

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
NATIONAL AVIATION UNIVERSITY

Air Transportation Management Department

PERMISSION TO DEFEND GRANTED
Head of the Department

_____ D. O. Shevchuk
“ ” _____ 2020

MASTER THESIS

(EXPLANATORY NOTES)

Theme: « Airline personnel management system»

Done by: Dmytro Dubskyi

Supervisor: Konovaliuk Valentina S., PhD in Physics and Mathematics, Associate professor

Standards Inspector: Yuliia V. Shevchenko, PhD in Economic, Associate professor

Kyiv 2020

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
НАЦІОНАЛЬНИЙ АВІАЦІЙНИЙ УНІВЕРСИТЕТ

Кафедра організації авіаційних перевезень

ДОПУСТИТИ ДО ЗАХИСТУ

Завідувач кафедри

_____ Шевчук Д.О.
« _____ » _____ 2020 р.

ДИПЛОМНА РОБОТА
(ПОЯСНЮВАЛЬНА ЗАПИСКА)

ВИПУСКНИКА ОСВІТНЬОГО СТУПЕНЯ «МАГІСТР»

Тема: «Система управління персоналом авіапідприємства»

Виконавець: Дубський Дмитро Дмитрович

Керівник: канд.фіз-мат.наук, доц.. Коновалюк Валентина Станиславівна

Нормоконтролер: к.е.н., доц.. Шевченко Юлія Вікторівна

Київ 2020

NATIONAL AVIATION UNIVERSITY
Faculty of Management, Transport and Logistics
Air Transportation Management Department

Major (specialty): 275 “Air Transportation Technology”

APPROVED BY
Head of the Department
_____ D. O. Shevchuk
“ ” _____ 2020

TASK
of completion the master thesis
Dmytro Dubskyi

1. Theme of the master thesis entitled «Airline personnel management system» was approved by a decree of the Rector order № 2026/CT. from 16.10.2020.
2. Term performance of thesis: from 05.10.2020 to 31.12.2020.
3. Initial data required for writing the master thesis: production and financial results of Turkish Airlines, route network, fleet size, types of services rendered by the airline.
4. Content of the explanatory notes: conceptual bases of the organization of the international delivery; ways of development of the supply chains e; assessment of supply chains of technological equipment.
5. List of mandatory graphic matters: review of airline structure and strategy of development, overview of human resources of company, analysis of production and financial activity of the airline 2003-2017, review of the fleet of Turkish Airlines, comparative analysis of resource efficiency with Lufthansa Group, proposal to improve efficiency of aircraft fleet usage by increasing capacity with help of new seats, justification of the chosen project..

6. PLANNING CALENDAR

№	Assignment	Deadline for completion	Mark on completion
1.	Collection and processing of statistical data	05.10.2020	done
2.	Writing of the theoretical part	16.10.2020	done
3.	Writing of the analytical part	26.10.2020	done
4.	Writing of the design part	16.11.2020	done
5.	Writing of the introduction and summary	26.11.2020	done
.	Execution of the explanatory note, graphic matters and the presentation	02.12.2020	done

7. Given date of the task: October 05, 2020.

Supervisor of the master thesis:

V. Konovalyuk

Task was accepted for completion:

D. Dubskiy

EXPLANATORY NOTE

Explanatory note to the master thesis «Airline personnel management system»: 89 pages, 18 figures, 21 tables, 20 references.

KEYWORDS: AIRLINE, PASSENGER FLIGHT, HUMAN RESOURCE MANAGEMENT, RESOURCE POTENTIAL, EFFICIENCY, PRODUCTION AND FINIANCIAL PARAMETERS, CAPACITY OF AIRCRAFT FLEET.

Object of the master thesis is the company Turkish Airlines.

Subject of the master thesis is improvement the efficiency of the airline's resource potential usage.

Main task of the master thesis is to investigate and analyze efficiency of resource potential usage of the airline and possibility to improve it by increasing of aircraft fleet capacity.

Methods of analysis include comparative analysis, analysis of the production and financial parameters, graphical methods, statistical methods, analysis of relevant literature.

During the completion of the master thesis it was established that efficiency usage of resources influences greatly on the revenue management of the airline and its success on air transportation market overall. The conducted analysis of production and financial parameters and graphics introduced of the chosen airline show how the subject of the study influences on airline's activity. Comparative analysis of efficiency of resource potential usage of Turkish Airlines and Lufthansa Group explains which of the airlines uses its resources more efficiently. The way to improve efficiency of airline's resources potential usage by increasing capacity of aircraft fleet is proposed.

The material base of this thesis is recommended to be used for the further researches, the educational process and for the professional practical implementation of the proposed improvements by Turkish Airlines.

LIST OF ABBREVIATIONS

ASK – available seat kilometers;

ATD – availability turndowns;

CEO – chief executive officer;

CFO – chief financial officer;

COO – chief operating officer;

CSR – corporate social responsibility;

IATA – International Air Transport Association

ICAO – International Civil Aviation Organization

IST – Istanbul Ataturk International Airport

Km – kilometer.

LCC – Low Cost Air Carriers

Pax – passengers;

RPK – revenue passenger kilometers;

TEC – Turkish Engine Center

THY – Turkish Airlines

CONTENTS

ABBREVIATIONS.....	6
INTRODUCTION.....	9
1. THEORETICAL PART.....	12
Human Resource Management (HRM) in the Aviation Industry	13
1.1 The functions of Human Resources (HR) departments within aviation organisations	16
1.2 Human Resources Management Practices in an Airline Industry	21
1.3 The perspective of human resource management practices in an airline industry	29
2. ANALYTICAL PART.....	29
2.1 General overview of Turkish Airlines	30
2.1.1 Turkish Airlines as the leading airline market player	32
2.1.2 Turkish Cargo	35
2.2 Turkish airlines destination network and cooperation with other airlines	37
2.2.1 Destination network	37
2.2.2 Turkish Airlines as a Star Alliance Member	38
2.3 Fleet of Turkish Airlines	42
2.4 Review of Turkish Airlines Subsidiaries	42
2.4.1 Turkish Aviation Academy	46
2.4.2 THY Airport Real Estate Investment and Operation	48
2.5 Organizational Structure and human resources of Turkish Airlines	49
2.6 Sponsorship and promotion agreements of the airline	52
2.7 Analysis of business activity of Turkish Airlines	56
2.7.1 Traffic results	58
2.7.2 Analysis of Turkish Airlines activity by regions	59
2.8 SWOT analysis of Turkish Airlines	61
3. DESIGN PART.....	58
3.1 Integrated rating of airlines in a competitive market	59
3.1.1 Technology of the method	59
3.1.2 Choice and brief overview of competitor for analysis	61
3.1.3 Calculation of the operation coefficients	63
3.1.4 Comparison of Turkish Airlines and Lufthansa Group efficiency ratios	64
3.2 Future strategy of Turkish Airlines	66
3.2.1 Industry developments	66
3.2.2 Investments, incentives and investment policies	68
3.2.3 Developments within the incorporation	70
3.4 Way to improve efficiency of aircraft fleet usage	72
3.4.1 Characteristics of Essenza, a superlightweight solution for Turkish Airlines A321NEO aircraft	74
3.4.2 Brief overview of Italian company Geven	75
3.4.3 Competitor's orders of lightweight seat Essenza	76
3.4.4 TiSeat E2 for Turkish Airlines new Boeing 737-9 MAX	78
3.5 Calculations of capacity growth	81
3.7 Calculations of NPV of the project	84
3.8 Prove of the project profitability	87
SUMMARY.....	84
REFERENCES.....	87

INTRODUCTION

Air Transportation Management Department				NAU.20.07.42 001EN				
Done by:	<i>Dmytro Dubskyi</i>			INTRODUCTION	Letter	Sheet.	Sheets	
Supervisor:	<i>Valentina Konovalyuk</i>					<i>D</i>	<i>9</i>	<i>4</i>
Standards Inspector	<i>Yuliia V. Shevchenko</i>				<i>FTML 275 OII- 202Ma</i>			
Head of the Department	<i>Shevchuk D. O.</i>							

In today's environment, airlines are under increasing pressure to deliver innovative, technologically advanced services with shrinking budgets. As a result, resources must be fully utilized and focused on the highest priorities at any given time.

Resource management is the efficient and effective development of an organization's resources when they are needed. Such resources may include financial resources, inventory, human skills, production resources, or information technology (IT). Ineffective or suboptimal resource management will certainly lead to negative consequences such as poor productivity, delays, decreased quality, increased costs and missed opportunities.

Current market conditions, which have a significant impact on airlines, are characterized by the following main factors: liberalization of the global air transportation market; creation and development of airline alliances; changes in the preferences of passengers who are placing ever greater demands on the quality of service; strengthening the positions of low-cost airlines; trends towards the consolidation and internationalization of airline partners; development of new technologies in the airline industry (including e-commerce). The created conditions promote the strengthening of competition between domestic and foreign companies, more freely operating in the Turkish market. The above problems have a very specific monetary expression, directly affecting sales volumes and results of operational activities. In this regard, for each airline, the issue of implementing continuous performance monitoring in comparison with other carriers is relevant.

When comparing airlines, the best option is to analyze a set of key economic indicators. But carrying out such complex comparisons is accompanied by considerable difficulties, of which the latter is not connected with the problem of access to data. In addition, the structure of costs and revenues varies from airline to airline.

Airlines operating large aircraft flying along routes of considerable length differ greatly in the structure of operating costs resulting from fuel costs, landing fees, the costs of preparing an airplane for a flight, for air navigation services, etc., from airlines that serve mainly small routes extent. Just as the unit costs (per pax/km) depend on the length of the route, the specific revenues (per pax/km) increase with the decrease in the length of the route. Before the advent of low-cost airlines in the European air transport market, this dependence was clearly traced: the average revenue per 1 pax/km on European short-haul routes was significantly higher than on routes connecting Europe with America or with East Asia. A strong difference in the structures of costs and revenues leads to the conclusion that the use of economic indicators is ineffective in conducting a comparative analysis of the airline as the basis for others.

An even more important factor hampering the use of economic indicators is the profound differences in strategy. Airlines have different strategies in dealing with both other air carriers and with service providers. Some airlines prefer a significant share of technical maintenance of their aircraft to perform their own efforts, while others turn to third-party organizations. Carriers who do most of the work for their own efforts often have a contractual relationship to carry out such work for other airlines, thereby gaining significant money (and bearing tangible costs). Likewise, a number of leading airlines have rather powerful handling units providing preparation of aircraft for the flight (refueling, loading of luggage and passengers). A significant part of these services can be provided to other air carriers. As a result, revenues and expenses of airlines that provide services for other air carriers are quite difficult to compare with similar economic indicators of airlines adhering to the policy of maximum consumption of specialized enterprises. Considering the fact that the structure of income and expenses in airlines is in most cases different from each other, this article proposes to focus mainly on those indicators that reflect the results of the main production activity, rather than financial ones. Improving the values of such indicators, however, has a significant impact on the overall financial condition of the company.

1. THEORETICAL PART

Air Transportation Management Department				NAU.20.07.42 002EN			
Done by:	<i>Dmytro Dubskyi</i>			<i>1. THEORETICAL PART</i>	Letter	Sheet.	Sheets
Supervisor:	<i>Valentina Konovalyuk</i>				D	14	34
Standards Inspector	<i>Yuliia V. Shevchenko</i>				<i>FTML 275 ОП- 202Ma</i>		
Head of the Department	<i>Shevchuk D. O.</i>						

Human Resource Management (HRM) in the Aviation Industry

1.1 The functions of Human Resources (HR) departments within aviation organisations

Service employees are a key input for delivering service excellence and productivity, both of which can be important sources of competitive advantage. Yet, among the most demanding jobs in service organizations are these so-called front-line jobs where employees are expected to be fast and efficient at executing operational tasks, as well as friendly and helpful in dealing with their customers.

Therefore, it is a challenge for service firms to get their human resource (HR) management right, and most successful service organizations have a firm commitment to effective HR management, including recruitment, selection, training, motivation and retention of employees. It is probably harder for competitors to duplicate high-performance human assets than any other corporate resource.

From a service organization's perspective, the service level and the way service is delivered by the front line can be an important source of differentiation as well as competitive advantage. In addition, the strength of the customer-front-line employee relationship is often an important driver of customer loyalty.

The functions of HR:

- ✓ Business partnership, e.g. as part of the business strategy, planning for short and long term objectives, working with senior leaders and management, reporting and management processes
- ✓ Human Capital Management, e.g. people as assets, hiring, training, change management, legislation, policies and procedures
- ✓ Resourcing and talent planning, e.g. recruitment, attracting the right people, brand compliance, equality and diversity
- ✓ Learning and development, e.g. compulsory training and refreshers, job specific training, industry-related qualifications, CPD (Continuous Professional Development), professional qualifications

- ✓ Support, e.g. admin, self-service portals

Role and responsibility of HR:

- ✓ recruitment, e.g. advertising, interview, appoint, induction
- ✓ Employee retention and engagement, e.g. on-boarding, reviews, targets, KPIs (Key Performance Indicators) reward, compensation and benefits, development, progression, incentives
 - ✓ Employment legislation, e.g. protected characteristics, data protection, background checks, employment rights, health and safety
 - ✓ Manage employment procedure, e.g. role of line manager, absence, leave for special circumstances, grievance, disciplinary, complying with company standards, redundancy, termination, retirement, off – boarding.

2. Recruiting personnel for the aviation industry as part of an HR team

Plan recruitment:

- ✓ job description, e.g. main responsibilities, essential and desirable skills and qualities, hours, location;
 - ✓ advertise, e.g. budget, trade publications, TV/radio, social media, in-house, recruitment agencies, recruitment fairs;
 - ✓ shortlist applicants, e.g. criteria for success;
 - ✓ prepare interview, e.g. location, documents, interview panel, group interview, telephone/video selection, selection activities.

Selection process:

- assess candidate, e.g. CV, group task, aptitude test, individual interview, telephone/video screening, IT assessment;
- confirm qualifications, e.g. academic, training, licences, experience, employment history, references;
- make a decision, e.g. offer employment, notify unsuccessful candidates;

- administration, e.g. notify department head, payroll, security.

3. Understand employment legislation relating to the aviation industry

Employment legislation:

- pre-employment checks, e.g. employment history, background checks, references;
- training, e.g. required to obtain airport/airline pass, to comply with current legislation, job-specific;
- general, e.g. minimum wage, discrimination, data protection, employment contract, working hours, minimum age, medical checks (vision, hearing)

Impacts of compliance:

- negative impacts, e.g. recruitment delays (references, employment history), expense (to applicant, to employer, training requirements), restricts recruitment pool (security, health, age);
- positive impacts, e.g. avoid prosecution, filters out inappropriate candidates

4. Know company employment policy and standards Company policy and standards relating to personnel:

- behaviour, e.g. to internal and external customers, property, absence, sickness, misconduct;
- health and safety, e.g. legal standards, company standards;
- security, e.g. legal standards, company standards (property, data, revenue)

Maintain company policy and standards relating to personnel:

- safety management system (SMS), e.g. risk assessment, intervention, appraisal, disciplinary procedures;
- training, e.g. new skills, recurrence, behaviour;

- feedback, e.g. from staff , from supervisors, from managers, from trade unions.

Sources of information and advice:

- regulatory bodies, e.g. Civil Aviation Authority (CAA), UK Regulator for Health and Safety, Department for Transport (DfT), Industry Trade Associations;
- trade bodies, e.g. Associations for HR Professionals;
- trade unions generic or specific to relevant professions and vocations.

1.2 Human Resources Management Practices in an Airline Industry

Human resources are a big part of business operations. It is a main source for the business which is oriented to the customers' satisfaction. Human resources are different from other material resources. Therefore, they need to be treated, first of all as people. Second, they should be accepted as the resources that bring profit. People are the human resources. That is why their psychological state should be considered when the management is making their business. Only in this case the efficiency of this resource would be on the highest level. People need to understand that their actions are valuable and estimated by the organization they work for. That is why human resources managers need to develop various strategies how to keep their employees motivated and feel them appreciated. Managers need to take into consideration different methods and practices that exist nowadays. These methods are developed by psychologists who study human behaviour.

Human resources managers have to act according to the fundamental management principles. The main functions that basic management principles describe include planning the tasks, organizing the conditions of work, directing an employee, and controlling the results of their performance. Also, the human resources management includes operational functions, such as:

1. Recruitment of manpower. It means that managers need to look for the personnel to work for their company. The basic rule is the following one: the

right person for the right job. Moreover, they have to take care about the new person to find his or her place in the collective.

2. Planning the development and learning process of employees. Managers need to determine the needs of workers that will help to perform at the workplace. Their training will bring profits to the company.

3. To estimate the work of employees in a financial aspect by salaries wages and possible grants for the excellent performance.

