Net profit margin= Net profit / Net Sales Revenue

This rate measures the percentage of each sales dollar contributed by net revenue from the company after paying expenses. At the same time, a company's cost structure, pricing policies and production efficiency specifications are also provided. External users, such as investors and buyers, benefit from this position to assess how effective their company's sales are as net revenues. For creditors, they must make sure that the company has made enough profits to repay the loans. When it comes to investors, they are usually interested in a high level of profit to ensure dividend payments (Alkhatib, Albzour and Marji, 2015, p 91-102).

The net profits are the profits calculated after deducting all expenses of the company and the tax payments. It is the last line of the income statement that is used for profit share distribution and auto financing to company partners (Kılıç, 2012, 93). If the other data are equal, a relatively high profit margin is desirable. This corresponds to lower spending rates compared to sales. However, we would like to add that other things are often not equal (Whitehurst, 2002, p.70). According to a research, the role of profit margins is not only about the amount of profit that owners can get from their work, but also about a defense line for a consulting firm that is experiencing a drop in income, which comes at the same time with the emergence of a bear market (Kitces, 2015, p.18-20).

The net profit margin is a measure of a business's success clearly in acquiring sales. The higher the margin a firm gets, the more it is profitable. However, net profit margins may vary due to differences in business types. A margin of 1 per cent for a company is considered ordinary; a margin of 10 percent for another company may be considered to be low (Pinson, 2005, p.109).

#### **2.7.4. Operating Profit Margin**

The operating profit margin is a value found by measuring the percentage of each sales dollar remaining after deduction of all costs and expenses other than interest, tax and preferred stock dividends. It is considered as simple gain earned from each sale. Operating profits are considered pure because only the earned earnings are measured.

Transactions and interest are calculated by excluding tax and preferred stock dividends. It is preferred that the operating profit margin is high (Gitman, 2002, p.63).

The formula of operating profit margin is as follows:

Operating profit margin = Operating profits / Net Sales Revenue

Operating profits obtained by the operator mean net profits from normal operations and business activities after deducting unnecessary transactions and costs. The higher the operating rate, the better the operational efficiency of the company (Tulsian, 2000, p.20).

## **2.8. Literature Review on Profitability**

In this part of the thesis study the pervious studies were given as a table. Profitability is one of the topics that researchers of finance focus on extensively. The detailed information can be found in the Table 1.

Table 1. *Literature Review*

Authors (Year)	Time Period	Country/ Industry	Method	Variables (Dependent)	Results
Whittington (1980)	1960-1974	United Kingdom / Multi-industries	Regression Analysis	ROA (DV) Profitability margin (DV) Sales/assets ratio (DV) Net asset Gross asset Sales Value added Return on gross assets	In this research study, it is concluded that the smaller the size of the firm, the less the company profitability. Moreover, some elements such as average profit margins and sales/asset ratios are not varying automatically based on the size of the firm.
Eriotis et al. (2002)	1995-1996	Unstated / Multi-industries	Panel data	Profit margin (DV) Concentration ratio Debt-to-equity ratio Investment level	In this research study, it is stated that, in order to affect profitability, the companies, as a strategic variable, manage their investments in fixed assets. Moreover, the companies, which support their investment operations through their own resources, are more profitable compared to the companies depending on borrowed sources.
Mesquita et al. (2003)	1995-2001	Brazil / Multi-industries	Ordinary Least Squares	ROE (DV) Short-term debt/total liability Long-term debt/total liability Equity Long-term debt/equity	In this research, an inverse proportion was detected between financial leverage and profitability, while a direct proportion was determined between short-term debt and profitability. In addition to this, it was determined that there was no correlation between long-term debt and profitability.
Pandey (2004)	1994-2000	Malaysia / Multi-industries	Panel data	Total debt-to-asset ratio (DV) Tobin's Q Profitability Growth Systematic risk Size Number of shares Tangibility	According to this research, the relationship between asset size and profitability of the companies was determined to be negative. Additionally, financial resource costs have reached a minimum level for a certain amount of profitability.

Table 1. *Continue*

Abor (2005)	1998- 2002	Ghana / Multi- industries	Regression analysis	ROE (DV) Short-term debt/capital Long-term debt/capital Total debt/capital Sales Sales growth	In this research, it is mentioned that there is a significant correlation between the ratio of short-term debt and total assets/ROE; however, the correlation between the ratio of long-term debt and total assets/ROE is determined to be negative. On the other hand, profitable firms highly ground on loans as their essential financing choice.
Külter et al. (2007)	1997- 2006	Turkey / Multi- industries	Pooled regression	ROA (DV) Company size Market share Net working capital Receivable turnover stock turnover leverage ratio	This research suggests that profitability increases as the working capital investments and market share increase. Additionally, profitability decreases based on the company size and incrementing level of loans.
Mahmood et al. (2007)	1996- 2003	Malaysia / Multi- industries	Ordinary Least Squares	Capital gearing (DV) Total Fix Asset Profit margin Price-earnings ratio	In this research study it was determined that the relations between debt/equity ratio and net profit margin and price/profit ratio were negative.
Albayrak et al. (2008)	2004- 2006	Turkey / Multi- industries	Multiple regression analysis	Profitability of Assets (DV) Equity Profitability (DV) Profit Margins (DV) Profit Per Share (DV) Liquidity Ratios Activity Ratios Leverage Ratios Market value Firm size	In this study, it was mentioned that the profitability was influenced from various factors, financial structure being one of the most significant. Moreover, for the development of profitability indicators and to decrease the shares of the liquidity ratios and external resources within total resources; the businesses should enlarge their size, and increase inventory turnover and market values.

Table 1. *Continue*

Akkaya (2008)	1997- 2006	Turkey / Textile Industry	Generalized Least Square	Systematic risk EBIT/Total assets Growth Total assets Real assets/Total assets Tobin Q Leverage	In this research study, according to Tobin Q ratio and beta, it was determined that there was a positive relationship between property, asset, and scale; however, the relationship concerning growth was determined to be negative.
Frank (2009)	1971- 2006	Multi- National / Multi- industries	Multiple Regression analysis	Debt (DV) Book value of equity (DV) Market value of equity Assets Debt issuance Equity issuance (DV) Debt repayment Equity repurchase Cash balance Book leverage (DV) Market leverage (DV) Profitability Market/Book ratio Tangibility	According to this research, the correlation between Firm profitability and leverage ratio was determined to be positive. Additionally, it was demonstrated that more profitable companies are rather inclined to have more lending and repurchase equity. As per the less profitable firms, they are more likely to apply the opposite. While the large firms want to be more active in the debt markets, small firms more likely prefer to be active rather in equity markets. In good time periods, external funding is utilized more compared to bad time periods.

Table 1. *Continue*

Gill et al. (2010)	2005-2007	United States of America / Manufacturing industry	Weighted Least Squares Regression	Gross operating profit (DV) Accounts receivables Accounts payables Inventory Cash conversion cycle Firm size Financial debt ratio Fixed financial asset ratio	This research study determined a correlation between the accounts receivables and profitability in a negative direction; additionally, a significant relation between the cash conversion cycle and profitability. On the other hand, no significant relation was determined between the size of the company and its profitability.
Liargovas et al. (2010)	1997-2004	Greece / Multi-industries	Panel data	Return on sales (DV) Return on assets (DV) Return on equity (DV) Leverage Liquidity Capitalization ratio Investment Size Age Location Export Management efficiency	According to this research, the relationship was determined to be significant between the economic performance of the companies and debt leverage, export activity, location, size and management adequacy index.
Karadeniz et al. (2011)	2002-2009	Turkey / Tourism Industry	Pooled regression	The Return on Assets (DV) Total Leverage Short Term Leverage Long-term leverage Business Size Market Share Net Working Capital / Total Assets Receivable Turnover Stock Turnover Rate Asset Turnover	In this research study, it was determined that the leverage ratio had an adverse influence over the ROA, while the influences of size, market share, net working capital turnover, asset turnover were determined to be positive on the ROA. Moreover, it was determined that receivable turnover and inventory turnover had no influences on ROA.



