



**T.C. İSTANBUL TİCARET
ÜNİVERSİTESİ**

GRADUATE SCHOOL OF SOCIAL SCIENCES

**KEY PERFORMANCE
INDICATORS IN AIRLINE
INDUSTRY: A COMPARISON
BETWEEN TURKISH AIRLINES, and
ITS COMPETITORS**

MA Thesis

Zeynep Özdemir

200015734

Advisor: Asst. Prof. Recep Ali KÜÇÜKÇOLAK

Istanbul, 2022



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ABSTRACT

Key Performance Indicators (KPIs) find the necessary criteria for the company to reach its strategic targets, and to increase the efficiency of the company by strengthening the company in the competitive environment. When using KPIs, it is important that all parties involved have a good understanding of their key ingredients. Features of KPIs, and how to select the main indicators of the company are important. In this study, KPIs have been investigated by using a balanced scorecard model in the aviation sector with the example of Turkish Airlines. The first part, the Concept of KPIs and Performance Measurement, Elements and Features of KPIs, and Balanced Scorecard Models are discussed. Second Part, Secondary data is used for obtaining information for creating balanced scorecard models for KPIs. Turkish Airlines is a good sample to check KPIs used in the aviation industry. As a result of the analysis of the information obtained, the availability of KPIs in aviation performance measurement has been observed with the example of Turkish Airlines. Consequently, Turkish Airlines has been compared to competitors and forward performance targets have been determined.

Keywords: Key Performance Indicators, Performance Measurement, Key Performance Indicators in Aviation Sector

ÖZET

Anahtar Performans Göstergeleri (KPI), şirketlerin stratejik hedeflerine ulaşması ve rekabet ortamında güçlenerek verimliliğinin artırılması için gerekli kriterleri bulur. Temel performans göstergelerini kullanırken, ilgili tüm tarafların temel bileşenlerini iyi anlamaları önemlidir. Temel performans göstergelerinin özellikleri ve şirketlerin ana göstergelerinin nasıl seçeceği önem arz etmektedir. Bu çalışmada, Türk Hava Yolları örneği ile havacılık sektöründe Dengeli Karne modeli kullanılarak Anahtar Performans Göstergeleri (KPI) incelenmiştir. Birinci bölümde Temel Performans Göstergeleri ve Performans Ölçümü Kavramı, KPI'ların Unsurları ve Özellikleri ve Balanced Scorecard Modelleri tartışılmıştır. İkinci Bölümde, ikincil veriler kullanılarak KPI'lar için dengeli puan kartı modeli oluşturulmuştur. Türk Hava Yolları, havacılık endüstrisinde kullanılan KPI'ları kontrol etmek için iyi bir örnektir. Elde edilen bilgilerin analizi sonucunda havacılık performans ölçümünde KPI'ların kullanılabilirliği Türk Hava Yolları örneği ile gözlemlenmiştir. Sonuç olarak Türk Hava Yolları rakipleri ile karşılaştırılarak ileriye dönük performans hedefleri belirlenmiştir.

Anahtar Kelimeler: Anahtar Performans Göstergeleri, Performans Ölçümü, Havacılık Sektöründe Anahtar Performans Göstergeleri

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LIST OF ABBREVIATIONS AND ACRONYMS

KPI: Key Performance Indicators

RASK: Revenue Available Seat Kilometers

CASK: Cost Available Seat Kilometers

THY: Turkish Airlines

RPK: Revenue Passenger Km

RCTK: Revenue Cargo Ton Km

L/F: Load Factor

Cargo L/F: Cargo Load Factor

EBITDAR: Earnings Before Interest, Taxes, Depreciation, Amortization, Rental Costs.

BSM: Balanced Scorecard Model

1. INTRODUCTION

1.1. Introduction

KPIs are one of the important methods of performance measurement today for effective and successful management. In this section, the aim is to provide background information on the study, the purpose of the study, information about research questions. At the end of this section, the structure related to the work will be specified.