1. Analysing and implementing the employees' interests to the benefit of the company.

2. Sustenance of the workforce. This includes satisfaction of the basic human's needs and some psychological needs of the employees.

3. Security of welfare facilities. Human resources managers to perform successfully should provide their workers with medical support, providing educational trainings, recreation, house renting, and transporting.

This component could bring a terrific competitive advantage to the company. Factors such as corporate social responsibility, philosophy of the organization, and its structure as well as the culture within a company and public activities may make a great contribution to the developing of the industry.

We can observe today that the airlines industry has acquired a lot in general, especially, if to talk about new technologies which are used. Nevertheless, the industry functions according to the traditional model of governance and operation that is becoming inappropriate and outdated. The airline industry is a market, which bases its service on the brand new knowledge. The experts of human resources management are needed today to help the industry to prosper. It is necessary to start focusing on recruitment of employees to develop the strategic where customers would be in the centre. Employees should be able to learn and adapt to the changes of goals and challenges the airline industry faces.

There are some needs that the airlines industry face today and human resources management can help to fill. Here are only some of them. The skills of the workforce

to communicate, their ability to respond quickly, and adapt to the extraordinary demands of the industry are among them.

The workforce of any airline gathered to the union, where they conduct common negotiations periodically. The result of such negotiations had an effect on the operational activities of the company. However, the management top tries to optimize the amount of employees by minimizing of the cost spent on the employment. The main goal of the organization is to create a strategy that will help to become an organization in the airline industry, where employees value and contribute to the relationships. Besides, such concept helps for innovation and improvement of the quality of the services to be provided to their customer, and the only criteria for these concepts is excellence. One of the main components of this strategy is a culture program.

This program includes 5 main aspects:

1. Encouraging staff to show the best performance on their workplace in the company;
2. One of the fundamental aspects of a high quality customer service is a consistent customer service.
3. The links among an inside and outside stakeholder of the company should drive to create the top level relationships;
4. The performance and success should be based on the company culture;
5. The main drive of the improvement and efficiency should be based on the corporate philosophy.

A team of human resources management provides the connections within the company to maximize the quality of the work. The organization tries to stand by the balanced scorecard theory which has been developed by Robert Kaplan and David Norton. This theory includes 4 main perspectives:

1. Financial perspectives, which requires the financial stability and profitability of the company to maintain the interest of shareholders in terms of value.
2. Customer perspective, where it is absolutely necessary to satisfy the customers' needs to keep the marketplace niche.

3. An internal process perspective that provides a quick responsiveness of the administrative, operational, and technological process to the goals and objectives of the company.
4. Growth and learning which implies that human resources component should enable the organization to fill the proficiency and competency needs of the workforce. It will help to keep employees motivated and to show the highest performance to decrease the potential to learn and develop themselves and the organization as a result.

In the airlines industry, the importance of the human resources strategy could not be overestimated. It is also crucial for airline as they provide highly cost customer service to continue their performance in the industry and this niche of the market. The quality of the work of employees enables the company to maintain the position of being number one in this industry for many years. Meanwhile it is having a tough competition among other companies that provide same services. The high cost of the training the company provides to their employee is paid off by the number of people using their services. They bring an enormous profit to the company and make it a leader of the industry in the region.

The connections between human resources management and the organization performance are obvious. The governance and wise leading of the staff is fundamental to any industry. Especially it is perceptible in the industry which is highly sensitive to the customers demand and is being service oriented.

In the balance scored theory, which is advocated by Kaplan and Norton (2004), the growth and learning process of the employee is strongly connected with the performance of the company. Thus, the development of employees and attention paid to the human resources management influence on the profitability of the company, internal business processes, and the satisfaction of the customers' needs. The human resources management is a fundamental point of the prosperity of the organization in the airlines industry.

To prove this point of view, it should be mentioned that the component of the ineffective human resources management entails different kinds of risk. The biggest effectiveness of the company could be achieved with the development of the culture

that would cultivate the excellence of the customer service. It should be the main goal of the most airlines companies. Lots of companies have reached success in a short-term period, but only few of them could hold their position in a long-term perspective.

There are lots of other factors that have a great influence on the performance of the company. Among them there are constantly changing business practices, expanding complexity in operations, and the demographic situation.

From the demographic position, the prospective in a long-term period of decreasing the cost of human resources component, airline should strengthen its position by diversifying set of manpower that works for the company. To maintain its performance on the world arena, it should strengthen connections with the counties that have reciprocity in this sphere.

There is a key difference between functions of human resources in the airline company which includes multinational workers as it does airline. The company gives opportunities and prospective of growth if to compare with the airlines companies. The process of employment here is complex and complicated, but, nonetheless, the company provides a great opportunity of promoting and developing to its workers. Their workers are one the most remunerated group in the industry.

The managers develop business plans and marketing strategies to overcome the challenges and prevent the risks that could be faced while developing in the airline industry. The shareholders have an interest in the company's development. Thus, the Board of Directors states the goals to the human resources management which help to the quality of the services, profitability to the company, and prosperity in a long-term period in the airlines industry.

The human resources management of the airline explains and reacts to providing the best quality services. It is the fundament and critical to the company to stay afloat in the airlines industry. The human resources management in this organization explains the importance of providing the high quality services while maximizing the profitability. It shows relations between the quality of the work of

employees and the level of their performance. Moreover, this management helps them to be driven and invest their inner resources to the company's performance.

Thus, the importance of the human resources of airline is crucial to its success that has been achieved during last few decades. It is absolutely important to its performing in the long-term future perspective.

1.3 The perspective of human resource management practices in an airline industry

The competition in this industry is increasing day by day and highly related with the high level of technology. The airline industry ensures the time saving for people which actually helps in the development of the organization and the economy. With the development of airline industry different other sectors and activities have expanded also. Tourism industry has developed along with the development of the airline industry. In this industry Human Resource can act as a competitive advantage for the organization. With the development of HR, any airline organization in the Industry can ensure better performance tools customers.

To compete in this competitive industry, the organization needs to concentrate on the development of HR besides other resources. Recently all airlines have focused Human Resource in order to make its performance outrageous. On this basis airline is chosen for this research assignment. Some of the HR programs which airline pursued were,

- ✓ Individual Learning;
- ✓ Individual Employee Development;
- ✓ Putting People First;
- ✓ Managing People First etc.

Understanding the human psychology helps the organization in providing better customized services to its customers which is very important for the organization. These changes ensure the success of the organization in the international market.

In this modern business world, competition is increasing day by day and in this competitive business world the airline industry performs its activities effectively and efficiently to survive successfully. Service is the core product of this industry. Besides services, the organization also needs to confirm the safety of the people and products. There are three main characteristics of this industry which mostly affects the HRM practices in the organization. These three characteristics are:

Firstly, the competition in the market is mostly influenced by performance. Ease and time saving transportation system, actually improves the level of competition in the market. Many organizations in this world now depend upon the airline industries for the transportation of the products, people, and posts. Previously, the airline companies mainly focused on the products and services but with the changing concept, the airline industries are now concentrating on the development of the people within the organization.

Secondly, ensuring the safety of the customers, products, and parcels is the most important part of activities of the airline industry. This characteristic is built in the system of the airline industry. During that moment, the airline industry needs to focus on the security system which is very essential for the safety of the customers as well as the products. This actually ensures the performances of this industry. The managers of airline industry need to be trained in order to provide better service to the customers. In the airline industry, the people of different cultures, languages and countries travel from one place to another. Thus to support those customers, the employees of the organization needs to be capable of communicating with those customers otherwise, it will be difficult for the organization to provide their best services to the customers. The values and ethics of the customers also vary from each other. Some comments may hurt the others whereas other may take it as a joke. Thus it is essential to have a clear understanding of the values and ethics of the people from different countries for the betterment of the organization.

Finally, for the betterment of the organization, the airline industry mostly focuses on providing quality and quick services to the customers. Based on the services, customers get motivated towards the organization and also try to influence

others to take the services of this organization which ultimately ensure the growth of the organization. This actually helps in avoiding high marketing costs of the organization.

The organization also tries to motivate employees to enhance the drive for learning something which will be beneficial for the personal and professional life. The development of the employees itself ensures development of the organization. To provide better services to the customers, airline also ensures a separate customer services department which will be responsible for providing all the information related with their services and also helps them by selling tickets to them. In this case, the organization provides equal chance to everyone. The organization goes for choosing the best person for this service.

The HRM department of airline also focuses on the improvement of interpersonal relationships among the employees of the organization. The supporting mentality among the employees helps them in providing best services to the customers. However, the organization also tries to treat its employees fairly and equally. Besides this, the organization offers different other benefits to the employees which also attracts them to stay within the organization and to provide their best services to the customers which will be better for the organization. This process helps the airline in ensuring the growth of the organization in the international competitive market.

The Company has experienced a lot of downfalls and threats over the past decades. However, the company's HRM department had started with heart and soul to achieve the company's corporate objectives. Two training programs were designed to train staff and managers where the first training program 'Putting People First' helped the staff to understand how the image of helpfulness satisfy the customers and the second training program 'Managing People First' evoked the managers to breakdown the strict approach and strict behavioral boundaries. A significant cultural change was observed in the organization on successful implementation of these training programs.

Research Methodology

In order to be industry leader the organization is now focusing on the improvement of the employees, who provide the services to the customers to ensure their satisfaction level over the organization's services and products. Saunders, Lewis, and Thornhill (2007) have developed a research model for the proper understanding of the research activities which is named as the “Research Onion Model”. All the elements of the research onion model have been covered in the following.

Research Approach

Another important part of the research onion model is the research approach. Basically there are two types of research approaches available- Inductive and Deductive. For the completion of this study, both the approaches will be covered. In the deductive approach, the research activities consider the hypothesis developed by the researcher based on the research.

The deductive approach is based on different types of data collection processes along with the settlement of hypothesis, development of theories and effective observation process. The positivism philosophy is the appropriately aligned with this approach.

On the other hand, the inductive approach is quite easy for the researcher to perform. This theory is not developed based on some predetermined theories in order to conduct the research activities. The observation process is the best process for this approach. Based on observation, the researcher will try to identify the problems in order to achieve the overall objectives of this research.

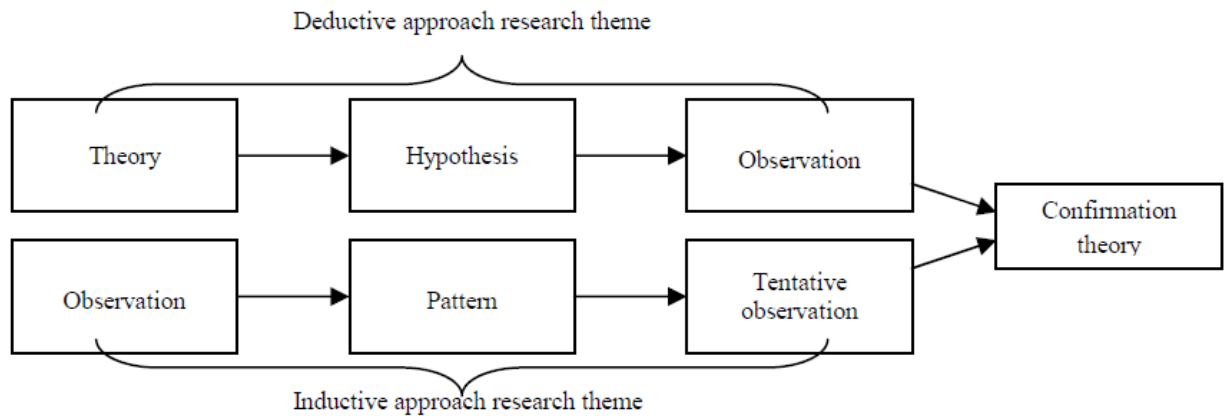


Fig. 1.1 Deductive and inductive approach research theme

Both the deductive and inductive approach will be covered in this study. On the other hand, to support the positivism and interpretivism philosophy of this study both the approach will be required.

Following hypothesis will help the researcher in developing proper findings in order to achieve the research aims and objectives.

Table 1.1

Hypothesis to achieve the research aims and objectives

Hypothesis		Result
H1:	There is a positive relationship between employee attitudes and managed performance.	Supported or not
H2:	There is a positive relationship between performance management practices and employee attitudes.	Supported or not
H3:	There is a positive relationship between performance management practices and managed performance.	Supported or not

In order to complete the research activities properly and effectively both the quantitative and qualitative methods will be used in this study. The success

of this study will be ensured by the proper cooperation of the research approach, philosophy, methods and strategies.

Besides the statistical information sometimes for the study completion purpose the observation of the employees and the customers will also be required. The proper combination of these two methods is known as the mixed method. This study will cover the mixed method for the successful completion of the study.

Research Strategies

In order to perform the research activities, it is essential to ensure the strategies of the study. The research strategy actually will help the researcher in collecting the required information through a systematic process or channel. In this study, the experimental strategy will help the researcher in gathering the information. However, the interview, survey and case study process will also contribute a lot in this case.

In this study to gather related information, the survey, interview and secondary data available on the World Wide Web will help in gathering required information. Thus deductive approach will help in gathering the information from the secondary sources whereas the inductive approach will cover the primary information.

Research Nature

There are three different kinds of research i.e. exploratory, explanatory, and descriptive. The present study will fall in the explanatory nature because it elaborates the effect of performance management practices on human resource managed performance.

Research Techniques

The study would use a systematic research and interviews as research strategy to collect study data. The deductive approach would use secondary data from a systematic literature review because a survey would be expensive in terms of time

and resources to collect data in either longitudinal or repeat studies, which will sufficiently explain the effect of performance management (HR) practices on managed performance over a period, for example in 2-4 years, instead of data collected in one survey that will be inadequate.

On the other hand, the inductive approach would gather primary data from a panel of experts. The panel of experts would be sampled using judgmental sampling to find experts on human resource who have the relevant knowledge and are available for the study. Interviews would be used to collect data because it is able to collect comprehensive data because it allows for clarification of unclear responses.

Ethical and Access Issues

Research ethics covers the conduct and behavior of the researcher while conducting a research activity. As the information will be gathered from both secondary and primary sources proper validation of the gathered information will be done by the researcher.

All the information used in this study will be current, for having a clear picture of the present condition in the airline. However, all the information regarding the information providers will keep secret and the information will be used for the research purpose only.

Conclusion

The quality services and service delivery of the employees help in achieving the trust of the customers and gaining the satisfaction. Customers are the all in all in this sector as the organization is a service based organization. However, the growth of this organization mostly depends upon the improvement of its employees who actually deliver quality services.

It is expected that the process of continuous improvement of the outlook that attempts to explain P.M practices in achieving managed performance in organization will continue to undergo changes & also be carried out to establish the intervention effects of employee attitudes between P.M & managed performance.

2. ANALYTICAL PART

Air Transportation Management Department				NAU.20.07.42 003EN				
Done by:	<i>Dmytro Dubskyi</i>			2. ANALYTICAL PART	Letter	Sheet.	Sheets	
Supervisor:	<i>Valentina Konovalyuk</i>					D	49	58
Standards Inspector	<i>Yuliia V. Shevchenko</i>				<i>FTML 275 OII- 202Ma</i>			
Head of the Department	<i>Shevchuk D. O.</i>							

Based at Istanbul's Ataturk International Airport, Turkish Airlines (THY) is the national airline of Turkey and the country's largest carrier. Turkish Airlines (see Fig.2.1.) operates a network of domestic and regional services throughout Turkey and the Middle East and international services to Europe, Africa, North America, South America and Asia. The carrier operates passenger services to over 270 destinations via Ataturk International Airport as well as secondary hubs at Esenboga International Airport and Adnan Menderes International Airport. Turkish Cargo is a freight division of the carrier, operating services to over 100 countries across its network. Turkish Airlines is also a member of the Star Alliance.



Fig.2.1. Logo of the company

Turkish Airlines runs a maintenance center at Istanbul Atatürk Airport. The maintenance center, called Turkish Technic, is responsible for the maintenance, repair and overhaul (MRO) of Turkish Airlines and third party aircraft, including airframe, landing gear, APU and other subsystems.

Turkish Technic opened an engine center in partnership with Pratt & Whitney at Sabiha Gökçen International Airport (SAW) called TEC (Turkish Engine Center) in January 2010. The facility provides engine maintenance, repair and overhaul services to customers worldwide.

Turkish Airlines won the Skytrax awards for Europe's Best Airline, Southern Europe's Best Airline, and the World's Best Premium Economy Class Airline Seat for three consecutive years in 2011, 2012 and 2013. It retained its status as the top European airline in 2014, 2015 and 2016, thereby holding the title for six years in a row. Additionally, Turkish Airlines was selected the Airline of the Year by Air

Transport News at the 2013 Air Transport News Awards Ceremony. In November 2017, Turkish Airlines was recognized as "The World's 16th Best Airline For Business Travel" by the CEOWORLD magazine.