Table 1. *Continue*

Margaretha et al. (2016)	2007-2012	Indonesia / Multi-industries	Multiple regression analysis	ROA (DV) Firm Size Firm Age Growth Operating profit Margin Productivity Value Added	In this study, the effects of company size, its growth, lagged profitability, productivity and industry linkage on profitability were determined to be significant; however, it was determined that the age of the firm had no influence over profitability. Additionally, it was determined that size of the company, its growth, and delayed profitability had an adverse effect on the profitability of the whole industry.
Mwangi (2013)	2008-2012	Kenya / Aviation industry	Multiple regression analysis	ROA (DV) Exchange rate GDP growth Money supply Interest rate Inflation rate	According to this research study, there is a weak, positive, and insignificant correlation between the ROA of the firms and gross domestic products growth rate/annual change in the supply of money. Moreover, it is determined that there is a weak, negative, and insignificant correlation between the ROA and exchange rate/annual average lending rate/annual average inflation.
Alahyari (2014)	1994-2013	Multi-National / Aviation industry	Panel data	ROA (DV) ROE (DV) Company Size Company Growth Leverage Ratio Liquidity Ratio Tangibility of Assets	In this research, the results demonstrate that the influences of tangibility of assets, growth opportunities and liquidity ratios are significant over the firm profitability. Tangibility of assets have an adverse influence in the profitability of the companies; on the other hand, the effects of growth opportunities on the profitability are negative. Moreover, a different element demonstrating an adverse and statistically significant correlation with the company profitability is the liquidity ratio.

Table 1. *Continue*

Garefalakis et al. (2016)	2005-2011	Multi-National / Aviation industry	Regression Analysis	Return On Assets (DV) Cash Flow/Current Liabilities Accounts Payable Common Equity Net Margin Return On Invested Capital Total Assets Short Term Investments Quick Ratio Property Plant & Equipment	According to this research, the correlation between the profitability of the firms and cash flow/liabilities, firm size, return on invested capital, net margin, quick ratio, location was determined to be positive. On the other hand, the relationship between profitability of the firms and short term investments was determined to be negative.
Yıldız (2018)	2006-2015	Multi-National / Aviation industry	Panel data	ROA (DV) Interest Coverage Ratio Operating Margin Long Term Debt/Capitalization Asset Turnover Fixed-Asset Turnover	In this research study, it was determined that the correlation between profitability and operating margin/fixed asset efficiency was positive and significant. On the other hand, long-term financial capitalization position, which is another indicator, had an adverse and statistically significant influence over the profitability.

## CHAPTER 3

### AVIATION INDUSTRY

Because the aviation industry is one of the most important and fastest growing sectors in the world, in this part of the thesis study the general characteristics and profitability of the industry were given below.

#### 3.1. Aviation Industry

The aviation industry has a long history of many global industries operating today. The first flight of the Wright brothers took place in 1903, but the first commercial flight took place ten years later. (Straszheim,1969, p.16-33). Long-distance flight tests begun, and the use of mail, cargo and passenger transportation started to be used intensively in short distances. However, this disturbance did not reach a high level due to lack of confidence in the planes, the inconvenience of the planes, the expense and the lack of sufficient capacity.

After the Wright brothers in 1903, the world experienced several developments, such as the start of intercontinental flights and the updating of aircraft in accordance with the aerodynamic structure of the air. Travels were increased by reducing time in light of these developments (Mooney, 1937, p.209-212). The period between 1903 and the end of World War I was the period when aircrafts were used for military purposes. Although the beginning of aviation was for civilian purposes, aviation has become an industrialized sector because of the political crises and wars of the early 20th century.

The association of the industry, at the origin of its awesome business extension starting in 1926, was to a great degree particular. Generally, the motor producers, the plane-developers, the frill makers, the transport and service operators, appealed to isolated and particular branches of the business from the business outlook (Watkins,1931 p. 42-68).

In the field of training, the plane is ended up being an important device in showing soil preservation, geology, and sociologies. With the new century, it was predominant on the ocean for all intents and purposes administered the world, and all its marine trade. Today, we know from our difficult involvement in World War II that predominance noticeable all around is of essential significance to the social and

financial opportunity, and the national security of a free people (Jordan, 1953-1954 p. 79-82).

In the years following World War II, civil aviation entered a rapid development on the ground that technological innovations of the war period greatly increased the range and carrying capacity of aircraft. In these years, the rapid increase in demand for air transport, the redesigning of the aircraft used during the war, and the attempt to meet the large passenger aircraft manufactured for civilian use only.

The principal vital tradition on air transport is the Chicago Tradition from 1944 which attempted to present some opposition worries inside the common air industry by controlling some of its highlights. This Tradition sorted out specialized and lawful parts of worldwide air transport, for example, wellbeing standard (Straszheim,1969,p.24). At the Chicago Conference in 1944, the need for the establishment of a joint venture to manage airports, air control activities and the security procedures necessary to allow countries to fly between air borders was established and decided. This decision was turned into reality in 1947 and the International Civil Aviation Organization (ICAO) was established. “Chicago Convention” or “International Civil Aviation Organization” went down in history as this pact paved the way for the foundation of today’s global air transport. Instead of putting international rules, the convention created a concept on bilateral “air service agreements” to be made between the two countries, which will form rules governing air transport services. These bilateral aviation agreements are still being used as an important instrument in international air transport. The imperative of establishing ICAO here is the need to advance civil aviation within a set of rules, internationally and standards-based. These needs have been a trigger for the establishment of ICAO. The institution has had a very important place in terms of civil aviation, indeed a real civilian dimension with the participation of all segments of the people. International work on civil aviation together with ICAO has also gained a visible legitimacy.

In the Air Services Agreement signed with the United Kingdom in 1946, the United States created a great privilege. United States accepted the IATA accepted pricing (Doganis, 2006, p.30). One of the most important developments in aeronautical development during its formation was the establishment of the International Air Traffic Association (IATA) by bringing together 57 members from 31 nations in 1945 to help airlines to standardize passenger tickets and paperwork and to compare technical procedures (IATA,2017).

With the commercialization of airlines after World War II, there has been a change in technical and industrial factors. The aviation industry started to use jet planes for commercial purposes in the 1950s, and when it came to the 1970s, large technological innovations in the sector were seen with the development of large jumbo jets (Belobaba and Odoni, 2009, p.2). During this period, technical developments were also made in the aviation sector that allowed the production of vehicles such as ocean-going flying jets, wide-body aircrafts. Thanks to these developments, air transportation has been able to transport more freight and passengers more quickly, less costly and with the effect of all these developments, the civil aviation sector has grown in double digits until the 1973 Oil Crisis.

For quite a while through 1966 the airlines could back a great section of their new venture inside, with the business' obligation value proportion falling significantly from its superior state around 1960 (Straszheim, 1969, p.16-33).

The most giant model in the midst of the latest 25 years or so has been the dynamic headway of general air transport. This had huge effects both on publicizing structure and on working cases. By the 1980s, the impacts of liberalization started to be observed in the trans-Atlantic and trans-Pacific roots. The airline passenger transport law in the United States of America in 1978, over time the regulations covering the whole world brought a new breath to the aviation industry. Competition has increased due to the influence of liberalization in different regions of the world. The obstacle for entry into the sector has been reduced. In addition, with this law, security in air transport has become the most important priority, new companies have been encouraged, and small-scale companies attempted to strengthen.

The liberalization process that began in the United States in 1978 continued in the 1980s, and these developments in the United States pioneered the liberalization process in the world as well. The process then spread all over the world, and in 1993, the European Union took a major step in the process of fully liberalizing the airline market, in other words, opening the full-fledged competition.

As airlines develop survival strategies, companies in the new open-sky regeneration sector began to force them. This was a difficult factor for governments to protect their country's airlines. With this development, the competition among the companies in the sector started to increase (Doganis, 2006, p.23). Civil aviation, which continued to develop in this way until the 1980s, was dominantly influenced during this period of rapid application of neo-liberal policies in the world, and with this impact, the

sector entered a rapid growth tendency after the re-opening of the sector. It was also seen in this case that there was a noticeable increase in competition among companies that provide civil air transport. The competition lasts on an international scale, and almost all elements, especially airline companies, are striving to exist within this structure. By the year 2001, there was a decline that began to be felt in some airline companies before the economic crisis. Between 2000 and 2005, it was not profitable and easy to navigate in terms of aviation industry.