1.2. Background

Companies regulate performance criteria to achieve their vision and missions and determined performance criteria measures whether resources are used professionally. KPIs control incomes, and expenses in line with targets, and measure whether company resources are used efficiently. Performance measurement is significant for the management principle because it identifies the shortcomings in current performance, and enables progress towards the target. KPIs are carefully selected, and improve performance (Weber, and Thomas, 2006).

1.3. Problem Statement

KPIs have been used by many companies today and in the past, but firms have set economic indicators as targets in performance indicators. This study was carried out not only on economic indicators but also on non-financial indicators using a balanced performance scorecard. Performance indicators have been shown to be available not only as performance evaluation within the company but also in comparison with other companies in performance comparison through secondary data. Through the example of THY, KPIs for the pre-pandemic and pandemic period were determined and compared with competitors.

1.4. General Objective

The main purpose of this study is to show that key performance indicators are also available in the

aviation sector. Performance indicators were determined in the balanced scorecard model (BSM) within the aviation sector through secondary data and the target value for the future was determined through these indicators.

1.5. Research Questions

1. How are KPIs used to improve performance in aviation?
2. How can THY use KPIs to compare with foreign competitors?
3. What is the impact of the pandemic on the KPI in the aviation sector?
4. How are KPIs used to determine target values?

1.6. Significance of the Study

This research aims to prove the availability of KPIs in performance comparison in the aviation sector in a balanced scorecard model using secondary data. KPIs have been determined for THY using secondary data. These designated KPIs have been compared with other foreign airlines. The effect of the pre-pandemic and pandemic period on THY and rival airlines has been observed through the KPIs. With this study, it has been shown that target values can be determined in the aviation sector using KPIs, and it has been shown to have a pandemic effect, this study is one of the first studies in this field.

1.7. Organization of the Paper

This study consists of five chapters, the first chapter is about the introduction of research and background and study objectives. In the second chapter, information was given about the structures that KPIs should have and what they consist of, and how they should be determined. In the third chapter, information was given about the BSM. The fourth chapter is about what the KPIs used in the aviation industry are made of, and how they are used. THY will be an example when examining the aviation industry. Information will be given about which KPIs THY can use. The final chapter consists of the results we have found as a result of our investigations in line with the THY example and the target performance indicators determined for the future.

2. LITERATURE REVIEW

The characteristics of the key performance indicator, and how it is used are explained in performance evaluation. First, it will be explained why performance measurements are so critical and after how KPIs to measure performance, and how they can reach our strategical goals.

2.1. Performance Measurement

Performance is a concept that is qualitatively, and quantitatively stated, obtained as a result of a purposeful, and planned activity (Williams, 1998). Performance is goods, thoughts, or services set out to meet the predetermined criteria and objectives for the performance of the task. (Helvacı, 2002).

While businesses make new decisions, they first evaluate their own resources. They try to use their existing resources efficiently. The performance of resources in enterprises ensures the efficiency of business resources. The performance of the business sources affects the decisions to be taken in the future (Yüncü, 2002). Performance measurement should determine the main objectives, and indicate what employees will do in line with this goal. Each Organization group must meet its own goals in connection with the overall goals. Goals should be easy to understand, and achievable. Employees should be trained for these goals, and given the necessary guidance. The system should be designed clearly, and simply so that employees, and managers can understand it (Carney, 1999).

It achieves its organizational objectives by using management activity resources. They entered into the resources used in this process, the targets obtained are also called outputs. The success of the organization and the work of the manager measurement can be obtained by dividing the outputs into inputs to measure the degree. This calculation and rate indicate the efficiency of the organization. The efficiency of all is an important area of interest for organizations. Because your productivity means "to be good." Level of efficiency, or success of management; management such as planning, editing, routing, and control depends on the performance of the function (Turban, 2005).