Also Turkish Airlines is the 6th largest airline in Europe (see Fig.2.2.) by total scheduled and chartered passengers.

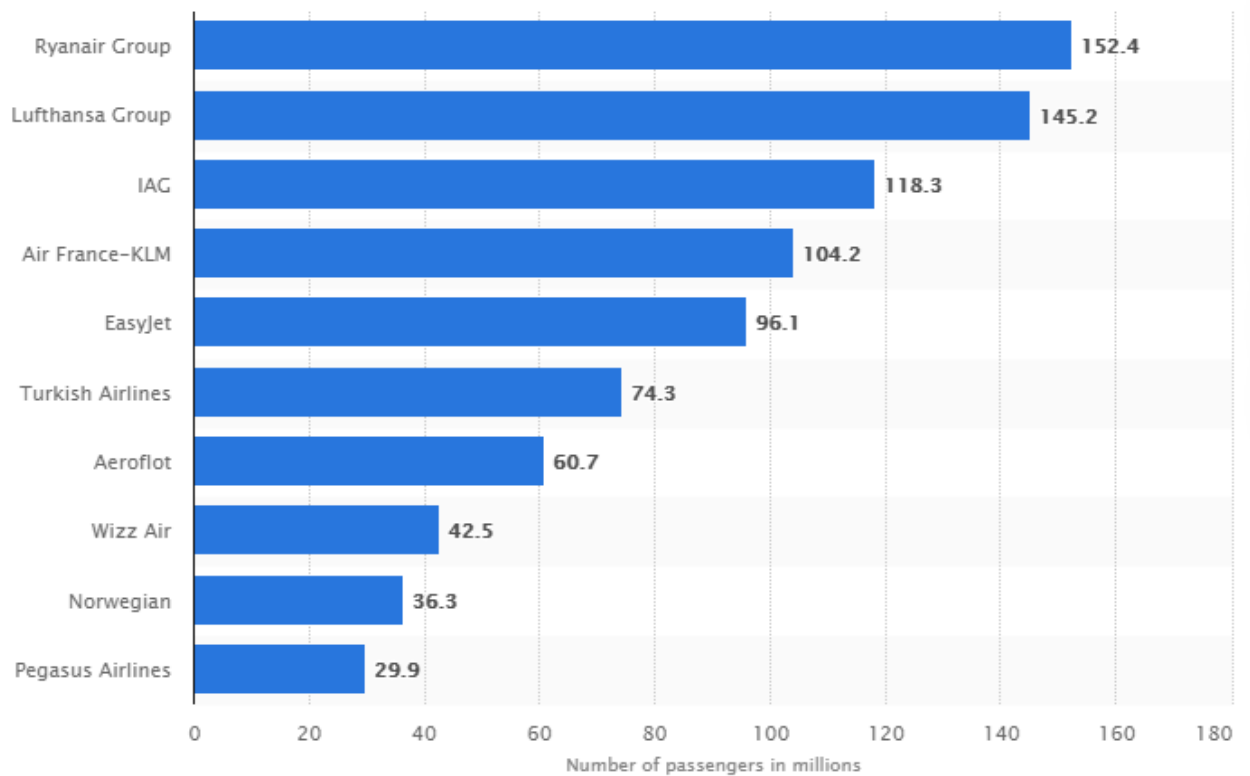


Fig.2.2. Largest European airlines and holdings (number of passengers carried in 2019)

2.1.2 Turkish Cargo

Turkish Cargo transports cargo to more than 290 destinations (see Fig.2.3.) and more than 116 countries by using Turkish Airlines passenger aircraft bellhold cargo

capacity. Additionally, provide scheduled cargo flights to many destinations with freighters.

Also, Turkish Cargo uses Interline/SPA agreements in cooperation with other airlines to expand its network to provide more routing options to business partners. Currently, Turkish Cargo has SPA (Special Prorate Agreement) with over 80 airlines. These agreements open up new markets for the two airline's customers.

Turkish Cargo have SPA agreements for offline destinations such as Australia (Sydney, Melbourne, Perth), New Zeland (Auckland), capital cities in Latin America and Africa.



Fig.2.3. Flight route map of Turkish Cargo in 2019

Turkish Cargo can also accept cargo for many destinations in Far East via Interline agreements.

The interline agreements work on new destinations where TK have no flights, to meet customer demand. By providing this kind of solutions Turkish Cargo is going to make more contribution to the international logistic solutions. When we look at the air cargo industry, the increase of cargo capacity in excess of the capacity offered in

recent years, the deficiency in global trade, oil prices and prices in downfall trend have a critical importance for air cargo profitability predictions. The demands shifting towards the maritime transport stand out as a thread in terms of the air cargo market. Wide-body passenger aircraft deliveries bring along a remarkable additional cargo (belly cargo) capacity. Particularly, in certain lines of merchandise, wide-body passenger aircraft will be effective in determining the dynamics of these markets, thanks to the additional cargo capacity they bring along. According to IATA figures, cargo capacity in 2016 increased by 5.3% while cargo traffic rose by 3.8%, falling behind the available capacity. This has led to a decrease in cargo load factor. Cargo load factors receded down up to 43% levels.

Air cargo carriers have been developing different strategies against demanding and varying market conditions. Joint Business Agreements are made between the carriers. Some air cargo companies establish new companies with local partners in different countries, to expand outside their own target markets. Therefore, they distribute the potential risks by appearing in diverse markets.

A number of significant carriers turn to special cargo (livestock, previous cargo, medicine, etc.), aiming at standing out with different and special services they offer in the shrinking market. Airlines intend to step forward in the competition with loyalty programs they began to offer to the cargo customer, just like the passenger loyalty programs.

Another strategy followed by some airlines focusing on cost-reducing measures is to discontinue the flights which suffer losses and purchase cargo aircraft capacity from a secondary air carrier in an effort not to lose their major cargo markets. New cargo terminal projects or capacity boosting projects of some air carriers based in Middle East and Europe, focusing on some special cargo types for the future, draw the attentions.

According to the prediction of DHMI (State Airport Administration), in 2019, it is expected to achieve an increase by 3.5% in Turkish domestic cargo shipping; 10.2% in Turkish international cargo shipping. In 2018, increase rate in domestic flights was 3.6% and increase rate in international flights was 10.8%. These figures

will allow us to deduce that the State Airports Administration has a cautious optimism.

2.2 Turkish airlines destination network and cooperation with other airlines

2.2.1 Destination network

Turkish Airlines flies to 49 domestic and 250 international destinations in 120 countries, excluding those only served by Turkish Airlines Cargo. Following is a table of destinations Turkish Airlines and Turkish Airlines Cargo fly to as part of scheduled services, as of May 2019. The table 2.1 includes number of countries, cities and airports (domestic and international).

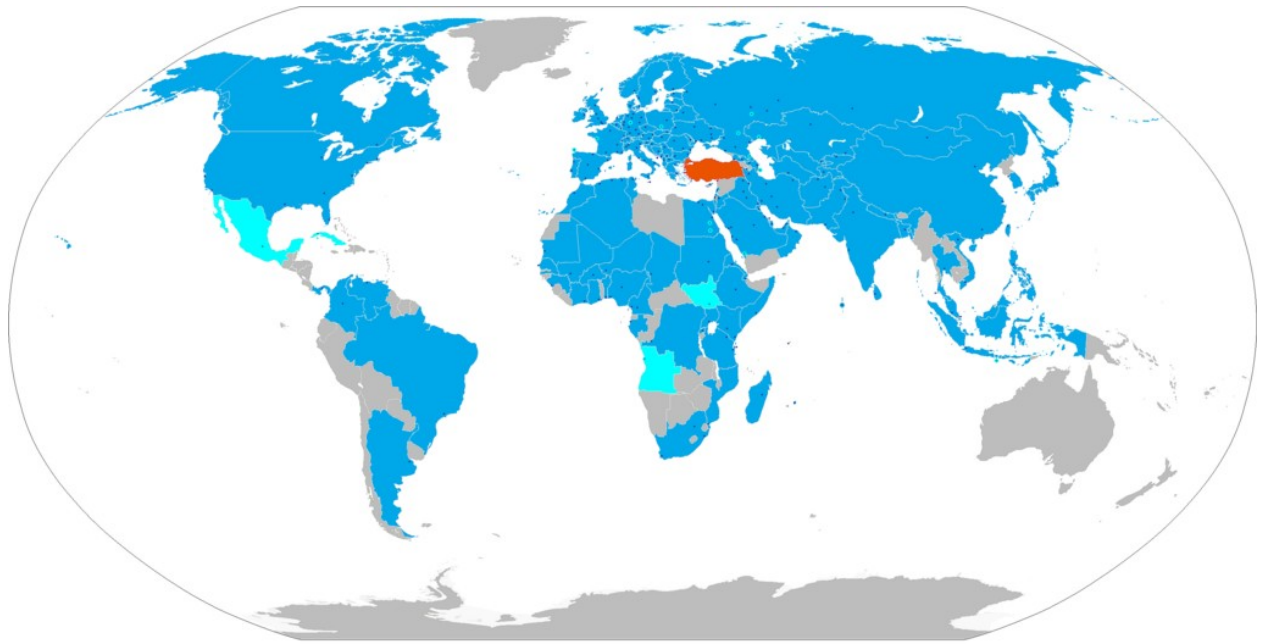
Table 2.1.

Number of routes served by Turkish Airlines

Region	Country	City	Airport
Domestic	1	49	51
International	119	250	251
Europe	43	113	114
Far East	22	35	35
Middle East	13	34	34
Africa	33	51	51
America	8	17	17
Total	120	299	302

The continents with most destinations outside Turkey are Europe with 113 (including Transcaucasia, Cyprus and Siberia), Asia with 61, Africa with 51 (including Sinai Peninsula) and the Americas with 17. Outside Turkey, the countries with the largest number of airports served by the carrier are Germany with 14; Russia with 10; Italy and the United States with 9; France, Saudi Arabia and Ukraine with 7; Iran with 6; Spain and the United Kingdom with 5 each.

The map of Turkish Airlines became wider every year. Actual situation can be shown at Fig.2.4.



- Turkey
- Turkish Airlines destinations in 2017
- Future destinations already announced by Turkish Airlines

Fig.2.4. Destination map of Turkish Airlines in 2019, including announced future destinations.

Table 2.2.

List of routes served by Turkish Airlines

International	Abidjan, Abu Dhabi, Abuja, Accra, Addis Ababa, Ahvaz, Alexandria, Algiers, Almaty, Amman, Amsterdam, Antananarivo, Ashgabat, Asmara, Astana, Athens, Atlanta, Baghdad, Baku, Bamako, Barcelona, Bari, Basel, Mulhouse, Freiburg, Basra, Batumi, Beijing, Beirut, Belgrade, Berlin, Bilbao, Birmingham, Bogota, Bologna, Bordeaux, Boston, Bremen, Brussels, Bucharest, Budapest, Buenos Aires, Cairo, Cape Town, Caracas, Casablanca, Catania, Chicago, Chisinau, Cluj-Napoca, Cologne Bonn, Colombo, Conakry, Constanta, Constantine, Copenhagen, Cotonou, Dakar, Dammam, Dar es Salaam, Dhaka, Delhi, Djibouti City, Dnipro, Doha, Douala, Dubai, Dublin, Dubrovnik, Durban, Dushanbe, Duddeldorf, Edinburgh, Entebbe, Frankfurt, Friedrichshafen, Ganja, Gassim, Geneva, Gothenburg, Graz, Guangzhou, Hamburg, Hanoi, Havana, Helsinki, Ho Chi Minh City, Hong Kong, Houston, Hurgada, Isfahan, Islamabad, Karachi, Karlsruhe Baden-Baden, Kathmandu, Kazan, Kharkiv, Khartoum, Kherson, Kiev, Kigali, Kilimanjaro, Kinshasa, Kosice, Kuala Lumpur, Kuwait City, Lagos, Lahore, Leipzig, Libreville, Lisbon, Ljubljana, London, Los Angeles, Luxembourg City, Lviv, Lyon, Madrid, Mahe, Malaga, Male, Manama, Manchester, Manila, Maputo, Marseilles, Mashhad, Mazar-i-Sharif, Medina, Miami, Milan, Minsk, Mogadishu, Mombasa, Montreal, Moscow, Munich, Mumbai, Muscat, Munster Osnabruck, N Djamena, Nairobi, Najaf, Nakhchivan, Naples, New York City, Niamey, Nice, Nicosia, Nouakchott, Nuremberg, Odessa, Oran, Oslo, Ouagadougou, Panama City, Paris, Phuket, Pisa, Podgorica, Port Louis, Porto, Prague, Pristina, Riga, Riyadh, Rome, Rostov-on-Don, Saint Petersburg, Salzburg, Samara, San Francisco, Sarajevo, Seoul, Shanghai, Sharm El Sheikh, Shiraz, Singapore, Skopje, Sochi, Sofia, Stavropol, Stockholm, Stuttgart, Sao Paulo, Tabriz, Taif, Taipei, Tallinn, Tashkent, Tbilisi, Tehran, Tel Aviv, Thessaloniki, Tirana, Tokyo, Toronto, Toulouse, Tunis, Turin, Ufa, Ulaanbaatar, Valencia, Valletta, Varna, Venice, Vienna, Vilnius, Voronezh, Warsaw, Washington D.C., Yanbu, Yaounde, Yekaterinburg, Zagreb, Zanzibar, Zurich
Domestic	Adana, Adiyaman, Agri, Alanya, Ankara, Antalya, Batman, Bingol, Bodrum, Bursa, Canakkale, Dalaman, Denizli, Diyarbakir, Edremit, Elazig, Erzincan, Erzurum, Gaziantep, Hakkari, Hatay, Isparta, Istanbul, Izmir, Igridir, Kahramanmaras, Kars, Kastamonu, Kayseri, Kocaeli, Konya, Kutahya, Malatya, Mardin, Merzifon, Mus, Nevsehir, Ordu/Giresun, Samsun, Sanliurfa, Sinop, Sivas, Sirnak, Tekirdag, Trabzon, Van

2.2.2 Turkish Airlines as a Star Alliance Member

Turkish Airlines is a member of Star Alliance (see Fig.2.5.) - the world's largest airline community, consisting of 26 members from leading companies in the global aviation sector. Star Alliance was established on May 14, 1997, and Turkish Airlines joined in April 2008, becoming its 21st member. This membership allows customers to benefit from a wider flight network, special passenger programs, and special offers.



Fig.2.5. Airlines Star Alliance Members

Star Alliance in figures:

- ✓ 4,338 aircraft
- ✓ 18,000 flights a day
- ✓ 439,232 employees
- ✓ 1,269 airports
- ✓ 193 countries
- ✓ Over 1,000 private passenger lounges

2.2.3 Codeshare agreements of the airline

Turkish Airlines **codeshares** with the following airlines:

Table 2.3.

Turkish Airlines codeshares

Adria Airways	Aegean Airlines	Air Algérie
Air Astana	Air Canada	Air China
Air Europa	Air India	Air Malta
Air Namibia	Air New Zealand	All Nippon Airways
Asiana Airlines	Avianca	Avianca Brazil
Azerbaijan Airlines	Belavia	Copa Airlines
Croatia Airlines	EgyptAir	Ethiopian Airlines
Etihad Airways	EVA Air	Garuda Indonesia
Gulf Air	Hawaiian Airlines	Iran Air
JetBlue	LOT Polish Airlines	Luxair
Middle East Airlines	Malindo Air	Oman Air
Pakistan International Airlines	Philippine Airlines	Royal Air Maroc
Royal Brunei Airlines	Royal Jordanian	RwandAir
Scandinavian Airlines	Singapore Airlines	TAP Air Portugal
Thai Airways	Ukraine International Airlines	United Airlines
Utair	Uzbekistan Airways	

2.3 Fleet of Turkish Airlines

As of December 2019, the number of aircraft in the Turkish Airlines fleet is 350 including 23 cargo aircraft, with an average fleet age of 8.3 years. On March 9, 2018, in order to ensure the need for wide body aircraft, the Incorporation has decided to purchase B787-9 and A350-900 type aircraft from Boeing and Airbus. On March 15 and April 9, 2013, in order to insure the need for single-aisle passenger aircraft, the Incorporation had decided to purchase 92 A321 NEO and 75 B737 MAX aircraft from Airbus and Boeing. Twelve A321 NEO aircraft and five B737-8 MAX aircraft of these order has been delivered by the end of December 2019. By the end of December 2019, the operation has been carried out by 97 double-aisle passenger aircraft, 230 single-aisle passenger aircraft and 23 cargo aircraft. Double-aisle aircraft constitute about 28 % of the total number of aircraft in fleet. Due to the effect of

stage length and seat capacity, contribution of wide body aircraft to the production is more than 50%.

As of September 2020, the Turkish Airlines fleet consists of the following aircraft

Table 2.4.