With the arrival of 2000s, the global aviation industry entered the era of unprecedented volatility and uncertainty with the September 11 attacks, terror fears and SARS pandemic (Graham and Dennis, 2007, p. 161–171). The aviation industry faced perhaps the most staggering crisis of the last century: many airlines lost billions of dollars, a few went bankrupt, others were rescued by their governments. The crisis in the aviation industry further deepened as a result of the economic crisis in the world markets, the September 11 terrorist attacks that followed, the war in Iraq, the SARS epidemic that first appeared in Asia affected the world, and the fluctuations in crude oil prices after 2003. In this period, airline companies that struggle with these as external factors also had to deal with internal developments that dynamically and potentially disturbed the stability. The impact of liberalization, which began in 1978 and still continues, was influential in the domestic market as just some of the open skies, airline partnerships, low cost passenger transport projects, online sales and distribution and privatization of airlines, important developments affecting airline companies (Doganis, 2006, p.2-6).

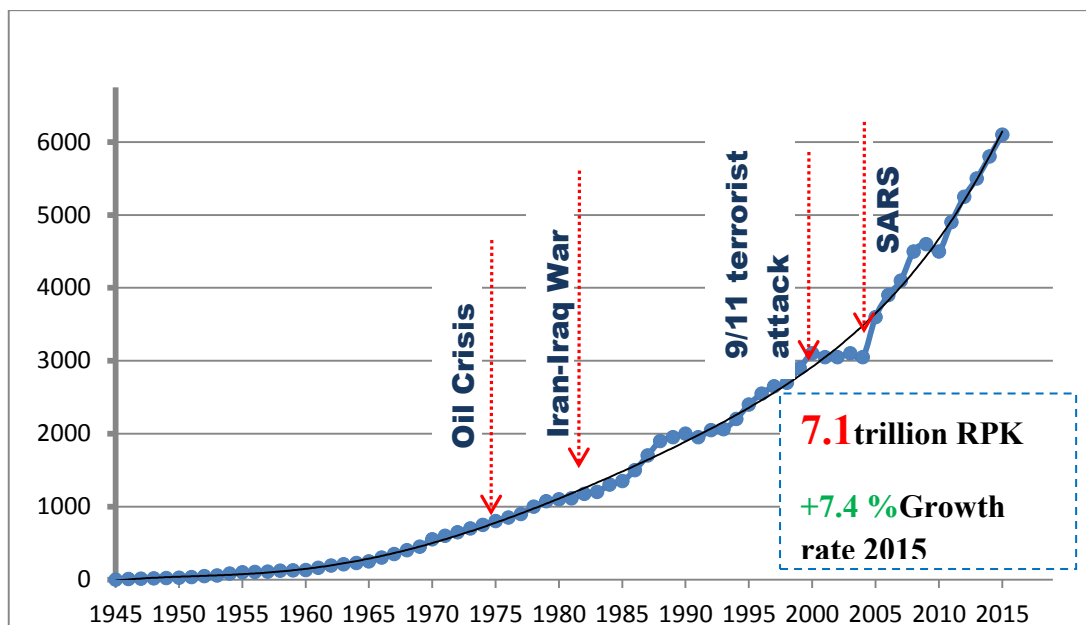


Figure 1. Growth of Air Transport

Source: ICAO Annual Report of the Council

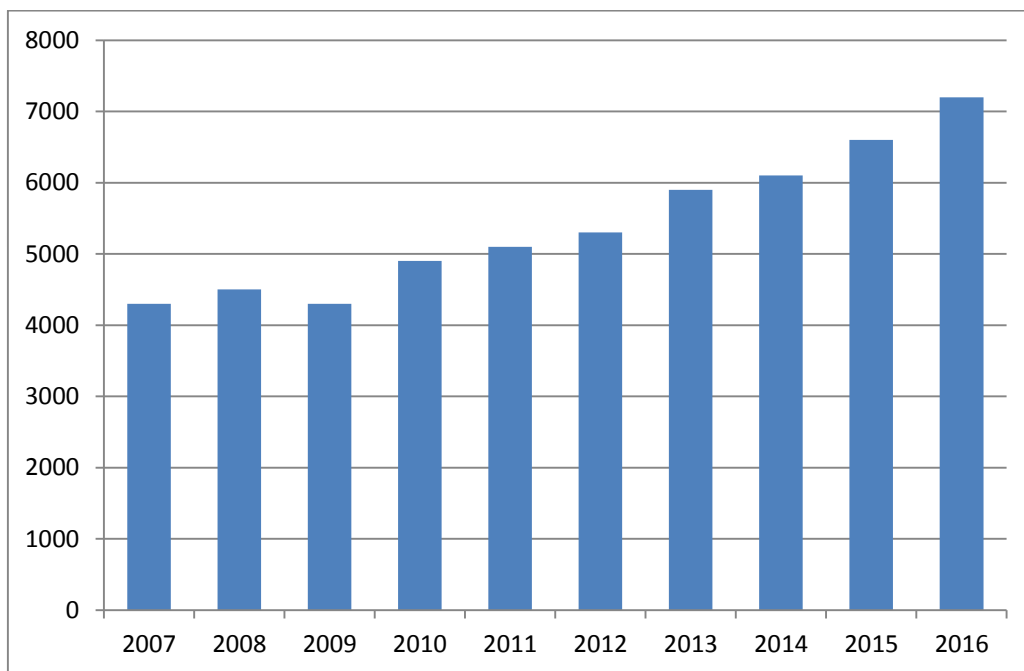
At the beginning of the 2000s, companies with lower cost airlines continued to grow faster and profitably, while other airline companies failed to compete with them, explaining by that their growth rates collapsed and suffered major losses.

Several factors created pressure to reduce wages in air transport. The first was that liberalization was more effective and the open sky regime was decisive. In addition, the opening of new airline companies and allowing existing airlines to new flight routes that were previously prohibited were decisive. Secondly, low-cost airlines would become increasingly effective in the domestic market compared to large and international air routes, and would cause large carrier companies to reassess prices. The potential for low-cost airlines to run on mid-range flights after the domestic market would increase downward pressure on wages. Thirdly, new aircraft deliveries, which began in 2005, revealed more capacity in many markets. This was followed by a step-by-step introduction of the Airbus A380 (Doganis, 2006, p.23).

Over the years, confidence in the transportation of airlines has begun to increase. In addition, airline companies have continued to develop competition and new strategies in the 21st century. People have turned the faces to aviation as a means of reaching to another. Airline companies were in a position to govern, with the impact of being the main actor of the process. Although the effectiveness of airline companies in terms of

managing the process in a technical sense was questionable, there were now passengers in the decision-making position.

According to The International Air Transport Association (IATA) performance statistics for 2016, system-wide airlines carried 3.8 billion passengers on scheduled services, with a 7% growth from that of 2015. This growth means 242 million additional air travels (IATA 2017).



*Figure 2. Passenger-kilometers performed, total scheduled traffic (2007-2016)*

*Source: <https://www.icao.int/annual-report-2016/Pages/the-world-of-air-transport-in-2016.aspx>*

## **3.2. Profitability Of The Aviation Industry**

### **3.2.1. Aviation Industry in General**

As competition intensifies and profit margins decrease in an increasingly commercial world, organizations are investigating methods as well as being able to increase revenues by means of reducing their costs. The aviation industry is also seen as the emerging value of today as an industry with a growing number of innovations increasing in competition over the years. The air transport industry is an enormous economic force worldwide, both in its own field of activity and in the industry, such as aircraft industry and tourism, which it affects.