Performance evaluation is a measurement system that compares the employee's abilities, work habits, behaviors, or other characteristics with similar characteristics (Örücü, and Köseoglu, 2003). Performance evaluation is the measurement of the degree to which the person achieves the work by analyzing the work to be done, and the characteristics he/she has for this job (Erdogan, 1991). Performance management is an area of management science that enables the performance, and goal of the worker to be determined. It aims to define, evaluate, and strengthen the way the worker works. Performance management ensures that the employees within the organization are better. Knowledge, skills, and abilities are enhanced. Determining educational needs is an important tool in determining strengths, and weaknesses, and increasing motivation. It is inevitable that managers will have the knowledge, and skills to evaluate performance (Helvacı, 2002).

Employees' careers are largely tied to their own performance. Businesses want to protect their staff in order to maintain their organizational efficiencies and aim to reach appropriate locations with performance evaluation. Performance evaluation serves individual and organizational objectives. Organizations evaluate individual, and organizational success, and use performance management to increase in order not to lose trained personnel, and to get more efficiency (Çalık, 2003). Performance evaluation and auditing process following the measurement process starts. Performance measurement results are compared and interpreted with targets. As long as no lessons are learned from the results and analyses, the measurements are only will remain accountability mechanisms.

During the evaluation phase, the measurement for realistic interpretation the results;

- With time series,
- With similar intra-organizational units suitable for comparison,
- With similar non-organizational units and professional standards must be compared (Kaynar, 2010).

Performance measurement systems, hierarchies, and activities within the organizational structure must be designed in a compatible manner. The system should measure in both past, and future periods, and aim to monitor, and improve future performance. All performance criteria in the system must support each other, and be designed so that there is no mismatch between them. The performance measurement system affects the relationship between the business environments. The

performance measurement system should support the strategies of the enterprise, and adapt to the organizational structure, and comply with the incentive systems (Neely et al., 1996).

Business performance is generally designed to answer three questions. Where are we? How can we be better? Where should we be? The answer to the question of where we are is what our job is, what our goal is. It is important how we use our resources while carrying out our work, and purpose. On the question of how we can be better, it is investigated whether the business uses its potential power. What has been achieved with the potential power of the enterprise? It is how the enterprise evaluates its resources to achieve its goals in the short, and long term. On the question of how we can be better, long-term business potential is investigated and determined as a target (Kaya, 2008).

If the performance measurement is not performed with the correct method, it can reduce the overall performance of the company. This is called target surprise. Target surprise is divided into two parts. First, while the focus is on the awarded activities, the main work to be done may be disrupted. The other is that each unit of the enterprise focuses on its own goals, making it difficult for the business to achieve its overall goals (Wheelen, and Hunger, 2002).

A successful performance measurement system has extremely strong management and communication tool. Businesses get the following benefits with performance measurement it is:

Facilitates the determination, and implementation of strategies.

- Increases management's planning capability.
- Management information systems affect the success of decision support systems.
- They support performance improvement.
- They are rewarding and encouraging.
- It is predetermined and preventive.
- Corrective, and developer.
- Facilitates evaluation, and auditing (Kaynar, 2010).

Evaluating performance is not only of interest to managers in the business, but also to investors, lenders, sellers, and customers. Evaluation of performance helps to achieve strategic goals. The strategic control system is a long-term process that covers the entire enterprise (Coskun, 2005).

Managers used only financial metrics to measure the organization's performance in the past. Since financial metrics are inadequate, they are developed in non-financial metrics. Financial metrics are often backdated, and inadequate to measure future performance. Financial metrics about the relevant situation provide brief information and show the result. It is also incomplete in the evaluation of intangible assets. Therefore, non-financial metrics need to be developed (Ittner and Larcker, 1998). Business not only for efficiency, cost, profit, but also for compliance, and growth, creativity, risk-taking, customer saturation, flexibility, participation should also focus on outcomes such as social responsibility. Performance emerges from the combination of many concepts related to each other it's out of the way. The most important are; efficiency, quality, productivity, effectiveness, and profitability concepts. When operating performance is evaluated in this understanding, identification of the planning, measurement, and auditing functions of management changed (Kaynar, 2010).