Passenger and cargo fleet of Turkish Airlines in 9 mounts 2020

Aircraft	In service	Orders	Passengers		
			C	Y	Total
Turkish Airlines passenger fleet					
Airbus A319-100	6	—	12	114	126
Airbus A320-200	14	—	12	141	153
Airbus A321-200	66	—	12	176	188
			20	158	178
Airbus A321neo	22	-	20	162	182
Airbus A330-200	14	—	22	228	250
			30	190	220
			22	259	281
Airbus A330-300	40	—	28	261	289
Airbus A340-300	4	—	34	236	270
Airbus A350-900	2	23	32	297	329
Boeing 737-800	100	—	16	135	151
			12	147	159
			20	135	155
Boeing 737-900ER	15	—	16	135	151
Boeing 737 MAX 8	11	65	16	135	151
Boeing 737 MAX 9	1	10	TBA		
Boeing 777-300ER	33	—	49	300	349
			28	372	400
Boeing 787-9	15	25	TBA		
Turkish Airlines cargo fleet					

Airbus A300-600F	1	—	Cargo
Airbus A310-300F	2	—	Cargo
Airbus A330-200F	10	—	Cargo
Boeing 747-400F	4	—	Cargo
Boeing 777F	8	—	Cargo
Total	364	174	

In October 2016, due to a downturn in domestic air traffic, the airline announced it was delaying delivery of 39 Boeing and Airbus aircraft (exact details were not specified) from its outstanding commitments for 167 aircraft (92 Airbus A321neos, 65 Boeing 737 MAX 8 and 10 Boeing 737 MAX 9s). It is set to receive just 10 of 32 aircraft due in 2018, but all outstanding orders are expected to be fulfilled by 2023 (see Fig.1.6.). On 26 June 2019, the first Boeing 787-9 Dreamliner from the airline's March 2018 order was delivered to the airline [23].

In August 2019, Turkish Airlines chairman İker Aycı stated that the carrier was looking into receiving its orders of long-haul aircraft, such as the Airbus A350-900, earlier than planned. In addition, the airline is interested in the Airbus A220 and Embraer E190/E195 in order to serve new destinations.

30.09.2020	Type	Total	Owned	Financial Lease	Opr./Wet Lease	Seat Capacity	Average Fleet Age
Wide Body	A330-200	14	5		9	3.702	12,6
	A330-300	40		29	11	11.826	6,7
	B777-3ER	33		27	6	11.670	6,9
	B787-9	14		14		4.200	0,7
	Total	101	5	70	26	31.398	6,8
Narrow Body	B737-900ER	15		15		2.355	7,3
	B737-9 MAX	1		1		169	1,6
	B737-800	84	30	32	22	13.851	11,0
	B737-8 MAX	11		11		1.661	1,8
	A321 NEO	21		13	8	3.822	0,9
	A319-100	6		6		792	9,4
	A320-200	14	9	3	2	2.232	13,0
	A321-200	66	13	49	4	12.016	8,1
	B737-800 WL	16			16	3.024	15,5
Total	234	52	130	52	39.922	9,0	
Cargo	A330-200F	10	1	9			6,9
	B777F	8		8			1,7
	Wet Lease	7			7		25,0
	Total	25	1	17	7		10,3
GRAND TOTAL	360	58	217	85	71.320	8,4	

Fig.2.6. Characteristics of actual fleet of Turkish Airlines in September 2020

Turkish Airlines has signed a Memorandum of Understanding (MoU) to acquire 25 A350-900 aircraft plus five options, underlining its strong confidence in the global market-dynamism and growth.

“This significant order will continue to enable our flag carrier to further compete, expand and reach new short and long-range destinations nonstop from our hubs in Istanbul, and Ankara.” said M. İlker Aycı, Turkish Airlines Chairman of the Board and the Executive Committee. “As Turkish Airlines, we are committed to offering our passengers on every route the best flying experience possible and we order on that promise as the Airbus’ A350 XWB provide comfort and convenience in spacious cabins, all matched with seamless reliability.”

2.4 Review of Turkish Airlines Subsidiaries

2.4.1 Turkish Aviation Academy

The Company was established on 21 June 2012 as a wholly-owned subsidiary of Turkish Airlines. Yet to commence operations, it was established to operate Aydın Çıldır Airport, provide aviation training, organize sports-training flights and conduct all activities related to the transportation of passengers with aircraft types appropriate to prevailing runway length. The airport is used as a base for Turkish Airlines Flight Academy and since the first half of 2013 provides flight training for Turkish Airlines Pilot Nominees.

As of 31 December 2017, Company has 33 employees. Name of the company has been changed from THY Aydın Çıldır Havalimanı İşletme A.Ş. to THY Uçuş Eğitim ve Havalimanı İşletme A.Ş.

2.4.2 THY Airport Real Estate Investment and Operation

The Incorporation has decided to establish, "THY Havaalanı Gayrimenkul Yatırım ve İşletme Anonim Şirketi", in order to operate principally in the fields of airport operations and investments and also according to the fields of other activity that is specified in the Articles of Association of the Company. The aforementioned Company, which is wholly-owned by Türk Hava Yolları A.O, has been registered by Istanbul Trade Registry Office on 15 November 2017 and is established with the cash capital of 50.000 TRY. (Fifty thousand Turkish Lira).

The Group has nine joint ventures. The affiliates are controlled by the Group jointly, and are accounted for by using the equity method.

The Table 2.5. sets out consolidated joint ventures and indicates the proportion of ownership interest of the Incorporation in these joint ventures as of 31 December 2019.

Table 2.5.

Turkish Airlines Subsidiaries

Name of the Company	Principal Activity	Direct	Indirect	Country of Registration
		Participation Rate	Participation Rate	
Sun Express Turkey	Aircraft Transportation	50%	-	Turkey
Turkish DO&CO	Catering Services	50%	-	Turkey
Turkish Ground Services	Ground Services	50%	-	Turkey
Turkish Opet Aviation Fuels Aircraft Seat Manufacturing	Aviation Fuel	50%	-	Turkey
Industry & Trade, Inc.	Cabin Interior	45%	5%	Turkey
Turkish Cabin Interior Systems Industries, Inc.	Cabin Interior	30%	20%	Turkey
Pratt Whitney THY Turkish Engine Center (TEC)	Maintenance	-	49%	Turkey
Goodrich Turkish Airlines Technical Service Center	Maintenance	-	40%	Turkey
Tax Free Zone, Inc. (Tax Refund)	VAT Return and Consultancy		-	Turkey

Sun Express – Turkey

Founded in 1989, SunExpress is a joint venture of Turkish Airlines and Lufthansa, in which each holds a 50% stake. The Company has a fleet of 22 aircraft for AnadoluJet operations of THY and with a fleet of 27 aircraft serves its customers in both charter and scheduled business with 3,768 employees as of 31 December 2016.

SunExpress flies to 15 domestic and 70 international destinations, which brings the total number to 85 destinations. In 2011, SunExpress Germany was founded as a joint venture of Stiftung and SunExpress, in which each holds %50-50 stake. As of 31 December 2016, SunExpress Germany conducts operations to 12 domestic and 29 international destinations with its 14 Boeing 737-800 passenger aircraft.

Turkish DO&CO

Founded in September 2006, commencing operations in 2007, Turkish DO&CO is a joint venture of Turkish Airlines and DO&CO Restaurants & Catering AG (Austria based), in which each holds a 50% stake. The Company provides inflight catering services to Turkish Airlines and other domestic and international airlines.

As of 31 December 2016, 4,606 employees are working for the Company.

Turkish Ground Services (TGS)

The Company was established on 26 August 2008 as a wholly-owned subsidiary of Turkish Airlines, in order to provide ground-handling services. By signing the articles of association in the framework of the Board Decision dated on 19.12.2008, 50% of shares was transferred to HAVAŞ Havaalanları Yer Hizmetleri A.Ş. On 1 January 2010, the Company began to provide services to Turkish Airlines. The Company provides ground services for Turkish Airlines in 8 airports in Turkey. TGS is employing 9,711 personnel as of 31 December 2016.

Turkish Opet Aviation Fuels

Turkish Opet Aviation Fuels, established in 2009, engages in the domestic and international sale, importation, exportation, distribution, and transport of various petroleum products, chemicals, lubricants, and paints for all kinds of aircraft. The Company commenced operations on 1 July 2010. Kuzey Tankercilik A.Ş. and Güney Tankercilik A.Ş., were established on 1 November 2012, as wholly owned subsidiaries of THY Opet Havacılık Yakıtları A.Ş. in order to provide transportation of petroleum and petroleum products. As of 31 December 2016, the Incorporation has 436 employees.

Aircraft Seat Manufacturing Industry & Trade, Inc.

Founded in 2011, the Company was set up to design and manufacture airline seats, and to make, modify, market, and sell spare parts to Turkish Airlines and other international airline companies. Stakes of 50%, 45%, 5% are respectively held by Assan Hanil Group, Turkish Airlines, and Turkish Tecnic. As of 31 December 2016, 91 employees are working for the company.

Turkish Cabin Interior Systems Industries, Inc.

Established in December 2010, TCI's objective is to undertake the design, manufacture, logistical support, modification, and marketing of aircraft cabin interior systems and components. Stakes of 30%, 20% and 50% are held respectively by Turkish Airlines, Turkish Technic and Türk Havacılık ve Uzay Sanayi A.Ş. (TUSAŞ – TAI). As of 31 December 2016, the Company has 134 employees.

Pratt Whitney THY Turkish Engine Center (TEC)

The Company provides aircraft engine maintenance, repair, and overhaul services to customers in Turkey and its hinterland. Established on 10 October 2008, stakes of 49% and 51% are held respectively by United Technologies, a subsidiary of Pratt&Whitney, and Turkish Airlines. Operating out of a maintenance center with an area of around 25,000 m² at Istanbul Sabiha Gökçen International Airport, 329 employees as of 31 December 2016.

Goodrich Turkish Airlines Technical Service Center

Established in 2010, the Goodrich Turkish Airlines Technical Service Center is a joint venture of Turkish Technic (40%) and TSA-Rina Holdings (60%), the latter a subsidiary of Goodrich Corporation. Services for maintenance and repair of nacelles, thrust reversers, related parts and rotatable support is provided. As of 31 December 2016, the Company has 33 employees.

Turbine Technical Gas Turbines Maintenance & Repair, Inc.

Established on 28 June 2011, as a joint venture of Turkish Technic and Zorlu O&M Enerji Tesisleri İşletme ve Bakım Hizmetleri A.Ş., in which each holds a 50% stake, in order to provide maintenance, repair and overhaul services for gas turbines and industrial gas turbines. As of 08.12.2016, Türk Hava Yolları Teknik A.Ş. (Turkish Technic) has transferred of its shares in Turkbine Teknik Gaz Türbinleri Bakım Onarım A.Ş (50% held by Turkish Technic) to Zorlu O&M.

Tax Free Zone, Inc. (Tax Refund)

The Company is established on 1 September 2014 as a joint venture of THY (30%), Maslak Oto (45%) and VK Holding (25%) to carry out brokerage operations of value added tax return regarding the goods bought in Turkey by non-residents. As of 31 December 2016, 19 employees are working for the company.

The Incorporation is responsible for the full and joint control over subsidiaries and affiliates through Board of Directors. In addition, operations of subsidiaries and affiliates are monitored by Senior Vice President of Subsidiaries located within the means of the Parent Company. The internal audit and control functions in the

Incorporation are carried out by SVP of Inspection Board, SVP of Quality Assurance and other relevant expertise and financial departments.

2.5 Organizational Structure and human resources of Turkish Airlines

As of 30 September 2020, the number of countries served has reached to 127. General Management and all central units are gathered around Istanbul Ataturk Airport. Organization chart of Turkish Airlines, as of 30 September 2020 is shown on the next page. (see Fig.2.7.).

The Board of Directors is comprised of nine members elected by the general assembly. At least eight out of nine Board Members should be elected from Class A shareholders with the highest vote, and one member should be chosen from among Class C share shareholders. At least six Board Members, including the Board Member representing the Class C share, must be Turkish citizens. The term of office for Board Members is 2 years. The General Assembly may terminate the membership of a Board Member before the end of his/her term. Board Member whose term has expired may be reelected.

Three members of the Board of Directors are appointed to the Executive Committee, and the other six are non-executive members. Among the non-executive Board of Directors three are independent members of the Board. Therefore, Turkish Airlines Chairman of the Board of Directors and Executive Committee is the same person, the CEO is not the Chairman of the Board of Directors. No one has unlimited power to make decisions in Turkish Airlines.

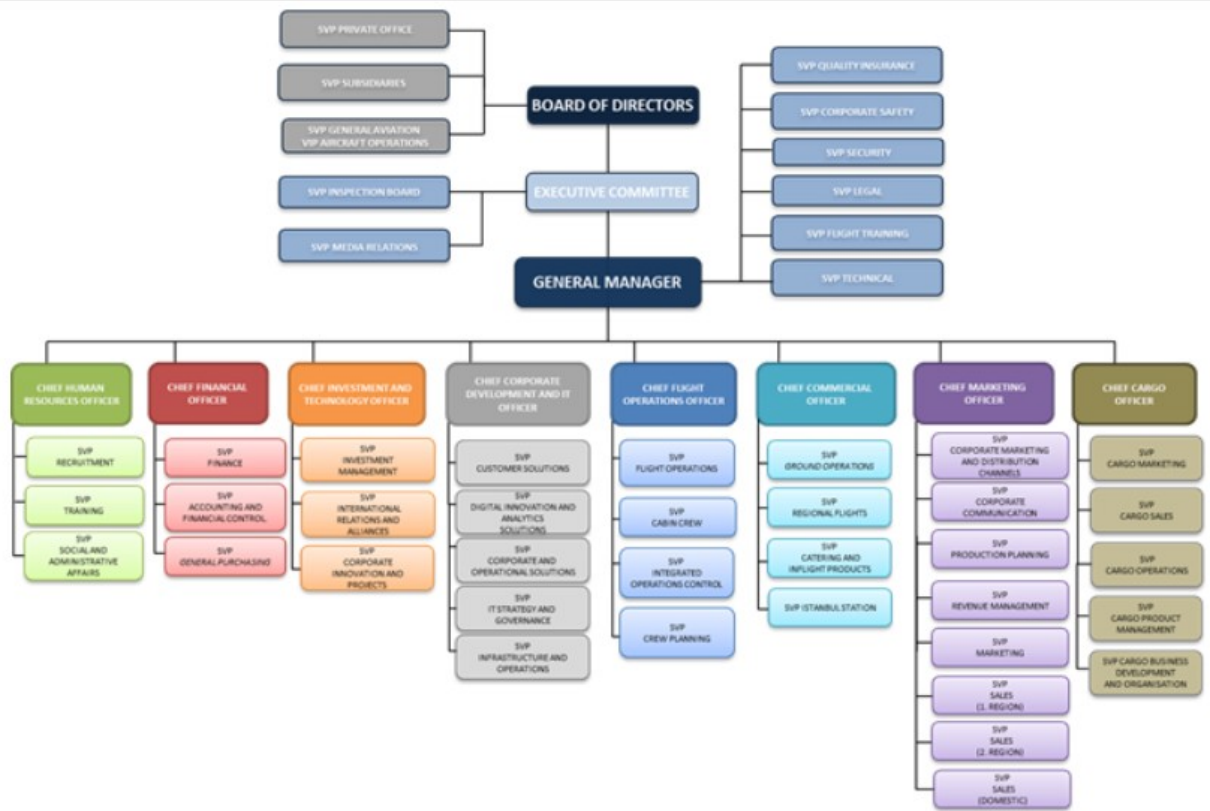


Fig. 2.7. Organization structure chart of Turkish Airlines

Number of personnel decreased by 2% to 28,807 as of September 2020 from 29,344. Personnel numbers according to classes are as follows:

Table 2.6

Number of personnel				
	31.12.2019	30.09.2019	30.09.2020	Change(%)
Cockpit Personnel	5,839	5,674	5,779	2%
Cabin Personnel	9,798	12,237	12,301	1%
Aircraft Maintenance Tech.	72	69	67	-3%
Staff Abroad	3,191	3,487	3,347	-4%
Domestic Staff	7,837	7,877	7,313	-7%
TOTAL	29,491	29,344	28,807	-2%

In Turkish Airlines, Government's shares are in minority but because of the "Golden Share" system which allows Government to control the management, Government has the greatest power among the management.

Members of the Board who were on duty as of 31 December 2019 are listed below in Table 2.7.