Although the aviation industry is a tremendous economic force worldwide, it is filled with confusion. From one perspective, it is restricted and obliged by financial



controls that are complex and seem to be obsolete. However, then again, it is an industry portrayed by quick change, advancement and innovation. It is a dynamically developing industry; however, it accomplishes just marginal profitability. To put it plainly, it is an industry of logical inconsistencies (Doganis, 2006, p.1-5). In spite of the fact that there is differentiation inside the aviation industry, it has assumed an indispensable part in the production of a worldwide economy. Aviation industry gives an administration for all intents and purposes to each nation on the planet and it is a noteworthy economic force. Looking forward, the industry still faces real difficulties, including phenomenal fuel value instability, a worldwide money crisis and debilitating interest for air travel as financial development moderates. Infrastructure capacity is an important obstacle throughout the world. It also threatens ongoing development and long-term profitability (Belobaba and Odoni, 2009, p.1-4). The financial performances of airlines, including pricing in a complete competitive environment, impact short and long term choices and shape vital regulations.

In order to take care of its fixed expenses, the aviation industry needs to discover a few methods for procuring adequate incomes above short and medium term peripheral cost. One perspective of this is driven by a limit contention that there is excessive limit in air transport markets and returns will be underneath the cost of capital until the point when limit is driven out. In this regard, the aviation industry has been weak for many years but still keeps increasing the capacity in almost every geographical market. This implies that capital markets are flawed and that they invest in airlines that cannot afford capital costs. Notwithstanding, there are additional contrasts in plans of action among the airlines, with a few transporters accomplishing a sufficient restore that takes care of their expenses of capital, and these include limit, even as transporters with insufficient return keep up their ability to ensure a piece of the overall industry, instead of shedding it (Tretheway and Markhvida, 2014, p.3-16).

The aviation industry is able to continue its activities by supporting the subsidiaries as well as the aspect of flight. These activities include care, catering and travel agencies. These subsidiaries create attractive opportunities for the aviation industry as they have the potential to generate wider profit margins (Redpath, O'Connell and Smith, 2016, p.1-18).

Aircrafts' systems are essentially determined by choices on their system, items, costs and assets. As airplane entails a long lifetime resource and require a high

speculation, choices on the armada synthesis are the most captivating ones (Bourjade, Huc and Vibes, 2017, p.30–46).

In the liberal and global world, as in every sector, competition in the civil aviation sector increased dramatically. Especially with the emergence of low-cost air routes, airlines have turned to new quests in the face of diminishing profits. The aviation industry's cycles seem to be firmly connected to the world financial atmosphere. At the point when development on the world economy backs off, the development sought after for air traffic and for air transport cargo backs off as well; however, there might be a slack period. A lower-than-expected development sought after for air transport implies over-limit and lower yields as admissions and tariffs are cut in an attempt to fill empty seats or cargo space. This pattern towards advancement of financial directions essentially changed economic situations in those parts of the world where such progression occurred. Specifically, it brought about the development of new airlines on numerous worldwide air routes. A further result of liberalization was that there was substantially less control of limit and recurrence on numerous courses while in the meantime there was impressively more noteworthy estimating flexibility (Doganis, 2006, p.5-13).

### **3.2.2. Aviation in the Late 20th Century**

In the last quarter of the 20th century, aviation industry began to encounter great challenges varying from economic fluctuations to global crises affecting air transportation preferences of the clients worldwide. However, liberalization, competition, strategic alliances, infrastructure developments, and some other factors were influential in the progress of the change of air industry.

Meanwhile, there were some negative aspects of liberalization of the air transport that began in the United States. In the aviation industry, pressures to reduce costs and fluctuations in profit margins were rescued by their governments, explaining the bankruptcies of companies that were weak while urging several major airline companies to merge. The liberalization of the civil aviation sector in the United States in 1978 allowed airlines to operate at their own selected rates.

Over the last 25 years, competition in the airline sector has increased with the proliferation of low cost carriers (LCC). Thus, the airports have changed drastically. From one perspective, it provided an opportunity for development of numerous

terminals. Then again, due to the continuous attempts of carrier centers around the world to bring down the costs, terminals have increasingly been compelled to produce elective wellsprings of wage by the aeronautical incomes. Given the expanding center around the money related execution of terminals, the developing weight on aeronautical incomes and the honed state help rules for terminals, it is significant to have knowledge in the most vital determinants for terminal benefit (Zuidberg, 2017, p. 61–72).

The application of low-tariff airlines has been a positive influence on the aviation industry, both at airline pricing and at affordable air travel. In addition, there is no data available on the reduction of airline safety, despite increased competition and concern about reduced aircraft maintenance standards.

Profitability levels and investment incomes of companies in the aviation sector may be constantly changing. The sectors that supported aviation showed a better performance. Between 1970s and 1990s, policy makers tried to encourage horizontal competition to correct the imbalance in the aviation industry with market liberalization. (Tretheway and Markhvida, 2014, p.3-16).

Airline companies attempted to estimate the demand for each flight and entered the seat distribution, or seat inventory control process, with the existing fees, thus revealing the first applications of return management in the sector. Yield management then turned into a revenue management application in the sector, including the concept of wage differentiation, and this approach went a step further and was practiced daily by almost all airlines in the world with the help of computerized systems. The increasing competition following the liberalization of the civil aviation sector in the US in 1978 and the introduction of low-cost airlines at very low prices propelled the implementation of the income management concept to increase revenue, especially for traditional airline companies (Belobaba, 2009, p.103-106).

As competition in the aviation industry increased, airlines were forced to seek markets, where they could get higher efficiency at a more affordable cost. As a result, a large number of mergers, acquisitions and internal growth have taken place to strengthen the economy. Normally, a firm that experiences economies of scale brings down the normal cost per unit through expanded production, since fixed expenses are shared over an expanded number of merchandises. On the other hand, the financial status of the airlines did not seem to be good because of low-cost transportation. Despite the increase in flights, the low ticket prices made it harder for airlines to grow economically. A few researchers accuse this for the rise of low cost airlines (LCCs);

however, this is an instance of surprising circumstances and end results. LCCs existed some time before the present issues. Their developing significance may have a remark with the unwillingness of travelers to pay more for tickets bringing about low yields. The causality, however, did not go the other path as a few people suggest charging the LCCs for low yields (Pilariski, 2007, p.3).

The liberalization in 1978 allowed airlines to operate at their own chosen rates at their own fixed rates. This situation led to intense competition. Airline companies are starting to pay independent fees from costs, even if they do not rely on the concept of flying miles. With the “low cost airline” companies included in the sector, traditional, major airline companies began to lose market share to these companies.

But the LCC has developed rapidly and there are companies operating worldwide. In the mid-1990s, with the introduction of new companies into the European airline market, this number increased day by day. In 2017, the number of companies flying low-cost flights in Europe was more than three times higher than those in the US (Belobaba and Odoni, 2009, p.8).

(<https://www.icao.int/sustainability/Pages/Low-Cost-Carriers.aspx>).

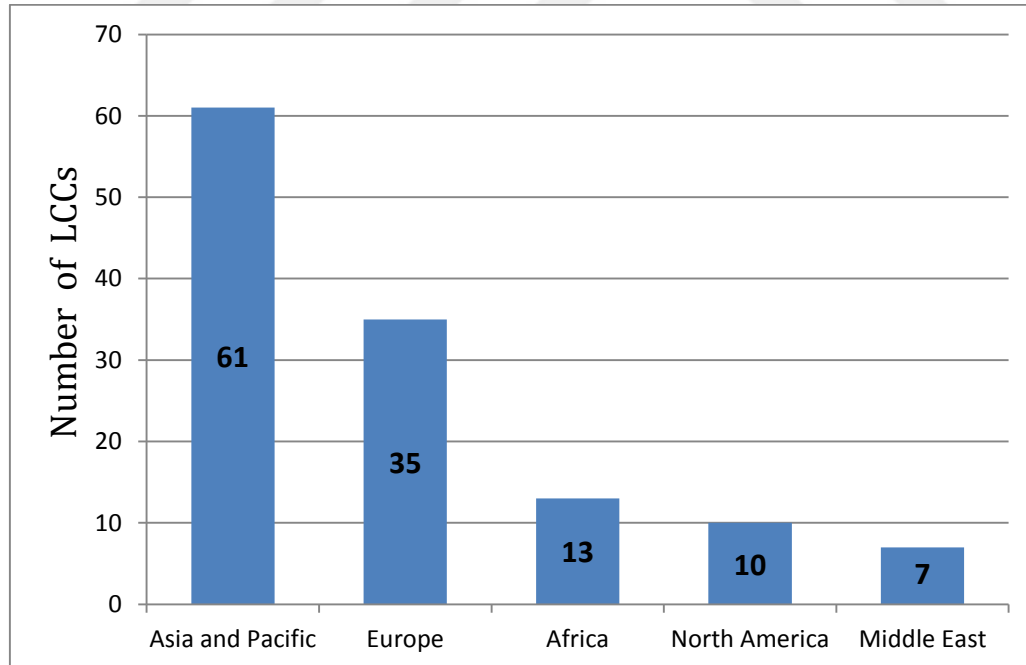


Figure 3. Low-Cost Carriers around the world, (2017)