2.2. KPIs

Performance measurement is significant for the management principle because it identifies the shortcomings in current performance, and enables progress towards the target. KPIs are carefully selected, and improve performance (Weber and Thomas, 2006).

First, an organization analyzes its activities, and defines its denominators, and then uses a method to measure its development needs it. KPIs perform this task. KPIs are generally long-term thinking and design. They don't change often. In this way, it is continuous and capable of demonstrating its development (Akal, 2000).

Many companies misidentify KPIs, this misidentification leads them to failure. Few organizations have understood the true definition of KPIs.

Performance measures are divided into 3 categories. (see figure 1):

1. Key Results Indicators (The result shows how you do it.)
2. Performance Indicators (What to do)
3. KPIs. (What to do to extend performance significantly)

The common feature of Key Result Indicators (KRIs) is that they are the result of actions, such as increased profits and increased customer satisfaction. Performance indicators say what you should do, and KRIs tell what to do to increase performance radically. Key Performance Indicator offers more information than Performance Indicators.

Onion clarifies the relationship between these three performances. The outer layer of the onion is formed as an indicator of the water, sun and nutrients it has taken. As we peel the layers of the onion, we reach more information. After peeling the layers of the onion, we reach the core. In summary, the outer layer of the onion represents Key Result Indicators, the layers represent Performance Indicators and the core represents KRIs. We can reach more information with KRIs than Key Result Indicators and Performance Indicators (Parmenter, 2007).

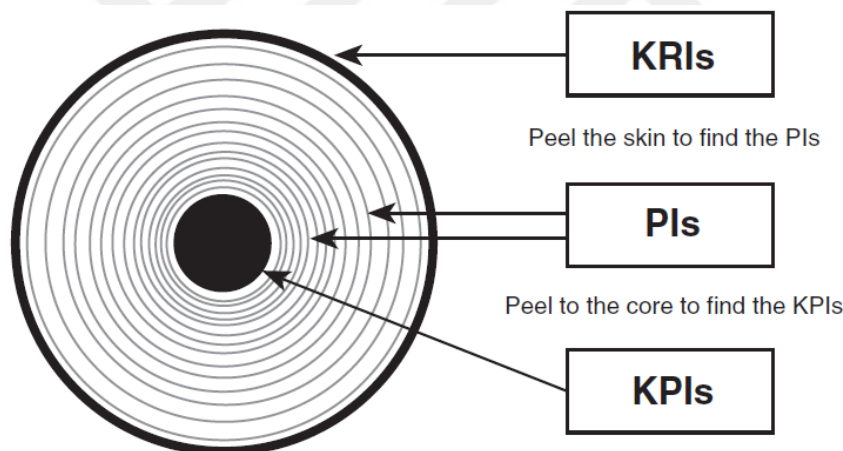


Figure 1: Three Types of Performance Measures

Although key performance benchmarks have a long history, in practice they have always been up to date with innovative ideas and improvements. Changes have also taken place in KRIs due to economic, social, political and environmental factors. Although financial indicator systems have been used more in the past years, with the change, non-financial factors are used in today's management. Financial or non-financial KRIs must have been determined according to companies' needs and their wants.

While determining the KRIs, all groups following and implementing the goal should have a good understanding of the details. When choosing key indicators, methods that are easy to calculate,

and understand should be preferred.

The following questions should be answered to choose a suitable key performance.

1. What is the problem to be solved? The problem needs to be well analyzed and understood.
2. What types of data would be suitable for its intended use. (such as financial, physical, time)
3. How will the data used in the key performance indicator be obtained from within the company?
4. What is the target value of the indicators, and how will these targets be achieved?
5. What can be done to improve KPIs? (Krause & Arora, 2019)

For enterprise performance management, creating goals, management, role-based monitoring of targets, and strategy maps must be prepared. After the KPIs are prepared, the determination of the targets, map of organization chart by person, role and department and targets can be assigned on the basis of that person, role, or department. More than according to the trends (trends) shown by these KPIs, the necessary activities and hierarchical cooperation and coordination should be established (Kaynar, 2010).