Table 2.7

Members of the Board Turkish Airlines

M. İlker AYCI	Chairman of the Board and the Executive Committee
Bilal EKŞİ	Vice Chairman of the Board and the Executive Committee, General Manager
İsmail Cenk DİLBEROĞLU	Member of the Board and the Executive Committee
İsmail GERÇEK	Member of the Board
Prof. Dr. Mecit EŞ	Member of the Board
Orhan Birdal	Member of the Board
Ogün ŞANLIER	Independent Board Member
Arzu AKALIN	Independent Board Member
M. Muzaffer AKPINAR	Independent Board Member

2.6 Sponsorship and promotion agreements of the airline

Turkish Airlines has been the official carrier of several European football clubs such as FC Barcelona, Borussia Dortmund, Galatasaray, Olympique de Marseille, Aston Villa, FK Sarajevo, Hannover 96, and A.S. Roma.

The airline has also made sponsorship and promotion deals with renowned athletes and actors, including Lionel Messi, Kobe Bryant, Caroline Wozniacki, Kevin Costner, Wayne Rooney and Didier Drogba.

The company has been the primary sponsor of the Turkish Airlines Euroleague since 2010 and was among the sponsors of the 2010 FIBA World Championship.

On 22 October 2013, Turkish Airlines and Euroleague signed an agreement to prolong their existing sponsorship deal by five years until 2020.

Turkish Airlines is the sponsor of the Turkish Airlines Open, a European Tour golf tournament played annually in Turkey since 2013.

Turkish Airlines was the kit sponsor of Galatasaray for the 2014–15 UEFA Champions League and for Bosnian club FK Sarajevo. Since then, the airline has also been the kit sponsor for the European campaigns of Turkish clubs such as Fenerbahçe and Başakşehir.

On 10 December 2015, Turkish Airlines and UEFA signed a sponsorship deal for the UEFA Euro 2016, becoming the first airline sponsor of UEFA European Championship tournaments.

On 29 January 2016, Turkish Airlines announced its partnership with Warner Bros. to sponsor the film *Batman v Superman: Dawn of Justice*. In the movie, a pivotal scene unfolds aboard an A330 Turkish Airlines plane. That year, the airline also teamed up with a number of Turkish tourist agencies in the production of romantic comedy film *Non-Transferable*.

2.7 Analysis of business activity of Turkish Airlines

2.7.1 Traffic results

In view of the current situation with the effects of the pandemic on the aviation industry, Turkish Airlines has reviewed its fleet plan and in agreement with Airbus has rescheduled certain deliveries and has adapted the overall outstanding orders to their operational and financial capabilities to ensure a solid basis for the future for the airline. This agreement also takes into account the strong industrial partnership that exists between Airbus and Turkey which is essential in these difficult times of our industry.

January-September 2020 traffic results are shown below:

Table 2.8

Total traffic result for 9 months 2020 Turkish Airlines

	TOTAL		
	2019	2020	Change (%)
Number of Landing (Passenger Flights)	370,724	159,071	-57.1%
Available Seat Km ('000)	140,620,201	56,398,409	-59.9%
Passenger Load Factor (%)	81.4%	73.3%	-8.1 pt
Passengers Carried	56,416,124	21,622,848	-61.7%
Cargo and Mail (Tons)	1,117,038	1,070,359	-4.2%

Table 2.9

Domestic traffic result for 9 months 2020 Turkish Airlines

	DOMESTIC		
	2019	2020	Change (%)
Number of Landing (Passenger Flights)	153,026	80,094	-47.7%
Available Seat Km ('000)	17,097,054	9,374,322	-45.2%
Passenger Load Factor (%)	86.5%	77.6%	-8.9 pt
Passengers Carried	23,420,381	10,643,712	-54.6%
Cargo and Mail (Tons)	51,564	31,161	-39.6%

Table 2.10

International traffic result for 9 months 2020 Turkish Airlines

	INTERNATIONAL		
	2019	2020	Change (%)
Number of Landing (Passenger Flights)	217,698	78,977	-63.7%
Available Seat Km ('000)	123,523,147	47,024,087 -	-61.9%
Passenger Load Factor (%)	80.7%	72.4%	-8.3 pt
Passengers Carried	32,995,743	10,979,136	-66.7%
Cargo and Mail (Tons)	1,065,474	1,039,198	-2.5%

I. Scheduled Domestic Flights:

During January - September 2020, the Incorporation did not start any operating scheduled flights with TK main brand to new domestic destinations.

II. Scheduled International Flights:

During January – September 2020, the Incorporation did not start any operating scheduled flights with TK main brand to new international destinations. Flight Destination Equatorial Guinea – Malabo

Flight Inaugural Date 07.02.2020

III. Additional, Charter and Hajj-Umrah Flights

During January - September 2020, number of additional, charter and Hajj-Umrah flights and number of passengers carried on these flights are stated on the table below:

Number of additional, charter and Hajj-Umrah flights and number of passengers

	Number of Flights		Number of Passengers
	Domestic	International	
Additional	894	1,032	123,553
Charter	1,659	614	178,534
Hajj-Umrah	-	1,392	173,972

By the end of September 2020, the operation has been carried out by 101 double-aisle passenger aircraft, 234 single-aisle passenger aircraft and 25 cargo aircraft. Double-aisle aircraft constitute about 28% of the total number of aircraft in fleet. Due to the effect of stage length and seat capacity, contribution of wide body aircraft to the production is more than 50%.

2.7.2 Analysis of Turkish Airlines activity by regions

Europe

In 2016 the terrorist acts experienced in the European region and decreasing demand have adversely affected aviation industry and forced the air carriers in Europe to seek alternative solutions to get out of the bottleneck suffered due to loss in their revenues. The airlines strive to provide their customers with a better service and communication network, with the bilateral agreements and joint ventures with other air carriers, along with the new strategies they determined, to get out of this bottleneck. This type of agreements was expressed to continue in 2017 as well. Besides, the fact that low-cost air carriers (LCC) have increased their shares forces other air carriers to act through different strategies.

According to IATA data, in 2018, approximately 3% growth is expected in revenues in European region and a decrease is expected in profits per passenger on USD basis. Airlines have made some changes in their end-of-year forecasts as a consequence of the events experienced throughout 2017.

Moreover, the uncertainty caused by the Brexit decision and the impacts of this decision, likely to cause on aviation and entire region, make the air carriers a bit worried. It is still unclear whether the fall of Pound against USD will continue. In 2018, oil prices are expected to be higher compared to 2017. It is expected that this will put an enormous pressure in reducing the costs.

Given all these circumstances in Europe, even though an increase is expected in the revenues and the number of passengers, it is expected that these increases will not be as in the previous year and rates of return will be affected adversely.

Asia

Asia Pacific is a region which involves a fast growing class, consists of 31% of global GDP and plays host to 4 billion people. Asia-Pacific, having the highest passenger capacity share with 30.2% in the world, is the fastest growing market after the Middle East, in terms of annual capacity, traffic and passenger capacity changes. According to IATA data, 7.6% capacity growth and 7% traffic (RPK) growth is expected for 2018 in Asia-Pacific region.

Total net profit of the air carriers in this region, which was 7.3 billion USD in 2017, is estimated to decrease to 6.3 billion dollars in 2018.

Although the busiest lines of the world, in terms of available capacity, are based in Asia-Pacific region, the tension and uncertainty in global economy and strong competition force the leading Asia-Pacific carriers to take some measures. Intense competition, insufficient infrastructure capacity and slot deficiencies at the airports put pressure on ticket prices and profitability. While low-cost carriers in Europe and North America use less-busy and lower-cost secondary airports to help with their recovery, this is not as applicable for the countries in Asia, which in turn creates a cost pressure for low-cost carriers in the region. Regulatory restrictions, infrastructure at the airports and slot deficiencies limit the development of low-cost carriers, too.

Some carriers in the region aim at increasing their flight networks and thus the number of passengers by getting into partnerships with the carriers based in Europe and Gulf Region. Furthermore, the efforts of the eight low-cost carriers within Value Alliance founded in 2016, to establish closer connections, indicate the trends of the low-cost carriers in the region to produce better traffic and financial results in 2017.

Middle East

The oil prices and exchange rate fluctuations that occurred in 2016, economic developments and ongoing social event across the world were the factors that affected the airlines in the Middle East.

While regional airlines increased their capacities by 13.9% in 2016, they underperformed in traffic (RPK) increase with 10.8%. Net profitability in 2016 decreased by 18%.

Regional airlines implemented some actions such as purchasing, establishing strategic partnerships as well as purchasing precious slots, limiting the capacity, shifting the capacity and closing down some of the lines, against the unfavorable developments and increasing protective policies.

In addition, new players emerged in the region as a result of the global developments and as the gaps in the market were filled up.

In 2017, Middle East-based carriers are expected to carry on their investments in the East and West and get into partnerships with other air carriers, in an attempt to both compete with their rivals and spread their risks. Some airlines are expected to review and update the investments they have made in previous years. Besides, the postponing in aircraft orders is expected to continue, with capacity and operation updates which have been disclosed or planned to be disclosed.

In 2018, total net profit of the carriers in the region is expected to decrease by 67%; traffic increase by 9% beyond the two-digit growth trend and the capacity growth by 10.1%.

Africa

Notwithstanding the remarkable growth potential of African Aviation industry, structural issues, ongoing political and economic instabilities, protective and

interventionist nature of the governments and poor management of the companies affect the development of aviation industry.

The negative situation in net profitability, which began in 2012, continued in 2016 and this negative situation is expected to continue in 2018 as well.

While the capacities of African carriers rose by 6.2% and traffics (RPK) by 5.8%, the capacity is expected to increase by 4.7% and traffic (RPK) by 4.5% in 2018. Africa has the lowest load factor among the regions.

North America

The regional airlines which announced remarkable profit figures in 2015 and 2016 have gained more than half of the net profit that the whole region achieved, with a total of 20.3 billion USD net profit figure they announced in 2016. It is expected that similar situation will continue in 2017 and the industry will achieve 18.1 billion USD net profit. While the regional air carriers increased their capacities by 3.8% in 2016, traffic (RPK) growth rose by 3.2%.

The capacity is expected to increase by 2.6% and traffic by 2.5% in 2018.

It also expected that the air carriers of Middle East region would adopt an expansionist policy in North America region and get into a partnership with an air carrier in the region.

South and Central America

Latin America faces challenging market conditions, along with the poor domestic market conditions and depreciating currencies. In the past years, the air carriers in the region have postponed their aircraft deliveries. Infrastructural deficiencies, high taxation and regulatory restraints of some countries within the region are some of the major factors that affect the industry.

The fact that some of the carriers based in Gulf region became partners with the airlines in Latin America and the projects that some of the air carriers based in Middle East, Europe and North America have planned for Latin America, stand out as factors to shape the aviation sector of the region.

2.8 SWOT analysis of Turkish Airlines

SWOT analysis of Turkish Airlines below (Table 2.11):

Table 2.11.

Analysis of competitiveness (SWOT) of Turkish Airlines

Strengths

- Has large fleet size
- Member of Star Alliance which is the global airline networks
- High quality flying experience
- Direct flights to many destinations
- Customer loyalty
- First airline company in Turkey
- Has 67% share in Turkish market
- Huge profit and growth even though European firms made smaller profit
- Has experienced staff
- Has a strong financial structure with the support of the Government
- Good advertising strategies by using famous sports teams(Barcelona, Manchester United) and Hollywood celebrities
- Has profitable subsidiaries such as Anadolujet, Sunexpress, Turkish Airlines Technic, Turkish Airlines Flight Academy
- Is the leader at cargo transportation

Opportunities

- Turkey's geopolitical location
- Its local competitors have limited international flights
- Third airport opening at Istanbul
- Turkey's touristic attractions
- Turkey's high population
- Due to demand increases for abroad, international flights are getting more important
- No visa required for some countries
- Increasing number of travel agencies

Weaknesses

- Higher prices than its competitors
- Most of the flights are only from Ataturk Airport which is not preferred by people located in Asia side of Istanbul
- Has limited participation on social responsibility projects
- Has limited cold beverages (limited sources to satisfy the passenger demands)
- The company website causes bad user experience for their customers

Threats

- New entrants in domestic market
- Change in fuel prices which leads to increased ticket cost to customers
- Risk of international players entering Turkish market
- Terrorist attacks
- Promotions by competitors

3. DESIGN PART

Air Transportation Management Department				NAU.20.07.42 004EN			
Done by:	<i>Dmytro Dubskyi</i>			3. DESIGN PART	Letter	Sheet.	Sheets
Supervisor:	<i>Valentina Konovalyuk</i>					D	
Standards Inspector	<i>Yuliia V. Shevchenko</i>				FTML 275 ОП- 202Ма		
Head of the Department	<i>Shevchuk D. O.</i>						

3.1 Integrated rating of airlines in a competitive market

3.1.1 Technology of the method

The technology consists of the following procedures:

Procedure 1. Determine, on the basis of accounting data, annual performance indicators. To display them in Table 3.1.

Procedure 2. Calculate the operating coefficients (Table 3.2.).

Procedure 3. Calculate reference indicators. The indicators can correspond to the airline's formalized strategy, or the averaged data of the "reference" airline-competitor, equal in number of aircraft and in the number of personnel. Quantitative data is obtained from available databases, directories. For comparison, the relative values of the coefficients are calculated (Table 2.3.).

Procedure 4. Construct analytical charts for all parameters or for individual parameter groups.

Procedure 5. To revise business and management strategy. This is the main objective of the resource analysis of the air carrier.

3.1.2 Choice and brief overview of competitor for analysis

Estimating the market gap in the airline's resources can be performed relatively quickly with the aim of making strategic adjustments and adjusting activities.

For implementation of this method the comparison with another airline is needed. Lufthansa Group was chosen for comparison with Turkish Airlines.

Deutsche Lufthansa (sometimes also as Lufthansa German Airlines), is the largest German airline and, when combined with its subsidiaries, also the largest airline in Europe both in terms of fleet size and passengers carried during 2017. Lufthansa is one of the five founding members of Star Alliance, the world's largest airline alliance, formed in 1997.

Besides its own services, and owning subsidiary passenger airlines Austrian Airlines, Swiss International Air Lines, Brussels Airlines, and Eurowings including

Germanwings (referred to in English by Lufthansa as its Passenger Airline Group), Deutsche Lufthansa AG owns several aviation-related companies, such as Lufthansa Technik, as part of the Lufthansa Group. In total, the group has over 600 aircraft, making it one of the largest airline fleets in the world.

Lufthansa's registered office and corporate headquarters are in Cologne. The main operations base, called Lufthansa Aviation Center, is at Lufthansa's primary hub at Frankfurt Airport, and its secondary hub is at Munich Airport.

The essence of the method is to quickly identify the balance of resources in accordance with the strategy of the airline and the market indicators of competitors (Table 3.1.)

Table 3.1

Indicators of competitors		
Indicator	Turkish Airlines	Lufthansa
Annual Passengers	68,616,740	131,426,527
Employees	24,075	50,190
Airline Fleet	329	617
Fleet seats	65,688	125,189
Revenue (m USD)	10,958	43,655
Operational Costs (m USD)	8,762	40,029
ASKs–Available Seat Kilometers (m pkm)	173,073	331,458
RPKs–Revenue Passenger Kilometers (m pkm)	136,946	268,813
Load Factor	79,1%	81,1%
ATKs – Available Tonne Kilometers	11,538,196	15,589,578
RTKs- Revenue Tonne Kilometers	9,781,894	11,671,362

3.1.3 Calculation of the operation coefficients

1. *Passenger per Employee*. The coefficient shows the level of efficiency of the human resources of the enterprise.

2. *Employee per Seat*. The coefficient shows the ratio of the human and technical resources of the airline, is an indicator of the professional qualifications of personnel and the level of technology.

3. *Employee per Airplane*. The coefficient reflects the technical level and structure of the airline fleet.

4. *Revenue per Employee*. The coefficient reflects the qualification and efficiency of the airline's human resources.

5. *Expenses per Employee*. The coefficient also reflects the qualification and efficiency of the airline's human resources.

6. *Revenue per Passenger*. The coefficient reflects the airline's tariffs, the level of demand and the position of the carrier in the airline market.

7. *Revenue per Seat*. The coefficient reflects the level of efficiency in the use of aircraft.

8. *RPKs per Seat*. The coefficient shows the level of demand for an air carrier's offer on the market.

9. *RPKs per Employee*. This is an indicator of the cost of labor resources of the airline on the market.

10. *ASKs per Seat*. This is the efficiency factor for the use of capacity.

11. *ASKs per Employee*. The coefficient shows the airline's operational capabilities for passenger transportation.

12. *Revenue per ASKs*. The coefficient shows the rate of return on the supply in the services market.

13. *Expenses per ASKs*. The coefficient shows the carrier's operational costs.

Table 3.2.