Source: <https://www.icao.int/sustainability/Documents/LCC-List.pdf>

While companies that have been in the aviation industry for years have been struggling with financial crises and restructuring, they have started to struggle with low-cost passenger transportation companies newly entering the sector. The airlines expand their networks of low-cost passenger companies rapidly getting on the stage. They have a significant market share not only in the United States, but also in Europe and Canada. New airliners carrying passengers at lower prices have made more frequent fly-in entries in the aviation industry (Belobaba and Odoni, 2009, p.11-12).

Rapid growth in the economies of the developing countries and developments in the world economy have been positively influential in the development of many sectors. With the development of these sectors, the number of enterprises increased; many companies have emerged in the sector. While businesses develop something new, they are re-interpreting the existing service to make it work for the satisfaction of the customers. All these efforts enable businesses to increase their income and profitably maintain their lives.

On the other hand, transformation was a total disaster for companies that could not compete. Many planes had to take off before they were full. Corporations lost billions of dollars. Some of the airline companies that could not remove this load had to collapse and others had to go under state guarantees. Many people see the international aviation industry as a prospective sector that is constantly renewing itself, always following up-to-date technology. But for very few companies, the aviation industry is a marginal and very cyclical sector (Doganis, 2006, p.2). Airline operators, which have very high levels of financial control, suffer from low incomes and are subsidized by governments. Loss-making airlines are trying to minimize the damage by going to shrink.

As a result of this rapid development in the aviation industry, companies that are troubled by the decline of competition are helped by governments to secure the industry. Naturally, mergers and partnerships have begun between companies that want to make more profits. These partnerships are a strategic alliance that will satisfy both sides by sharing common resources between the two companies. (Bratlie and Jotne, 2012, p.14-17).

### **3.2.3. Effects of Liberalization, Crises and Other Factors in the Aviation Industry**

After the liberalization, there have been some changes in the number of passengers carried in the aviation sector, number of flights carried out and ticket fees. At the beginning of the 1980s, it is possible to say that most of the world's airlines were in state monopoly. The reluctance due to concerns such as private sector risk and financial costs and the lack of experience in this area were seen as obstacles to the opening of the sector's recruitment. The Deregulation Law aimed to increase competition to provide airline companies with higher quality services at lower prices, gradually reducing the government's control over prices and services, allowing the new entrepreneurs to take the stage in the market. As a result, the aviation sector has expanded and the understanding of the service in the sector has begun to change.

Another factor that affects profitability and changes over the years in the aviation industry is the fluctuation in crude oil prices. In the period between 1970 and 2002, the cost of oil and aviation fuel was fixed at a lower rate, while worldwide oil price hiked in response to the upsurge in serious economic recession experienced. A crisis in the crude oil industry or a shortage in production could affect other countries and sectors. Depending on the oil crisis in 1973 it occurred the first oil shock of 1973 called recession OPEC oil supply portion is started by the grant decision. In the Arab-Israeli war that broke out in 1973, the Arab world, which holds the majority of the crude oil reserves after the United States backed the Israeli army, has influenced crude oil prices, which it declared to western countries. The second oil shock, have occurred in 1979-1980 with the start of Iran-Iraq War. The third, took place ten years later in 1990, due to Iraq's intervention in Kuwait.

The decrease and adjustment in the cost of flying fuel implied that the cost of fuel amid the vast majority of the 1990s and till 2002 was about of 12 and 15 per cent of airlines' aggregate operating costs. The beginning of the twenty-first century did not start well for the aviation industry. The misfortunes of 2001 and 2004 disturbed the sector for years in the aviation industry. Over the next decade, the aviation industry will closely monitor two variables, including the cost of crude oil and the future development of the world economy (Doganis, 2006, p.8-14).

Along with twenty-first century, the aviation industry has experienced a financial crisis worldwide, and particularly in the United States. The problems that started with the money crisis that started in parallel with the early 2001 reached

relatively destructive dimensions after the terrorist attacks on September 11, 2001. 9/11 terrorist attack was the first major event that the globalizing world experienced in the new century. Although it seemed to be a local event, the terrorist attacks had global dimensions, concerning both the fiction and consequences.

Lots of similar powers influenced non-US aircrafts, which recorded misfortunes in the years 2001– 2003, however posted unobtrusive net benefits in 2004 and 2005 (Belobaba and Odoni,2009, p.6-7). Airline companies were particularly affected by military and political events around the world, and in 2003 from the SARS-related health crisis. In its 2003 statement, the World Health Organization has begun to recommend delaying travel if it is not necessary for them to travel to Asia to prevent the disease from spreading to many countries. For the planes that will pass to other countries than the same regions, it is suggested that if there are no passengers to enter that country, they should transit from this region. Crises such as the Sept. 11 attacks of the early 20th century and SARS disease, coupled with high fuel prices, have led many former airline companies to go bankrupt or to merge with another company.

#### **3.2.4. Today and Future of Aviation Industry**

In 2010, the aviation industry generated 547 billion US dollars and 2681 million scheduled passenger revenue. Operating profit was US \$ 21.7 billion, with a profit margin of 4 percent and a net profit of US \$ 15.8 billion, positive for the first time in three years. IATA estimated that by the year 2015, 4.6 percent of the annual growth rate would take place. Average growth over the past 30 years is 5 percent. But the future is brighter after a slight increase in 2010 (Bratlie and Jotne, 2012, p.16).

Airline companies attempted to stay alive and stay in the industry by reaching the ultimate goal to increase their efficiency. In order to improve income, number of some routes was reduced. To upgrade stack factors, associations have ended up being more versatile in assessing and in allocating faultless planes to different courses. Most strikingly, associations hoped to cut costs by increasing workforce proficiency, diminishing overhead load, bestowing organizations to various bearers and lessening pay rates and points of interest (Grant, 2010, p.91). Although passenger traffic increases every year, airline management often fails to achieve the desired level of profitability. When businesses value opportunities for tight expense control and pricing, they will be able to take serious steps towards profitability.

The aviation industry is slowly starting to make profits day by day. But the process is a long-winded road and it is difficult.





## CHAPTER 4

### INVESTIGATION OF THE INTERNAL FACTORS AFFECT THE FINANCIAL PERFORMANCE OF THE AVIATION INDUSTRY

#### 4.1. The Aim and Importance of the Study

In this study identifying the key factors that determine the profitability of the aviation industry was aimed. The internal profitability dynamics of the world's leading aviation companies will be able to be more understandable through the findings of this thesis study.

#### 4.2. Material and Method

In this part the utilized material and method were given to study the internal factors affecting the profitability of the world's leading aviation companies.

##### 4.2.1. Material

The main motive of this study was to depict the internal factors that affect the profitability of the firms in the aviation industry. There are different classification groups for the leading aviation companies in the sector. These can be listed as Star Alliance, One World, Sky Team etc. In this thesis study we used the data of companies that are the members of Star Alliance. The Star Alliance network is the first global airline alliance established in 1997 to provide worldwide access, recognition and uninterrupted service to international travelers. In the list, 12 members whose data available in the utilized database have been chosen as the sample. Then via ratio analysis some liquidity, activity and capital structure ratios were designated as independent variables and profitability ratios designated as dependent variables. And finally logistic regression analysis was employed. The aviation companies in the data set were Aegean Airlines, Air China, Air New Zealand, ANA, Asiana Airlines, Avianca, EVA Air, Singapore Airlines, Thai Airways International, United Airlines, Lufthansa and THY.