2.3. Elements of KPI

KPI consists of strategically determined measurements, not ordinary measurements. The KPI demonstrates a strategic goal and measures performance against that goal (Eckerson, 2009)

Strategy	KPIs embody a strategic objective.
Targets	KPIs measure performance against specific targets. Targets are defined in strategic, planning, or budget sessions and can take different forms (e.g., achievement, reduction, absolute, zero).
Ranges	Targets have ranges of performance (e.g., above, on, or below target).
Encodings	Ranges are encoded in software, enabling the visual display of performance (e.g., green, yellow, red). Encodings can be based on percentages or more complex rules.
Time frames	Targets are assigned time frames by which they must be accomplished. A time frame is often divided into smaller intervals to provide mileposts of performance along the way.
Benchmarks	Targets are measured against a baseline or benchmark. The previous year's results often serve as a benchmark, but arbitrary numbers or external benchmarks may also be used.

Figure 2: Elements of KPI

2.3.1. Strategy

The strategy was first used militarily in history. It represents the military maneuver, and military order used to defeat enemies. The strategy was used to create assimilated plans, create combinations and decide individual engagements within them. Business likes to use military terms. Therefore, the concept of strategy has easily adapted to the business world. The Strategy has been used as a tool for controlling and planning research in business life. The strategy determines what the job is, where we want to go, and how we arrive. The strategy is used to provide a competitive advantage in the business world. (Harvard Business School Press, 2005, p:12) Strategy is a necessary way for a company to reach its vision. In a competitive environment, your strategy can set you apart from your competitors (Parmenter, 2007).

KPIs are assigned to each perspective in strategy map, strategy map and are designed in order to reach the organization's long-term approach in the entrepreneurial sector (Gabcanova, 2012). A successful performance measurement system facilitates the identification, and implementation of strategies, and communication tools (Kaynar, 2010).

In order for the measurement systems to give what is expected of them in all these processes, they need to be designed to reflect strategies and influence strategies. Improvements in strategies with at least some of the measurement systems should be monitored, whether what is expected to be done is done, what is done. It should be determined whether it provides the expected effects on it.

According to the classical understanding, the most obvious purpose of performance measurements is control. In the measurement systems for control, the aim is to compare the process with the defined criteria, so that whether the system is under control, if not, the level of deviations, and to determine the reasons. The control purpose of performance measurements is important together, a limitation should be imposed on this control task in the classical sense. Low-level purpose of control can be given to the purpose of control in the activities, but still, the measurements are more in order to improve the organization, and adapt to the changed conditions should be preferred (Kaya, 2008).

2.3.2. Targets

Goals, and Targets. The goals related to KPIs are identified as targets because of measurable results rather than conceptual goal. Ideally, managers and workers set goals collectively during strategic, planning, or budget discussions. Provides this type of cooperation purchasing, and more accurate targets. Targets can also be set by a KPI team tasked with translating strategic objectives into a performance plan. KPIs achieves its goals from the targets associated with them, so it is important to understand the targets. Ranga Bodla, senior director of enterprise performance for SAP software, identifies five types of targets:

1. Success: Performance should be able to achieve or exceed the goal, but it does not always have to be on it. Performance above target can be debilitating for the practitioner.
2. Reduction: Performance must reach, or be lower than the target. Examples include overtime and attrition.
3. Absolute: Performance must be equal to the target. Anything above, or below is not good. Examples include in-stock percentage and on-time delivery.
4. Min/max: Performance must be in a value range. Example: the average time between repairs.
5. Zero: Performance must be equal to zero, which is the lowest possible value. Examples employee injuries, and product defects (Eckerson, 2009).