Operation coefficient calculations for Turkish Airlines

Coefficients	Calculations
Passenger per Employee	$\frac{68,616,740}{24,075}=2,850$
Employee per Seat	$\frac{24,075}{65,688}=0.37$
Employee per Airplane	$\frac{24,075}{329}=73.18$
Revenue per Employee (USD)	$\frac{10,958,000,000}{24,075}=455,161$
Expenses per Employee (USD)	$\frac{8,762,000,000}{24,075}=363,946$
Revenue per Passenger (USD)	$\frac{10,958,000,000}{68,616,740}=159.7$
Revenue per Seat (USD)	$\frac{10,958,000,000}{65,688}=166,819$
RPKs per Seat (mln.)	$\frac{136,946}{65,688}=2.08$
RPKs per Employee (mln.)	$\frac{136,946}{24,075}=5.69$
ASKs per Seat (mln.)	$\frac{173,073}{65,688}=2.63$
ASKs per Employee (mln.)	$\frac{173,073}{24,075}=7.19$
Revenue per ASKs (USD/pkm)	$\frac{10,958}{173,073}=0.063$
Expenses per ASKs (USD/pkm)	$\frac{8,762}{173,073}=0.051$

Analogically calculations for Lufthansa Group operation coefficients were performed.

3.1.4 Comparison of Turkish Airlines and Lufthansa Group efficiency ratios

Table 3.3

Comparison of Turkish Airlines and Lufthansa Group efficiency ratios

Efficiency Ratios	Turkish Airlines		Lufthansa Group	
	Absolute	Relative	Absolute	Relative
Passenger per Employee	2,850	1	2,620	0.92
Employee per Seat	0.37	1	0.4	1.08
Employee per Airplane	73.18	1	81.3	1.11
Revenue per Employee (USD)	455,161	1	869,794	1.91
Expenses per Employee (USD)	363,946	1	797,548	2.19
Revenue per Passenger (USD)	159.7	1	332.2	2.08
Revenue per Seat (USD)	166,819	1	348,713	2.09
RPKs per Seat (mln.)	2.08	1	2.15	1.03
RPKs per Employee (mln.)	5.69	1	5.46	0.96
ASKs per Seat (mln.)	2.63	1	2.65	1.008
ASKs per Employee (mln.)	7.19	1	6.68	0.93
Revenue per ASKs (USD/pkm)	0.063	1	0.132	2.1
Expenses per ASKs (USD/pkm)	0.051	1	0.121	2.37

For building of analytical chart (see Fig.3.2.) relative values were used.

After analyzing the histogram we can conclude that Lufthansa Group uses its resource potential more efficiently. The chart shows that the qualification and efficiency of the airline's human resources are not significantly differentiate. But

when compare coefficients reflected the airline's tariffs, the level of demand and the position of the carrier in the airline market we can see that Turkish Airlines are less efficiently in 2 times then competitor. The coefficient reflects the level of efficiency in the use of aircraft also shows that Lufthansa uses this resource twice more efficiently.

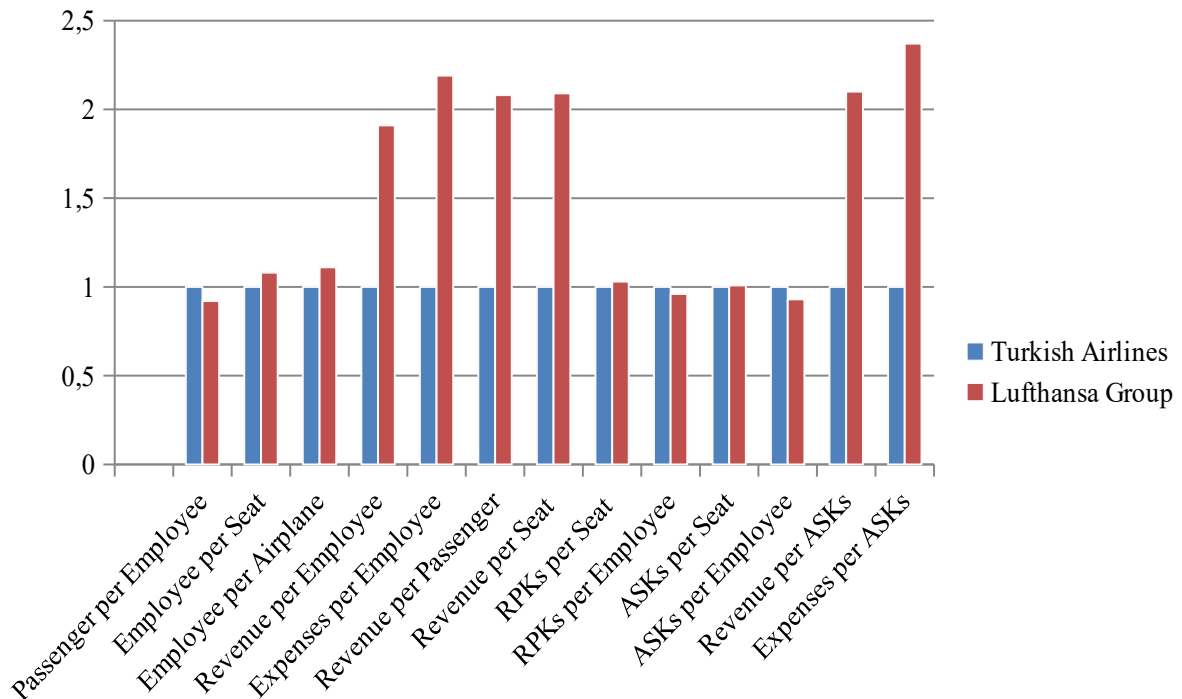


Fig.3.2. Analytical Chart of Turkish Airlines and Lufthansa Group efficiency ratios

So, we decide to revise business and management strategy of Turkish Airlines and to improve efficiency of aircraft fleet usage.

3.2 Future strategy of Turkish Airlines

3.2.1 Industry developments

The global aviation sector, negatively affected by terrorist incidents in 2016, began to recover in 2017 following a decrease in safety concern, with passenger demand increase. These positive developments in 2017 affected the first quarter of 2018 positively. Global passenger demand grew 9.5% year on year terms during the first quarter of 2018 and it is expected to continue on this growth by the end of 2018.

Besides this strong demand pick up, global aviation capacity and load factor increased 6,4% 2.3 points respectively. Compared to the global aviation sector, Turkish Airlines performed better; passenger demand increased by 25%, capacity increased by 15% and load factor increased by 6.5 points. In this period, the number of passengers carried by Turkish Airlines increased by 29%, reaching 17 million passengers compared to the first quarter of last year.

Turkish Airlines continues its success on passenger side in cargo transportation. The Incorporation has achieved to maintain its strong growth trend in the cargo market over the last decade and consequently, cargo carried increased by 38% and cargo revenue increased by 52%. Turkish Airlines increases the importance of cargo transportation each passing day and plans to expand the cargo fleet in proportionate to passenger fleet.

Accordingly, Turkish Airlines takes firm steps forward to be one of the largest air cargo carries in the world by increasing its share of the world air cargo market with the addition of new cargo aircraft to the existing fleet (see Fig.3.3.).

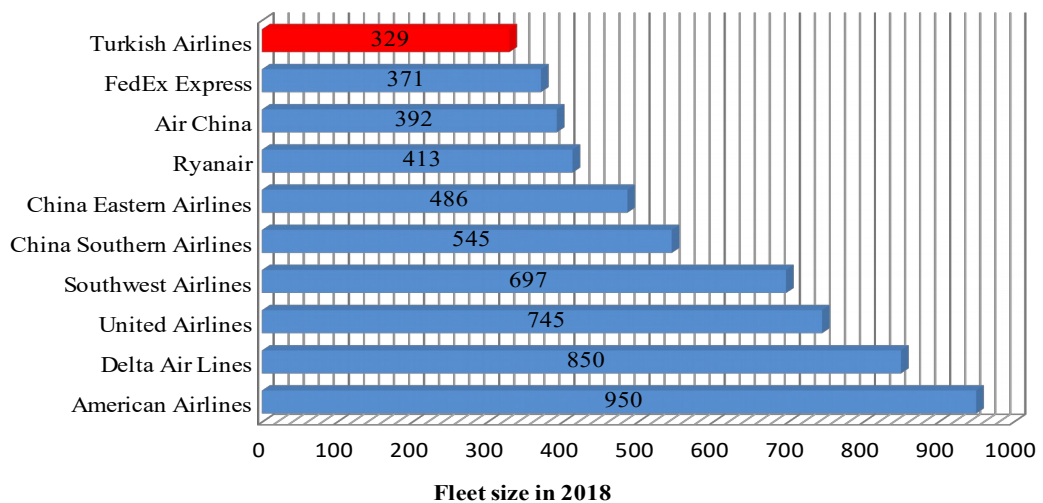


Fig.3.3. Top 10 airlines by fleet size in 2018

Turkish Airlines continued its impressive communication performance in 2018 without slowing down as in 2017.

Sponsorship in the international sports organizations, corporate social responsibility projects and other various sponsorships support Turkish Airlines brand

image as well as make huge contribution to the development of tourism in Turkey by accurate advertisement of Turkey. Turkish Airlines, titled as airline which flies to the most countries in the world, underlines that it will maintain its title in the forthcoming years by open and planned to open new destinations. Turkish Airlines' large flight network and young fleet structure will become stronger and provide significant advantage in intensely competitive aviation sector.

3.2.2 Investments, incentives and investment policies

Within the scope of “2009-2023 Fleet Projection” and “2012-2020 Fleet Plans”, confirmed by the Board, number of aircraft and delivery years are stated on the following table.

On March 9, 2018, in order to insure the need for wide body aircraft, the Incorporation has decided to purchase 50 firm and 10 optional aircraft, a total of 60 wide body aircraft to be delivered between 2019 and 2023 (see Fig.3.4.).

31.12.2017	Type	Total	Owned	Financial Lease	Opr./Wet Lease	Seat Capacity	Average Fleet Age	Year End Fleet*					
								2018	2019	2020	2021	2022	2023
Wide Body	A330-200	16	2	3	11	4.122	10,3	18	16	13	13	8	5
	A330-300	37		29	8	10.807	3,9	37	37	37	37	36	29
	A340-300	4	4			1.332	19,7	4	4	4	4	4	4
	B777-3ER	33		27	6	11.670	4,1	33	32	30	30	30	30
	Total	90	6	59	25	27.931	5,8	92	89	84	84	78	68
Narrow Body	B737-900ER	15		15		2.355	4,6	15	15	15	15	15	15
	B737-9 MAX								5	10	10	10	10
	B737-800	88	25	42	21	14.392	9,5	82	82	80	80	80	78
	B737-700	1			1	124	11,9	1	1				
	B737-8 MAX							7	19	38	53	65	65
	A321 NEO							3	21	39	59	77	92
	A319-100	7		6	1	924	7,2	7	6	6	6	6	6
	A320-200	24	5	7	12	3.822	11,0	19	12	12	12	12	12
	A321-200	68		62	6	12.360	5,5	68	68	66	64	64	64
	A320-200 WL												
	B737-800 WL	20				20	3.780	12,4	17	14	8	6	2
Total	223	30	132	61	37.757	8,3	219	243	274	305	331	342	
Cargo	A330-200F	9		9			4,0	9	9	9	9	9	9
	B777F	2		2			0,1	5	5	5	5	5	5
	Wet Lease	5			5		24,0						
	Total	16		11	5		9,8	14	14	14	14	14	14
GRAND TOTAL	329	36	202	91	65.688	7,7	325	346	372	403	423	424	
Year End Seat Capacity :								65.545	68.722	72.308	77.631	80.407	79.543

Fig.3.4. Order of deliveries of Turkish Airlines aircraft in 2018-2023

According to this, a total of 30 B787-9 aircraft, of which 25 firm and 5 optional, will be purchased from Boeing and a total of 30 A350-900 aircraft, of which 25 firm and 5 optional will be purchased from Boeing.

By the end of March 2018, the operation has been carried out by 90 double-aisle passenger aircraft, 219 singleaisle passenger aircraft and 18 cargo aircraft. Double-aisle aircraft constitute about 28 % of the total number of aircraft in fleet. Due to the effect of stage length and seat capacity, contribution of wide body aircraft to the production is more than 50% (see Fig.3.5.).

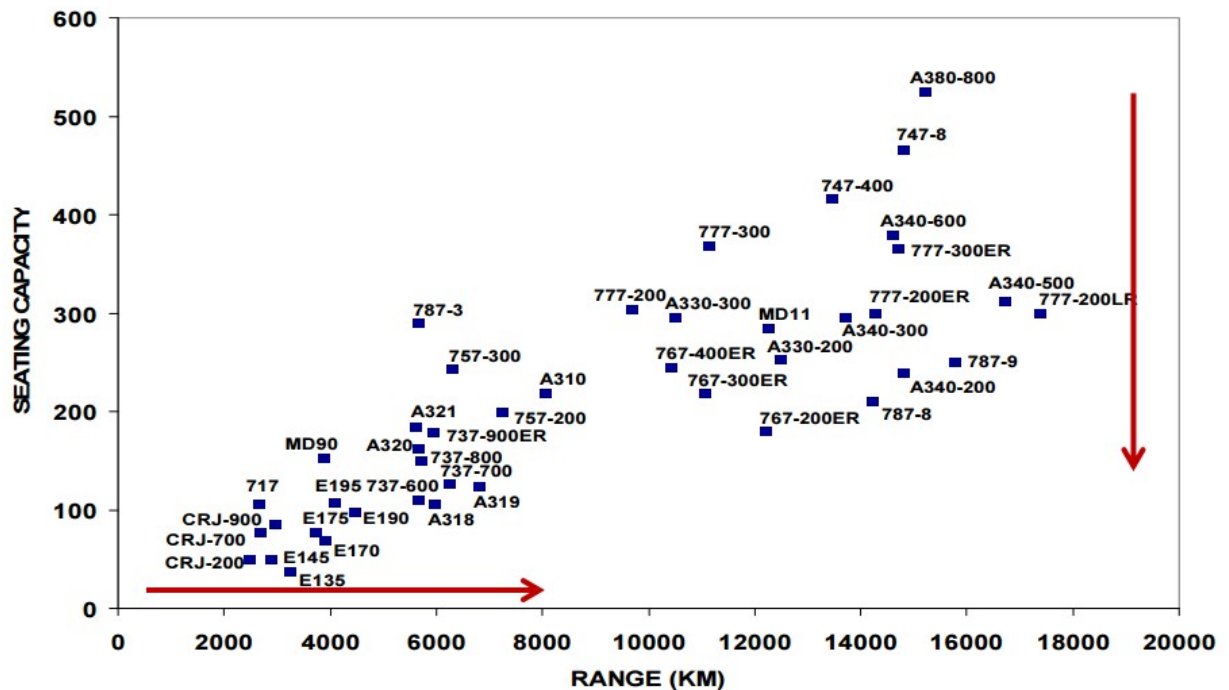


Fig.3.5. Commercial aircraft by size and range

3.3.3 Developments within the incorporation

New Route Announcement

The Incorporation will start operating scheduled flights, based on market conditions, to Banjul, the capital of Gambia, Marrakesh of Morocco, Palermo of Italy and Moroni, the capital of Comoros.

Cargo Aircraft Purchase

In order to insure the need for cargo aircraft for the year 2019 and afterwards, the Incorporation has decided to purchase 1 A330-200F cargo aircraft from DVB Bank SE.

Wide Body Aircraft Purchase

In order to insure the need for wide body aircraft, the Incorporation has decided to purchase 50 firm and 10 optional aircraft, a total of 60 wide body aircraft, of which 6 to be delivered in 2019, 14 in 2020, 10 in 2021, 12 in 2022, 11 in 2023 and 7 in the year 2024. According to this, total of 30 B787-9 aircraft, of which 25 firm and 5 optional, will be purchased from Boeing and a total of 30 A350-900 aircraft, of which 25 firm and 5 optional will be purchased from Airbus.

Traffic Development

- Total number of passengers carried is targeted to reach 74 million including 33 million on domestic routes, 41 million on international routes.

- While passenger load factor is expected to be in the band of 79% and 80%, total Available Seat Kilometers (ASK) will approximately reach to 183 billion with an increase of between 5% and 6% compared to 2017. Capacity (ASK) increase is expected to be 10% in Turkey, 9% in Middle East, 6% in Europe, 6% in Far East, 4% in America and 3% in Africa regions.

- In 2021, cargo/mail carried is expected to increase by 21% reaching 1.3 million tonnes.

Financial Development

- In 2021, jet fuel consumption is expected to increase by 9% compared to 2017.
- Average jet fuel (including fuel hedge) is expected to be 633\$/ton in 2021.
- The Incorporation is targeting to generate 11.8 billion USD of sales revenue.
- Cost per available seat kilometer (CASK), excluding fuel is expected to increase by between 3%-5%.

- Unconsolidated EBITDAR margin is targeted to be between 21% and 22%, whereas consolidated EBITDAR margin is targeted to be in the band of 23% and 24%.