#### 4.2.2. Data

The financial ratios of the companies in the sample were obtained from the Morningstar.com data base. The data set consisted of ratios of eight years of the 12 aviation firms from 2009 to 2016. Basically there are five types of financial ratios. They can be classified as liquidity, activity, debt, profitability and market ratios (Gitman and Zutter, 2012, p. 70). The profitability ratios used as dependent variable due to the aim of depicting the factors affect profitability. In addition to that because the study focused on internal factors related with the profitability, the market ratios were excluded. Hereby gross margin, operating profit margin, net margin, return on asset (ROA) and return on equity (ROE) ratios were designated as dependent variables, while current ratio, quick ratio, inventory turnover, receivables turnover, payables period, asset turnover and debt ratio designated as independent variables. On the other hand owing to the high level of correlation between current ratio and quick ratio, quick ratio was excluded. The correlation levels of independent variables were given in the Table 2. In addition to that due to the properties of logistic regression gross margin was also excluded<sup>1</sup>.

Table 2. *Correlation Matrix of the Independent Variables*

	current ratio	quick ratio	inventory turnover	receivables turnover	payback period	asset turnover	debt ratio
current ratio	1.00						
quick ratio	0.95	1.00					
inventory turnover	0.02	0.14	1.00				
receivables turnover	-0.52	-0.45	0.33	1.00			
payback period	0.16	0.25	-0.20	-0.17	1.00		
asset turnover	0.48	0.50	0.37	-0.28	-0.09	1.00	
debt ratio	-0.60	-0.66	-0.17	0.30	-0.46	-0.03	1.00

The final list of variables was given in the Table 3.

<sup>1</sup> In the analysis negative dependent variables coded as "0", and positive dependent variables coded as "1". Due to the no negative gross margin, logit regression analysis could not be performed.

Table 3. *The List of Variables*

<b>Dependent Variable</b>	<b>Independent Variables</b>
operating profit margin	current ratio,
net margin	inventory turnover,
return on asset (ROA)	receivables turnover,
return on equity (ROE)	payables period,
	asset turnover,
	debt ratio.

The explanations about the variables were given in the Table 4. In the study it was preferred to use the names of the ratios as in the data base, :

Table 4. *The Explanations about the Variables*

<b>Variable</b>	<b>Formula</b>	<b>Explanation</b>
current ratio	$\frac{\text{Current assets}}{\text{Current Liabilities}}$	measures the liquidity of the firm as current ratio, differs from current ratio by excluding inventories (Gitman and Zutter, 2012, p. 72) .
inventory turnover	$\frac{\text{Cost of goods sold}}{\text{Inventory}}$	is a measure of liquidity or activity of the firms inventory (Gitman and Zutter, 2012, p. 73).
receivables turnover	$\frac{\text{Net Credit Sales}}{\text{Average Account Receivables}}$	is an indicator that shows how fast a firm convert its average receivables investment into cash (Richards and Laughlin, 1980, p. 33).
payables period	$\frac{\text{Accounts payable}}{\text{Average purchases per day}}$	(average payment period) is the time needed to pay accounts payables(Gitman and Zutter, 2012, p. 75).
asset turnover	$\frac{\text{Sales}}{\text{Total Assets}}$	is a kind of efficiency which the organizations utilize its own assets to create sales (Gitman and Zutter, 2012, p. 75)
debt ratio	$\frac{\text{Total Liabilities}}{\text{Total Assets}}$	gives the proportion that the creditors financed the assests of the firm (Gitman and Zutter, 2012, p. 77)
operating profit margin	$\frac{\text{Operating Profits}}{\text{Sales}}$	(it is also used as operating profit margin) shows the percentage of each sales dollar left after all costs and expenses other than interest, taxes, and prefeered stock dividends are deducted (Gitman and Zutter, 2012, p. 80).
net margin	$\frac{\text{Earnings available for common stockholders}}{\text{Sales}}$	(it is also used as net profit margin) is a measure of profitability that gives the percentage of each sales dollar remaining after all costs and expenses including interest, taxes, and prefeered stock dividends have been deducted (Gitman and Zutter, 2012, p. 80).
return on asset (ROA)	$\frac{\text{Earnings available for common stockholders}}{\text{Total Assets}}$	is a profitability measure tahat quantifies the overall effectiveness of management in generating profits with the assets (Gitman and Zutter, 2012, p. 81)
return on equity (ROE)	$\frac{\text{Earnings available for common stockholders}}{\text{Common stock equity}}$	measures the return on the common stockholders' investment in the firm (Gitman and Zutter, 2012, p. 82)

In the Table 5, the main characteristics of the dependent variables, namely observation number, mean, standard deviation the maximum and the minimum observations can be seen. The firms had averagely 4.30% operating profit margin, 2.60% net margin, 2.20% return on asset and 8.59% return on equity. The standard deviation levels were generally same except the standard deviation of return on equity. Parallel to that the minimum and maximum values remained similar except ROE.

Table 5. *Descriptive Statistics of the Dependent Variables*

Variable	Observation	Mean	Standard Deviation	Min (%)	Max (%)
Operating profit margin	94	4.30	4.81	-8.89	17.62
Net Margin	94	2.60	4.56	-8.29	19.39
Return on Asset	94	2.19	3.97	-6.28	18.77
Return on Equity	94	8.59	21.72	-63.23	129.20

In the Table 6 the descriptive statistics of the independent variables were provided. The mean, deviation, range information can be found. The means of current ratio, inventory turnover, receivables turnover, payables period, asset turnover and debt ratio are respectively 0.92, 32.45, 16.10, 55.06, 0.83 and 73.21. The standard deviations of current ratio, inventory turnover, receivables turnover, payables period, asset turnover and debt ratio are respectively 0.38, 21.11, 7.30, 41.20, 0.25 and 13.40.

Table 6. *Descriptive Statistics of the Independent Variables*

Variable	Observation	Mean	Standard Deviation	Min	Max
Current Ratio (%)	94	0.92	0.39	0.20	2.25
Inventory Turnover Ratio (times)	94	32.45	21.11	6.16	103.59
Receivables Turnover Ratio (times)	94	16.10	7.30	7.07	35.53
Payables Period (days)	94	55.06	41.20	1.84	194.36
Asset Turnover (times)	94	0.83	0.25	0.50	1.60
Debt Ratio (%)	94	73.21	13.40	40.10	115.04

### 4.3. Methodology

In the study logistic regression analysis was employed. Logistic regression method helps to investigate the systematic relationship between dependent variable and independent variables.

### 4.3.1. Logistic Regression

Regression briefly deals with specification and evaluation of the relationship between a given variable and one or more other variables. In other words, regression is an endeavor to clarify the differentiations in a variable by referencing it to the differentiations in at least one different variable. Therefore regression analysis can be assumed as the most significant test method in econometry field (Brooks, 2008, p. 27). The model of ordinary regression has the outward presentation below;

$$\bar{y} = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_p x_p \quad (1)$$

where;

$\bar{y}$  = Predicted outcome variable

$\beta_0$  = Estimated constant

$\beta_1, \dots, \beta_p$  = Regression coefficients

$x_1, \dots, x_p$  = Predictor Values

Least squares method is a technique utilized by analysts to predict parameters and values acquired under the method are least squares estimates. The linear regression model is insufficient in the studies that contain categorical outcome variables.

According to Peng et. al. (2002) to beat the restrictions of least squares regression in taking care of categorical variables, various disjunctive statistical methods have been recommended. These can be listed as logistic regression, discriminant function analysis, log-linear models and linear probability models.