3.4 Way to improve efficiency of aircraft fleet usage

3.4.1 Characteristics of Essenza, a superlightweight solution for Turkish Airlines A321NEO aircraft

The proposition for Turkish Airlines is to select the new Geven Essenza seat model to equip its upcoming A321NEO aircraft.

With the increasing demand for air transportation, and sophisticated passenger needs, aircraft cabin interiors have become the ultimate and most important item for airlines. The biggest problem, which airlines have to deal with, it is definitely space optimization, especially those reserved to economy class, where there's a fine line between comfort and squeezing in as many passengers as possible, while remaining profitable without affecting aspects such as weight or fuel costs.

At present, the challenges in meeting market trends are essentially represented by weight reduction, comfort, ergonomics, living space and functionality at restricted pitch ranges plus a reduced cost of ownership and low expendable part count.

This is the reason why Geven continuously investigates new possible design and engineering solutions addressed to product improvements in accordance to those market trends. Constant focus is obviously first on Customer satisfaction, reliability and last but not the least, competitiveness in pricing and time to market.

This philosophy has brought company to the decision to continue efforts in the evolution of the product portfolio.

In this endeavor, Essenza, the new economy class seat exhibited at last AIX HAMBURG show, is the result of intensive Geven R&D team's studies and research in new technologies, processes and materials. As always, the comfort of final

customers is target for airlines. The Essenza seat represents a very significant upgrade in the economy class product line.



Fig.3.6. Essenza, the new economy class seat front view

Essenza implements substantial and radical innovative solutions at a high level of industrialization with a consistent step forward in style, innovation, technology, robustness, in-service life, comfort and flexibility of modularity options. Essenza is conceived in two different variants: pre-reclined, for high-density configurations with minimal options, and reclinable to extend the product flexibility in order to guarantee a wide range of options for all Customers' needs.

Besides a drastic weight reduction, the Essenza seat model is a real technological jewel. Thanks to an intensive studies, aimed at creating a fully functional and comfortable economy class product, even at a short pitches (prohibitive 27" included), it was reduced to the minimum, by about 30-40% compared to super featherweight Piuma EVO, the number of expendables present.

The Essenza provides a distinctive and unique visual and comfort experience never seen on an Economy Class cabin arrangement (see Fig.3.7.).

On the Essenza, each structural element have been critically optimized, from cushions and covers' weight, to the backrest, ergonomically conceived, in order to

increase the comfort of the backrest cushion, reduced in thicknesses, without any impact on comfort and with big advantages in terms of weight.



Fig.3.7. Essenza, the new economy class seat back view

The seat primary structure is composed by an optimized number of components, realized in different and newer materials and technologies assembled together by standard minimized number of fasteners in few variants, allowing high performances with an optimum compromise between strength and deformations. The seat primary structure is also designed to enable easy cleaning of the cabin, as well as for the stowage of regular size hand luggage.

The seats will weigh 7.9kg each, with what Geven calls an “arm-to-arm width larger than 18 inches”.

3.4.2 Brief overview of Italian company Geven

Geven (see Fig.3.8.) is aircraft seating and interiors manufacturer. Company’s history begins many decades ago when the Veneruso family starts the industrialization of customized upholstery in the automotive sector.



Fig.3.8. Logo of the company

From there to train and marine seating to arrive as a logical consequence in the field of transport to the aeronautical sector where the leap to more strict requirement was successfully carried out. At the end of 90s, the first orders for aircraft seats confirm the confidence and quality of products and services that Geven begins to realize.

The aircraft passenger seating begins to retrofit, the mandatory itinerary towards OEM's Catalog approvals. In 2000s the continued engagement and ability to meet commitments lead to increase growth and in 2006 Geven decide to expand and build a new, larger and modern industrial plant in the industrial area of Nola (20km from Naples) in Italy.

Geven is today one of the major world players in the aeronautical sector and company's goal is to become an innovator manufacturer investing in Capacity and Capabilities.

In Geven look at the future performed through:

- Targeted investments to protect company's competitive success factors;
- Constant/ daily commitment;
- Active participation of employees is essential to Geven's values;
- Shared decision making;
- Attention to the needs of Customers;

- Expansion of Geven group through new and dedicated organizations and companies, specialized in dedicated sectors (GEMEC, SKYTECNO, LOGYSTIC, FSC).

The Mission of Geven is therefore:

- To maintain in the long-term company's leading position in the field;
- To preserve the reputation of high regard earned internationally thus far as a reliable, flexible and customer aware supplier;
- Keep a cutting edge on innovation and new product concepts;
- Exceed the expectations of customers via assessment of individual needs based both on specific operational standards and new market trends;
- Follow the products through with a caring and efficient, as well as tailored support of company's products throughout their lifetime.

3.4.3 Competitor's orders of lightweight seat Essenza

Aircraft seating and interiors manufacturer, Geven, has announced three seating deals. The first contract is a particularly major one, with Lufthansa Group opting to equip its fleet of medium-haul Airbus A320 and A321neo aircraft with Geven's Essenza economy class seat. The Essenza seat model will be fitted to the group's airlines between Q4 2018 and 2022: Austrian Airlines, Lufthansa and SWISS. The selection of the seats is part of a larger cabin design modernization project that Lufthansa Group is undergoing as part of its development and growth plan.

The seats will be customized with different trim and finish variants to fit with the design scheme of each airline. Geven and Lufthansa Group have worked together from the early developmental phase of the seats to create the custom seat designs.

"Lufthansa Group is an highly demanding and meticulous customer, but also an ideal partner for developing new products and solutions to their passengers worldwide and ultimately to the aviation industry," stated Alberto Veneruso, Geven's managing director. "Lufthansa Group is well known for paying a lot of attention in the selection of its partners. Since the early stage of the negotiation phase they

conducted several audits and required a huge amount of details and data that they have carefully analyzed. For those reasons, to have been selected for such an important project makes Geven extremely proud”.

Paul Estoppey, Lufthansa Group’s head of cabin product added: “The cooperation with Geven went very well. Due to the combination of seat manufacturer know-how and our customer perspective, we have jointly developed a great seat that is both technically and ergonomically state-of-the-art.”

Geven has also received a large order for Essenza from Wizz Air, a Central and Eastern European low-cost airline, for its fleet of more than 110 aircraft, comprising A321 NEOs and A320 NEOs. Geven has been supplying seats to Wizz Air since the airline acquired its first Airbus narrow-body aircraft in 2007. The A321 NEOs will have 239 seats , while the A320 NEOs will have 186 seats, in an all economy class layout.

Mexican carrier Interjet has also selected the Essenza seat model for its forthcoming fleet of 35 A320 NEOs, with deliveries due to begin in May 2019. The reclining version has been selected, which will be highly customized for the airline.

3.4.4 TiSeat E2 for Turkish Airlines new Boeing 737-9 MAX

In 2018, two years after the first release of the Titanium Seat Neo, Expliseat has launched the TiSeat E2, the standard model for Boeing 737 aircraft.

Compared to other traditional economy class seats, TiSeat E2 is 60% lighter with superior comfort and exceptional modularity for Airlines.

A new way of working inspired by the automotive industry

Based on the “concept car” model used by car manufacturers, Expliseat started by showcasing a seat concept to airlines in 2016. Hundreds of experts and a dozen Airlines have tested the seat in different configurations allowing Expliseat to adjust the standard model of the seat.

Expliseat offers a wide range of optional features and customization allowing Airlines to adjust the TiSeat E2 configuration to their actual needs: support and foam

density based on flight duration, seat recline, IFE or in seat power systems, meal table dimensions, or configuration of storage areas.

As a consequence, TiSeat E2 can satisfy the needs of a legacy airline on medium haul segments as well as the needs of a low cost or regional carrier on short haul segments with intensive use. A great technical achievement in the aviation business where airworthiness constraints are tremendous.

“New aircraft are more and more versatile, today, the same aircraft can operate several short segments and then fly across the Atlantic. We had to offer a unique seat for all situations”, specified Benjamin Saada.

A unique technology for an even better aircraft

Due to its patented technology combining carbon fiber and titanium, TiSeat E2 is 60% lighter than its competitors. This could represent a weight saving of up to 1.7 tones or 3,750 lbs on a new 737 MAX 10.

This significant gain enables an improved performance of the aircraft: less fuel, less CO2 emissions, more range, more cargo, more passengers and reduction of constraints in difficult operating environments including hot temperatures and high altitude airports as well as short runways.

3.5 Calculations of capacity growth

Proposed way to improve efficiency of Turkish Airlines aircraft fleet usage is **to increase capacity**. It can be done by increasing capacity of 2 types of Turkish Airlines aircraft delivery of which will be in 2019-2023 years.

The method is based on changing standard seats for Airbus 321 NEO and Boeing 373-9 MAX on new generation of aircraft super lightweight seats Essenza and TiSeat E2 respectively. In this case 92 A321 NEO will have capacity of 240 passengers per aircraft and each of 10 B737-9 MAX will be able to carry 218 passengers. Airbus and Boeing have tasted aircraft with increased capacity and confirm opportunity to use them.

As the aircraft will become the property of the airline capacity of fleet will increase every year up to 2023 (see Table 3.4.).

Table 3.4.

Capacity of Turkish Airlines Fleet 2018-2023

Year	2018	2019	2020	2021	2022	2023
Fleet size	325	346	372	403	423	424
Capacity	65,545	68,722	72,308	77,631	80,407	79,543
Increased Capacity	65,545	70,384	75,443	81,365	85,860	85,523
Change	0	+1,662	+3,135	+3,734	+5,453	+5,980

So, from Table 3.4. can be seen that project will bring first results in 2019 with 1,662 extra seats for Turkish Airlines. At the end of deliveries of B737-9 MAX and A321 Neo in 2023 year the capacity of Turkish Airlines fleet will be 85,523 instead of 79,543 when standard seats are used. Totally project gives 5,980 extra seats in 2023 (see Fig.3.9.).

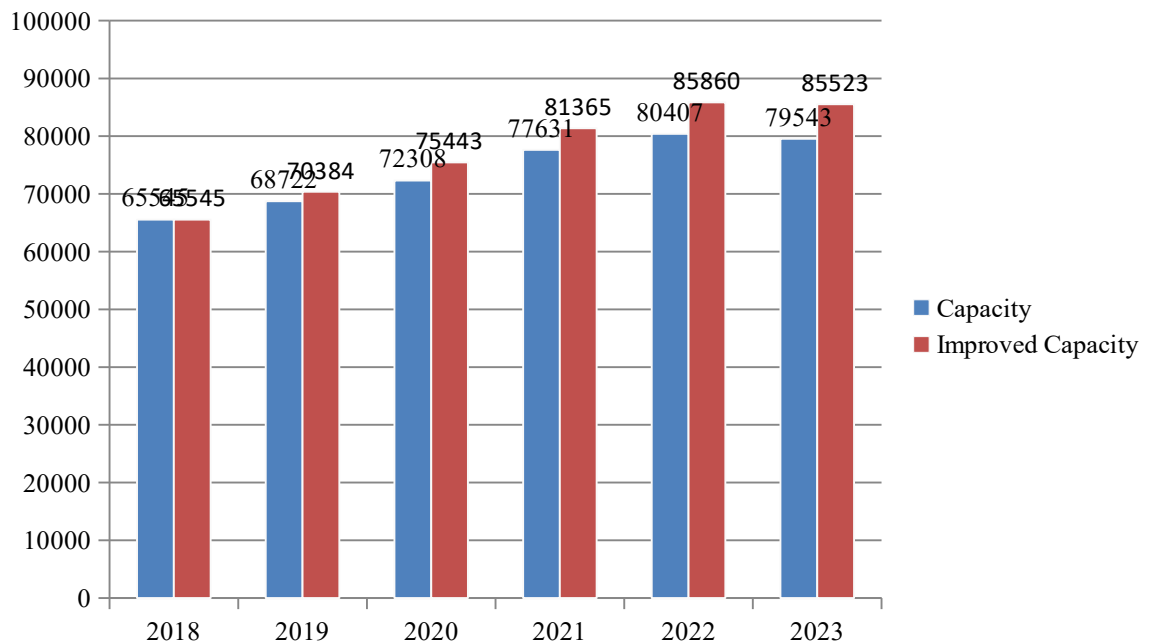


Fig.3.9. Difference between standard and improved capacity of Turkish Airlines fleet

In order to illustrate the growth of capacity of Turkish Airlines fleet caused by implementation the project following graph (see Fig. 3.10.) is build.

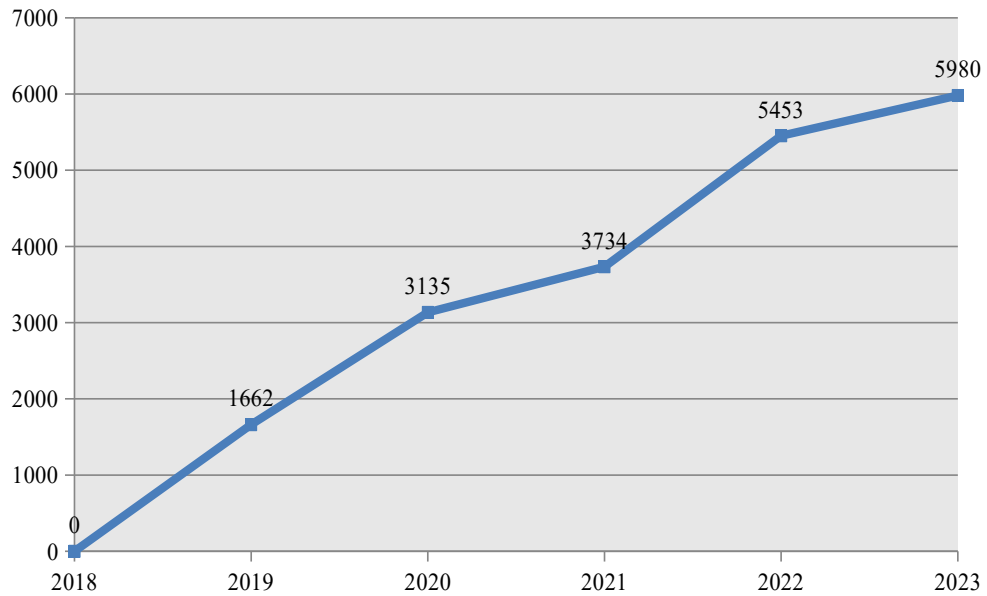


Fig.3.10. Growth of capacity of Turkish Airlines fleet

3.6 Calculations of Profit Growth

In statistical modeling, **regression analysis** is a set of statistical processes for estimating the relationships among variables. It includes many techniques for modeling and analyzing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables (or 'predictors'). Regression analysis helps one understand how the typical value of the dependent variable (or 'criterion variable') changes when any one of the independent variables is varied, while the other independent variables are held fixed.

Most commonly, regression analysis estimates the conditional expectation of the dependent variable given the independent variables – that is, the average value of the dependent variable when the independent variables are fixed. Less commonly, the focus is on a quantile, or other location parameter of the conditional distribution of

the dependent variable given the independent variables. In all cases, a function of the independent variables called the regression function is to be estimated. In regression analysis, it is also of interest to characterize the variation of the dependent variable around the prediction of the regression function using a probability distribution.

Regression analysis is widely used for prediction and forecasting, where its use has substantial overlap with the field of machine learning. Regression analysis is also used to understand which among the independent variables are related to the dependent variable, and to explore the forms of these relationships. In restricted circumstances, regression analysis can be used to infer causal relationships between the independent and dependent variables. However this can lead to illusions or false relationships, so caution is advisable; for example, correlation does not prove causation.

Many techniques for carrying out regression analysis have been developed. Familiar methods such as linear regression and ordinary least squares regression are parametric, in that the regression function is defined in terms of a finite number of unknown parameters that are estimated from the data. Nonparametric regression refers to techniques that allow the regression function to lie in a specified set of functions, which may be infinite-dimensional.

The performance of regression analysis methods in practice depends on the form of the data generating process, and how it relates to the regression approach being used. Since the true form of the data-generating process is generally not known, regression analysis often depends to some extent on making assumptions about this process. These assumptions are sometimes testable if a sufficient quantity of data is available. Regression models for prediction are often useful even when the assumptions are moderately violated, although they may not perform optimally. However, in many applications, especially with small effects or questions of causality based on observational data, regression methods can give misleading results.

For forecasting future profit of Turkish Airlines data from annual reports of previous years was used (capacity, passengers carried, revenue and operational costs of sales).

Calculations were performed with the help of standard formula:

$$Profit = C * X_1 + P * X_2 + Y_{crossing} \quad , \quad (3.1)$$

where C – Capacity Coefficient;

P – Passenger Coefficient;

X_1 – Future Capacity of Aircraft Fleet;

X_2 – Estimated Annual Number of Passengers;

$Y_{crossing}$ – Coefficient of Y-crossing.

The results of forecasting according to actual strategy of Turkish Airlines are given in Table 3.5.

Table 3.5.

Year	Capacity, seats	Passengers, m	Profit, m USD
2012	33118	39,0	1845
2013	41605	48,3	2047
2014	48163	54,7	2040
2015	56899	61,2	2102
2016	65993	62,8	1136
2017	65688	68,6	2196
2018	65545	68,5	2074,57
2019	68722	71,8	2169,59
2020*	72308	75,5	2276,85
2021*	77631	81,1	2436,06
2022*	80407	84,0	2519,09
2023*	79543	83,1	2493,25

Analogically forecast of future profit of Turkish Airlines with improved aircraft fleet capacity by purchasing new seats TiSeat E2 for 10 Boeing 737-9 MAX and Essenza for 92 Airbus 321 NEO is calculated. Results of forecasting are summarized in Table 3.6.

Table 3.6.

Year	Capacity, seats	Passengers, m	Profit, m USD
2018	65545	68,5	2074,57
2019	70384	73,5	2219,30
2020*	75443	78,8	2370,62
2021*	81365	85,0	2547,74
2022*	85860	89,7	2682,19
2023*	85523	89,3	2672,11

If compare results (see Table 3.7.) of calculations of current Turkish Airlines strategy and our project for increasing capacity of aircraft fleet it can be stated that Profit 2 (in case of improved capacity) is much more then Profit 1 (current Turkish Airlines strategy).

Table 3.7.

Comparison of results of regression analysis

Year	Profit 1, USD	Profit 2, USD	Change, USD	Change, %
2019	2,169,590,244	2,219,300,786	49,710,542	2.29%
2020	2,276,847,766	2,370,615,845	93,768,079	4.12%
2021	2,436,059,085	2,547,743,298	111,684,213	4.58%
2022	2,519,089,448	2,682,189,076	163,099,629	6.47%
2023	2,493,247,144	2,672,109,381	178,862,237	7.17%

So, we can conclude that in 2023 when our project will be fully realized Turkish Airlines will receive **7.17%** more profit in comparison with current strategy of development of the airline.

3.7 Calculations of NPV of the project

The net present value (NPV) or net present worth (NPW) is a measurement of profit calculated by subtracting the present values (PV) of cash outflows (including initial cost) from the present values of cash inflows over a period of time. Incoming and outgoing cash flows can also be described as benefit and cost cash flows, respectively.

Time value of money dictates that time affects the value of cash flows. This decrease in the current value of future cash flows is based on the market dictated rate of return. More technically, cash flows of nominal equal value over a time series result in different effective value cash flows that make future cash flows less valuable over time.

Net present value (NPV) is determined by calculating the costs (negative cash flows) and benefits (positive cash flows) for each period of an investment. The period is typically one year, but could be measured in quarter-years, half-years or months. After the cash flow for each period is calculated, the present value (PV) of each one is achieved by discounting its future value (see Formula 2.2) at a periodic rate of return (the rate of return dictated by the market). NPV is the sum of all the discounted future cash flows. Because of its simplicity, NPV is a useful tool to determine whether a project or investment will result in a net profit or a loss. A positive NPV results in profit, while a negative NPV results in a loss. The NPV measures the excess or shortfall of cash flows, in present value terms, above the cost of funds. In a theoretical situation of unlimited capital budgeting a company should pursue every investment with a positive NPV. However, in practical terms a company's capital constraints limit investments to projects with the highest NPV whose cost cash flows, or initial cash investment, do not exceed the company's capital. NPV is a central tool in discounted cash flow (DCF) analysis and is a standard method for using the time value of money to appraise long-term projects. It is widely used throughout economics, finance, and accounting.

$$NPV = \sum_{t=0}^n \frac{CF_t}{(1+R)^t} \quad , \quad (3.2)$$

where t – the time of the cash flow;

n – the number of time periods;

R – the discount rate, i.e. the return that could be earned per unit of time on an investment with similar risk;

CF – the net cash flow i.e. cash inflow – cash outflow, at time t.

In the case when all future cash flows are positive, or incoming (such as the principal and coupon payment of a bond) the only outflow of cash is the purchase price, the NPV is simply the PV of future cash flows minus the purchase price (which is its own PV). NPV can be described as the "difference amount" between the sums of discounted cash inflows and cash outflows. It compares the present value of money today to the present value of money in the future, taking inflation and returns into account.

The NPV of a sequence of cash flows takes as input the cash flows and a discount rate or discount curve and outputs a price. The converse process in DCF analysis—taking a sequence of cash flows and a price as input and inferring as output a discount rate (the discount rate which would yield the given price as NPV) - is called the yield and is more widely used in bond trading.

For improving the efficiency of Turkish Airlines aircraft fleet usage by purchase and usage new superlightweight seats for 92 A321 NEO and 10 B737-9 MAX investments in amount of 40,800,000 USD are needed. This amount will be used as primary investments in 2018 year.

Time period of deliveries of 102 new aircraft with lightweight seats is 2019-2023 that equals 5 years.

$$NPV = \frac{CF_{2018}}{(1+R)^0} + \frac{CF_{2019}}{(1+R)^1} + \frac{CF_{2020}}{(1+R)^2} + \frac{CF_{2021}}{(1+R)^3} + \frac{CF_{2022}}{(1+R)^4} + \frac{CF_{2023}}{(1+R)^5} \quad (3.3)$$

To calculate NPV we should put results of calculations of future profit caused by increasing of the capacity of Turkish Airlines Fleet by purchasing new seats in Formula 3.4:

$$NPV = \frac{40800000}{1} + \frac{49710542}{(1+0.1)^1} + \frac{93768079}{(1+0.1)^2} + \frac{111684213}{(1+0.1)^3} + \frac{163099629}{(1+0.1)^4} + \frac{178862237}{(1+0.1)^5} = 388242754 \text{ USD} \quad (2.4)$$

Results of calculations of NPV are summarized in Table 3.8.

Table 3.8

Results of calculations of NPV

Year	Cash Flow, USD	Rate 10%	Factor	Sum, USD
2018	(40,800,000)	1	1	(40,800,000)
2019	49,710,542	1/(1.10) ¹	0.9091	45,191,854
2020	93,768,079	1/(1.10) ²	0.8264	77,489,940
2021	111,684,213	1/(1.10) ³	0.7513	83,908,349
2022	163,099,629	1/(1.10) ⁴	0.6830	111,397,047
2023	178,862,237	1/(1.10) ⁵	0.6209	111,055,563
Total	556,324,700			388,242,753

3.8 Prove of the project profitability

NPV is an indicator of how much value an investment or project adds to the firm. With a particular project, if NPV is a positive value, the project is in the status of positive cash inflow in the time of t . If NPV is a negative value, the project is in the status of discounted cash outflow in the time of t . Appropriately risked projects with a positive NPV could be accepted. This does not necessarily mean that they should be undertaken since NPV at the cost of capital may not account for opportunity cost, i.e., comparison with other available investments.

In financial theory, if there is a choice between two mutually exclusive alternatives, the one yielding the higher NPV should be selected. A positive net present value indicates that the projected earnings generated by a project or investment (in present dollars) exceeds the anticipated costs (also in present dollars). Generally, an investment with a positive NPV will be a profitable one and one with a negative NPV will result in a net loss. This concept is the basis for the Net Present Value Rule, which dictates that the only investments that should be made are those with positive NPV values. It presents in Table 3.9.

Decision-making with the help of NPV

If...	It means...	Then...
NPV > 0	the investment would add value to the firm	the project may be accepted
NPV < 0	the investment would subtract value from the firm	the project may be rejected
NPV = 0	the investment would neither gain nor lose value for the firm	We should be indifferent in the decision whether to accept or reject the project. This project adds no monetary value. Decision should be based on other criteria, e.g., strategic positioning or other factors not explicitly included in the calculation.

NPV of the project is **388,242,753**. It means that the investments for purchasing new seats for Turkish Airlines would add value of the airline. So, this project should be accepted.

Profitability index (PI), also known as profit investment ratio (PIR) and value investment ratio (VIR), is the ratio of payoff to investment of a proposed project. It is a useful tool for ranking projects because it allows you to quantify the amount of value created per unit of investment.

The ratio is calculated as follows:

$$\text{Profitability Index} = \frac{\text{PV of future cash flow}}{\text{Initial investment}} \quad (3.5)$$

Assuming that the cash flow calculated does not include the investment made in the project, a profitability index of 1 indicates breakeven. Any value lower than one would indicate that the project's present value (PV) is less than the initial investment.

As the value of the profitability index increases, so does the financial attractiveness of the proposed project.

$$\textit{Profitability Index} = \frac{429042753}{40800000} = 10.52 \quad (3.6)$$

Rules for selection or rejection of a project:

If $PI > 1$ then accept the project,

If $PI < 1$ then reject the project.

So, as PI of the project for Turkish Airlines is **10.52** then it should be accepted.

SUMMARY

Air Transportation Management Department				NAU.20.07.42 004EN				
Done by:	<i>Dmytro Dubskyi</i>			SUMMARY	Letter	Sheet.	Sheets	
Supervisor:	<i>Valentina Konovalyuk</i>					D	109	4
Standards Inspector	<i>Yuliia V. Shevchenko</i>				FTML 275 ОП- 202Ма			
Head of the Department	<i>Shevchuk D. O.</i>							

During the completion of the master thesis it was established that efficiency usage of resources influences greatly on the revenue management of the airline and its success on air transportation market overall. Demand for air transportation is determined by gross national product as an external factor, expressed in the form of traffic potential and is reflected in the form of internal and controlled parameters: tariffs, flight frequencies.

Actual passenger turnover and operating revenue depend on these factors. The carrying capacity depends on both internal factors and the prevailing market conditions. These are the capital, composition and structure of the fleet, an airline network formed by an air carrier, pricing and service standards in the market and accepted by the airlines. These factors were investigated in analytical part of bachelor thesis.

The conducted analysis of production and financial parameters and graphics introduced of the chosen airline show how the efficiency of resource potential usage influences on airline's activity. Also number of external factors influencing activity of Turkish Airlines such as geopolitical environment in country and in the world, fuel prices etc. were analyzed. Maintaining the accounts of a company is important for calculating the annual turnover of a company or the yearly profit and loss details of a company. It helps in deciding whether a company is running in loss or making profits from its business activities. Therefore, maintaining the details in a perfect way is important to decide the future of the company.

Comparative analysis of efficiency of resource potential usage of Turkish Airlines and Lufthansa Group explains which of the airlines uses its resources more efficiently. After analysis we can conclude that Lufthansa Group uses its resource potential more efficiently. The chart shows that the qualification and efficiency of the airline's human resources are not significantly differentiate. But when compare coefficients reflected the airline's tariffs, the level of demand and the position of the carrier in the airline market we can see that Turkish Airlines are less efficiently in 2 times then competitor. The coefficient reflects the level of efficiency in the use of aircraft also shows that Lufthansa uses this resource twice more efficiently. So, it can

be concluded that Turkish Airlines need to improve efficiency of resource potential usage.

The development and practical application of modern technologies in the field of air transportation are closely interrelated with the solution of important economic problems, one of which is the task of reducing costs and increasing the efficiency of the airline. A single recipe for reducing costs does not exist. But there are a number of ways that airlines can use to increase efficiency and reduce costs. There are three ways to reduce the costs of the airline. One of the significant items of expenditure in the structure of the cost of transport in air transport is fuel cost. The change in the cost of aviation fuel primarily depends on world oil prices, which is very difficult to predict.

A method of saving costs associated with a change in the price of fuel is hedging risks. Another known method of saving is focused on the use of the same type of aircraft in airlines, which allows you to reduce part of the cost of purchasing spare parts and the training and retraining of flight crews. In the conditions of instability of the air transport market, the tasks of reducing costs due to the effective use of aircraft are becoming topical. According to these facts the decision is to improve efficiency of aircraft usage.

Proposed way to improve efficiency of Turkish Airlines aircraft fleet usage is to increase capacity. It can be done by increasing capacity of 2 types of Turkish Airlines aircraft delivery of which will be in 2019-2023 years. For improving the efficiency of Turkish Airlines aircraft fleet usage by purchase and usage new superlightweight seats for 92 A321 NEO and 10 B737-9 MAX investments in amount of 40,800,000 USD are needed. This amount will be a primary investments in 2018 year.

The method is based on changing standard seats for Airbus 321 NEO and Boeing 373-9 MAX on new generation of aircraft super lightweight seats Essenza and TiSeat E2 respectively. In this case 92 A321 NEO will have capacity of 240 passengers per aircraft and each of 10 B737-9 MAX will be able to carry 218 passengers. Airbus and Boeing have tasted aircraft with increased capacity and confirm opportunity to use them.

As the aircraft will become the property of the airline capacity of fleet will increase every year up to 2023, so the period of implementation of the project is 5 years. NPV of the project is 388,242,753. It means that the investments for purchasing new seats for Turkish Airlines would add value of the airline. In 2023 when our project will be fully realized Turkish Airlines will receive 7.17% more profit in comparison with current strategy of development of the airline.

REFERENCES

1. Airbus official website [Electronic source]. – Access mode: -
<https://www.airbus.com/>
2. Airlines Inform. Aircraft specifications [Electronic source]. – Access mode: -
<https://www.airlines-inform.com/commercial-aircraft/Boeing-737-9MAX>
3. Board Activity Report of Turkish Airlines 1 January – 31 December 2014 [Electronic source]. – Access mode: -
http://investor.turkishairlines.com/documents/ThyInvestorRelations/download/boards/2014_Boards_Activity_Report.pdf
4. Board Activity Report of Turkish Airlines 1 January – 31 December 2015 [Electronic source]. – Access mode: -
http://investor.turkishairlines.com/documents/ThyInvestorRelations/download/faaliyet_raporu/Boards_Activity_Report_4Q15_EN.pdf
5. Board Activity Report of Turkish Airlines 1 January – 31 December 2016 [Electronic source]. – Access mode: -
[-http://investor.turkishairlines.com/documents/ThyInvestorRelations/download/faaliyet_raporu/YK_Faaliyet_Raporu_4Q2016_ING.pdf](http://investor.turkishairlines.com/documents/ThyInvestorRelations/download/faaliyet_raporu/YK_Faaliyet_Raporu_4Q2016_ING.pdf)
6. Board Activity Report of Turkish Airlines 1 January – 31 December 2017 [Electronic source]. – Access mode: -
http://investor.turkishairlines.com/documents/ThyInvestorRelations/YK_Faaliyet_Raporu_4Q2017_ING...pdf
7. Board Activity Report of Turkish Airlines 1 January – 31 March 2018 [Electronic source]. – Access mode: -
http://investor.turkishairlines.com/documents/ThyInvestorRelations/YK_Faaliyet_Raporu_1Q2018_ING.pdf
8. Boeing official website [Electronic source]. – Access mode: -
<https://www.boeing.com/>
9. Flight Network of Turkish Airlines [Electronic source]. – Access mode: -
<http://investor.turkishairlines.com/en/financial-operational/flight-network>

10. Geven official website [Electronic source]. – Access mode: - <http://www.geven.com/>
11. IATA Forecast to 2036 in passenger traffic [Electronic source]. – Access mode: - <http://www.iata.org/pressroom/pr/Pages/2017-10-24-01.aspx>
12. Lufthansa official website [Electronic source]. – Access mode: - <https://www.lufthansa.com/ua/en/Homepage>
13. Operational Efficiency and Cost Management [Electronic source]. – Access mode: - <http://www.iata.org/whatwedo/ops-infra/Pages/efficiency.aspx>
14. Turkish Airlines Annual Report 2017 relations [Electronic source]. – Access mode:- http://investor.turkishairlines.com/documents/ThyInvestorRelations/download/yillik_raporlar/2017_Faaliyet_Raporu_en.pdf
15. Turkish Airlines Annual Report 2017 relations [Electronic source]. – Access mode:- http://investor.turkishairlines.com/documents/ThyInvestorRelations/download/yillik_raporlar/2018_Annual_Report_EN.pdf
16. Turkish Airlines Annual Report 2018 relations [Electronic source]. – Access mode: -http://investor.turkishairlines.com/documents/ThyInvestorRelations/download/yillik_raporlar/2014_Annual_Report_EN.pdf
17. Turkish Airlines Annual Report 2019 relations [Electronic source]. – Access mode: - http://investor.turkishairlines.com/documents/ThyInvestorRelations/download/yillik_raporlar/2019_Annual_Report_EN_vF.pdf
18. Turkish Airlines Annual Report 2019 relations [Electronic source]. – Access mode: - http://investor.turkishairlines.com/documents/ThyInvestorRelations/THY_2019_ANNUAL_REPORT-v2.pdf
19. Turkish Airlines investor relations [Electronic source]. – Access mode: - <http://investor.turkishairlines.com/en>
20. Turkish Airlines official website [Electronic source]. – Access mode: -<https://www.turkishairlines.com>