The data about events investigated in the field of applied social sciences are often nominal either obtained with an ordinal scale. The multivariate statistical analysis of nominal data is momentous for nearly every social science area. Logistic regression analysis has an important place in categorical data analysis with the advantage of being more appropriate than other analyze methods and having the power of regression logic (Cokluk, 2010).

Logistic regression is an advanced regression method which provides a model that evaluates the relationship between dependent and independent variables and allows

the investigation of several factors influence on the outcome by foreseeing the likelihood of the events occurrence (Anderson, 1982).

So far, there are three classes of logistic regression models utilized in the literature; binary logistic regression, multinomial logistic regression and ordinal logistic regression.

At the point where a response variable has just two conceivable esteems, the binary logistic regression is widely used. Multinomial logistic regression method is an expansion of this way to deal with circumstances where the response variable is clear cut and has more than two conceivable esteems. Ordinal logistic regression is an exceptional sort of multivariable regression and might be favorable when the response variable is ordinal (Warner, 2008).

Logistic regression is the most widely recognized technique used to binary response data modelling. At the point when the response is binary, it as a rule takes the frame 1 and 0, where 1 ordinarily demonstrates the success and 0 shows the failure. In any case, the genuine esteems that 1 and 0 may take change broadly relying upon the motivation behind the study (Hilbe, 2011).

Logit - the natural logarithm of an odds ratio - is the focal numerical idea that lies behind logistic regression.

In the least difficult instance of one indicator  $X$  and one dichotomous response variable  $Y$ , the logistic regression model predicts the logit of  $Y$  from  $X$ . The basic logistic model has the outward presentation below;

$$\ln\left(\frac{P}{1-P}\right) = \log(odds) = \text{logit} = \alpha + \beta x \quad (2)$$

Herefrom,

$$\text{Probability}(Y | X = x) = P = \frac{e^{\alpha + \beta x}}{1 + e^{\alpha + \beta x}} = g(x) \quad (3)$$

$P$  = Probability of the response of event under variable  $Y$

$\alpha$  = The  $Y$  intercept

$\beta$  = The slope parameter

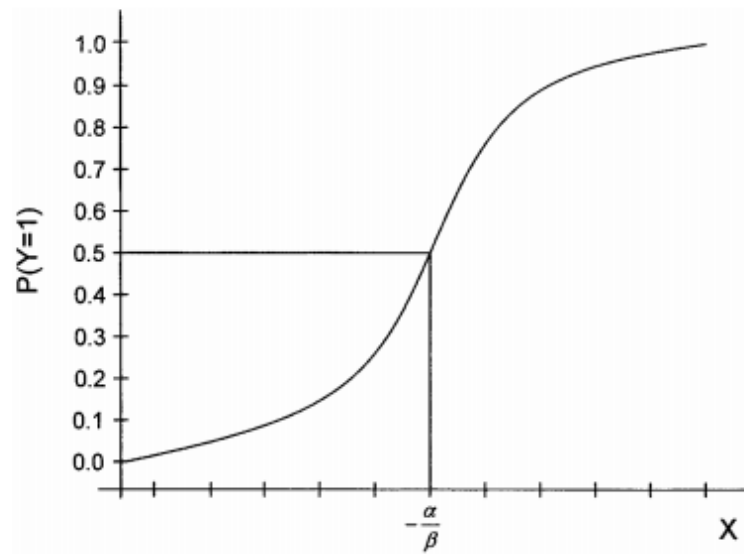


Figure 4. Univariate Logistic Regression Model Based on  $\alpha = 0$  and  $\beta = 0,16428$

Source: Peng et. al., 2002

Logistic function has three characteristic properties;

1. Unless  $\beta = 0$ , the binary logistic regression maps the regression line onto the interval  $(0,1)$  which is compatible with the logical range of probabilities.
2. The regression line is monotonically increasing if  $\beta > 0$ , and monotonically decreasing if  $\beta < 0$ .
3. The function takes the value of 0.5 at  $x = -\alpha / \beta$  and is symmetric to the point of  $(-\alpha / \beta, 0.5)$ .

By utilizing the logic that lies behind the basic logistic regression, a complex model can be built to improve the prediction of the logit by including a few indicators. The complex logistic model has the outward presentation below;

$$\ln\left(\frac{P}{1-P}\right) = \text{logit} = \alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k \quad (4)$$

Thus,

$$\text{Probability}(Y | X_1 = x_1, X_2 = x_2, \dots, X_k = x_k) = P = \frac{e^{\alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k}}{1 + e^{\alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k}} = g(x) \quad (5)$$



Where  $P$  is the probability of the event under the outcome variable  $Y$ ,  $\alpha$  is the  $Y$  intercept parameter,  $\beta$ s are slope parameters, and  $X$ s are a set of predictors (Peng et. al., 2002).

#### 4.4. Results

In this part of the study logistic regression analysis results can be found. Although the normality test results were not reported, Shapiro-Wilk Normality test results indicate that the variable were not normally distributed. Operating profit margin, Net Margin, Return on Asset and Return on Equity ratios used as dependent variables in the analysis so there would be 4 logistic regression estimations. In the case of income dependent variables were coded as “1”, on the other hand in case of loss they were coded as “0”. So the results were given in the same table. In addition, due to the same sign of the dependent variables of Net Margin, ROA and ROE the results did not differ.

Table 7. *The Result of Logistic Regression Analysis about Operating Margin*

<b>Variables</b>	<b>Coefficient</b>	<b>Standard Error</b>	<b>z</b>	<b>P&gt; z </b>
current ratio	-7.817215	2.856974	-2.74	0.01
inventory turnover	-0.2121693	0.067497	-3.14	0.00
receivables turnover	0.4913472	0.183988	2.67	0.01
payables period	0.0715542	0.033371	2.14	0.03
asset turnover	18.84567	6.613398	2.85	0.00
debt ratio	-0.2701559	0.093430	-2.89	0.00
Constant	11.80014	7.434148	1.59	0.11
Hosmer-Lemeshow Test	Chi-Square: 5.34	sig. : 0.8677		
Log Likelihood:-17.403483	LR Statistics: 43.31	p-value:0.0000		
Pseudo R <sup>2</sup> : 0.5601				

The results of the logistic regression analysis can be seen in the Table 7.

To answer how well the model fitted the data employed, The Hosmer-Lemeshow Test was performed. The Hosmer-Lemeshow Test hypotheses are as follows (Tuffery, 2011);

$H_0$ : The established model fits the best to the data.

$H_1$ : The established model does not fit the best to the data.

Pursuant to the Hosmer-Lemeshow goodness of fit test, because of the Chi-Square was 5.34 with the significance level of 0.8677, it could be argued that the model established fitted the best to the data.

Furthermore due to the likelihood ratio of p-value was 0.0000 the model was statistically significant. In addition to model significance, the Pseudo  $R^2$  was calculated as 0.5601.

The coefficient for the variable current ratio was -7.817215. Holding other independent variables constant, this meant that one-unit (%) increase in current ratio, it could be expected a 7.817215 decrease in the log-odds of the dependent variable operating margin.

One-unit (times) increase in inventory turnover, because the coefficient is negative, it could be expected a 0.2121693 decrease in the log-odds of the operating margin, holding other independent variables constant.

Holding other independent variables constant, for every one-unit (times) increase in receivables turnover, it could be expected a 0.4913472 increase in the log-odds of the dependent variable operating margin.

Every additional day on payables period, caused an increase of 0.0715542 in the log-odds of the dependent variable operating margin, holding other independent variables constant.

One-unit (times) increase in asset turnover, holding other independent variables constant, it could be expected a 18.84567 increase in the log-odds of the operating margin.

Finally one-unit (%) increase in debt ratio, it could be expected a 0.2701559 decrease in the log-odds of the operating margin, holding other independent variables constant.

As it is seen in the interpretation of the coefficients of the logit model, it is hard to understand. So to overcome this complexity the marginal effects have been calculated in the following table.

Table 8. *The Effect of One Unit Change of the Independent Variables to the Probability of Profitability (Operating Profit Margin)*

<b>Variables</b>	<b>dy/dx*</b>	<b>Standard Error</b>	<b>z</b>	<b>P&gt; z </b>
current ratio	-0.441261	0.1269811	-3.48	0.00
inventory turnover	-0.011976	0.0026324	-4.55	0.00
receivables turnover	0.0277353	0.008193	3.39	0.00
payables period	0.004039	0.0016306	2.48	0.01
asset turnover	1.063788	0.2914615	3.65	0.00
debt ratio	-0.01525	0.0037502	-4.07	0.00

dy/dx is the derivative of y according to the x. Basically it is the velocity of y according to the x (Gujarati, 2016, p: 240). In the sample, holding other independent variables constant, if the average current ratio increased 1%, the probability of having positive Operating Profit Margin decreased by 0.441261. Similarly if the average inventory turnover increased 1 time, the probability of having positive operating profit margin decreased 0.011976. In the case the receivables turnover increased 1 time, the probability of having positive operating profit margin increased 0.0277353. If the payables period increased 1 day, the probability of positive operating profit margin increased 0.004039. If the asset turnover increased 1 times, the probability of positive Operating Profit Margin increased 1.063788. And finally when the debt ratio increased 1%, the probability of having positive Operating Profit Margin decreased 0.01525.

Table 9. *Logistic Regression Classification Table for the Operating Profit Margin Model*

	predicted positive Operating Profit Margin	predicted negative Operating Profit Margin	Percentage correct
observed positive Operating Profit Margin	79	5	84
observed negative Operating Profit Margin	1	9	10
Correctly classified			93.62

Finally about the analysis of Operating Profit Margin, classification table was performed to see the predictive accuracy or in other words the performance of the model employed. According to the table the logit model correctly predicted 93.62% of the cases. In detail, 79 of the 84 profit-making (in terms of Operating Profit Margin) companies had classified correctly, and 5 of it classified in the not profit making companies incorrectly. On the other hand 9 of the 10 not profit making companies had classified correctly, and 1 of it classified in the profit making companies incorrectly.

Table 10. *The Results of Logistic Regression Analysis about Net Margin, ROA and ROE*

<b>Variables</b>	<b>Coefficient</b>	<b>Standard Error</b>	<b>z</b>	<b>P&gt; z </b>
current ratio	-3.054499	1.443973	-2.12	0.03
inventory turnover	-0.0896215	0.0320596	-2.80	0.01
receivables turnover	0.2790458	0.090367	3.09	0.00
payables period	0.0152253	0.0109558	1.39	0.17
asset turnover	6.053446	2.700393	2.24	0.03
debt ratio	-0.1883281	0.0578751	-3.25	0.00
Constant	11.38679	4.798169	2.37	0.02
Hosmer-Lemeshow Test		Chi-Square: 8.66	sig. : 0.5649	
Log Likelihood:-33.538576		LR Statistics: 32.79	p-value:0.0000	
Pseudo R <sup>2</sup> : 0.3283				

According to the Hosmer-Lemeshow goodness of fit test, due to the Chi-Square was 8.66 with the significance level of 0.5649, the model fitted the best to the data. The Pseudo R<sup>2</sup> was observed as 0.3283. The likelihood ratio p-value was 0.0000 the model was statistically significant.

One-unit (%) increase in current ratio, because the coefficient is negative, it could be expected a 3.054499 decrease in the log-odds of the above-mentioned profitability ratios, holding other independent variables constant.

The coefficient for the variable inventory turnover was -0.0896215. Holding other independent variables constant, this meant that one-unit (times) increase in inventory turnover, it could be expected a 0.0896215 decrease in the log-odds of the above-mentioned profitability ratios.

Every additional day on receivables turnover, caused an increase of 0.2790458 in the log-odds of the dependent variables, holding other independent variables constant.

According to the regression results the payables period was not significant.

One-unit (times) increase in asset turnover, holding other independent variables constant, it could be expected a 6.053446 increase in the log-odds of the above-mentioned profitability ratios.

Finally one-unit (%) increase in debt ratio, it could be expected a 0.1883281 decrease in the log-odds of the dependent variables, holding other independent variables constant.

As in the logit model employed for the mentioned profitability ratios, due to the difficulty of interpretation of the logit model coefficients, marginal effects have been calculated also for the logit model employed for the Net Margin, ROA and ROE. The results can be seen in the following table.

Table 11. *The effect of one unit change of the independent variables to the probability of profitability (Net Margin, ROA and ROE)*

<b>Variables</b>	<b>dy/dx</b>	<b>Standard Error</b>	<b>z</b>	<b>P&gt; z </b>
current ratio	-0.3500347	0.150758	-2.32	0.02
inventory turnover	-0.0102703	0.002963	-3.47	0.00
receivables turnover	0.0319777	0.008145	3.93	0.00
payables period	0.0017448	0.001205	1.45	0.15
asset turnover	0.6937033	0.273554	2.54	0.01
debt ratio	-0.0215817	0.005059	-4.27	0.00

In the sample, holding other independent variables constant, if the average current ratio increased 1%, the probability of having positive Net Margin, ROA and ROE decreased 0.3500347. Likewise the probability of having positive Net Margin, ROA and ROE decreased 0.0102703, if the average inventory turnover increased 1 time. The probability of having positive Net Margin, ROA and ROE increased 0.0319777, if the receivables turnover increased 1 time. If the asset turnover increased 1 times, the probability of positive Net Margin, ROA and ROE increased 0.6937033. To

close when the debt ratio increased 1%, the probability of having positive Net Margin, ROA and ROE decreased 0.0215817.

Table 12. *Logistic Regression Classification Table for the Net Margin, ROA and ROE Models*

	predicted positive profitability ratio	predicted negative profitability ratio	Percentage correct
observed positive profitability ratio	69	11	80
observed negative profitability ratio	4	10	14
Correctly classified			84.04

To be able to understand the predictive accuracy of the model, classification table created.

Pursuant to the classification table the logit model correctly predicted 84.04% of the cases, which was a good score. To be more precise, 69 of the 80 profit-making (in terms of Net Margin, ROA and ROE) companies had classified correctly, and 11 of it classified in the not profit making companies incorrectly. On the other hand 10 of the 14 not profit making companies had classified correctly, and 4 of it classified in the profit making companies incorrectly.

## CHAPTER 5

### CONCLUSION

Although the factors affecting financial performance or profitability are generally similar, it is necessary to make separate examinations in order to reach the appropriate factors affecting the performance for the specific characteristics, taking into account the sector dynamics. The transportation and logistics sector has been a field which has not lost its significance with the rise of globalization and consumption therefore it has been studied by many researchers. As a sub sector the aviation industry has its own characteristics. The main motive for this thesis study to depict the internal factors affect the profitability of the leading aviation companies of the world. The data set consisted of the financial ratios of the 12 aviation companies between 2009-2016. The logistic regression method was employed in the analysis part.

The results of the models showed that:

- The aviation firms which were more liquid than the others had more likely lower profitability ratios, namely Operating Profit Margin, net margin, ROA and ROE. This could proceed from the trade-off between liquidity and the profitability. Or with another aspect the firms with high liquidity ratios were more likely not to effectively use their current assets in making profits.
- Unexpectedly higher inventory turnover decreased the probability of high profitability. Aviation industry is a service industry and generally service firms have insignificant levels of inventories.
- Higher receivables turnover ratios increased the probability of high profitability. Higher receivables turnovers could be explained with higher credit sales or less accounts receivable levels. The firm must implement a careful credit policy and manage the accounts receivables. So the aviation companies collected accounts receivable as quickly as possible had more likely more profitability ratios.
- The aviation firms which made their payments as late as possible more likely had more profit ratios. This is not an unexpected situation.
- Normally the aviation companies which created more sales with the remaining assets, in other word which had higher asset turnover ratios had more likely high level of profitability ratios.

- Finally the leveraged aviation firms had more likely less profitability ratios. Leverage sometimes increases the profitability but on the other hand it increases the risk. In these circumstances it could be interpreted that the firms suffered high level of financial risk.

Finally the results provide important implications to the aviation companies, investors, regulatory agencies and standart setting bodies. The topic can be analyzed deeply by the help of more advanced statistical models by the future studies.





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