The definition of KPIs should be made taking into account the desired result of the processes. Smart technique is recommended for the elimination of KPI metrics. Accordingly, a good KPI must be Specific, Measurable, Accessible, Relevant, and Time-Dependent. This measurement

method is not interested in the cause-and-effect relationship. The best way to solve this problem is to. Organizing metrics, and proposing new KPIs, identifying ineffective performance strategies, and continuously improving relationships between metrics, and enterprise goals (Mazlum, 2007).

2.3.3. Ranges

Many organizations and business targets are classified, often proportionally below the target, or above the target. Businesses can create any number of rates around the target Generally, Three versions are used. Below the target, above target, on target (Eckerson, 2009).

Setting up an acceptable range is more beneficial than a fixed target because it takes into account a future, and that sometimes more tolerant of environmental change (Parmenter, 2007).

2.3.4. Encodings, and Thresholds

The next step is to encode ranges on an indicator, or report, which can also be graphical reporting. It's important for companies to use consistent, and reliable coding, and scoring. It is important to show, and encode KPIs in these environments. When a user looks at a KPI and sees it in a table, it's important that all conditional formatting is in the same sense. For example, above target, on target, below target can be systematically encoded in red, green, and yellow color. The threshold is defined as the boundary line between ranges. If performance exceeds a specified target, it can change color in graphical representation. Colors make it easy for the user to quickly evaluate by looking at reports. Not all companies use color, some companies can use graphics devices. The graphics and reporting method to be used may differ depending on the company's culture, or preference (Eckerson, 2009).

2.3.5. Time Frames

Evaluation of performance targets takes place at certain time intervals. These time intervals also affect the way KPs are calculated and shown. Many Organizations determine the measurement of KPIs annually. In order to achieve the goals with employees, many organizations divide time into slices, such as 6 months, 3 months, monthly (Eckerson, 2009).

Indicators are never offered solely as a one-off, they are presented in the time period in which past

and future information are included (Peterson, 2006).

2.3.6. Benchmarks

Benchmarking can be defined as an ongoing systematic process to seek better practices. By comparison, it is decided what needs to be changed (Parmenter, 2007).

Organizations use KPI to see the performance that develops according to the starting point. Typically, the previous year's data is used to compare. KPI's are used to make comparisons not only within the company but also between different companies (Eckerson, 2009). Properly selected KPIs for external, and internal benchmarking help identify areas that need to improve (Lloyd GF, and et al, 2015).

Anderson (2011) cited Weller in his paper who presents the significance of KPIs in a unique manner: “If you don’t measure, and benchmark, you won’t know how you are doing now, which areas of your process need the most attention, and how well your changes are working down the road.” (Iveta, 2012).

2.4. Features of KPIs

To create exactly a set of KPIs, firms must create a group of values that can be processed. It's just about identifying these indicators not only but also the need to meet the strategic objectives set to be able to configure the sequence of activities that can provide the level of performance. According to McNeeney (2006), Choosing the right performance indicators is extremely important for the event. These determined metrics may influence the behavior of individuals, and groups, and performance that allows them to carry out their activities in accordance with company targets must be configured inside the measuring system (Kaya, 2008).

Incorrect measurement and evaluation of KPI cause great damage to performance. The power that will bring about change in an organization is applied only with accurate measurements. Incorrect measurements can harm the organization, reduce personnel motivation, and drive the company away from its target. Eckerson (2007) describes the features that KPI must carry as follows “sparse, drillable, simple, actionable, owned, referenced, correlated, balanced, aligned, validated”.

2.4.1. Sparse

The small number of KPIs used is important in performance evaluation. The number of KPIs must be limited to a certain number at the same time (Mazlum, 2017).

Many managers in businesses allow each department to create its own KPI. Obviously, it will take a lot of time to understand the KPIs used throughout the company. KPI must be created that applies to all departments within the organization. The initial proposed KPI may not meet the need over time and may have to change. Using a few KPIs makes it easier for the user to understand the KPI. If the data is not sourced, and it is not easy to supply, it is a good method to limit the number of KPIs. If more than one KPI is used, administrators will have to work hard to manage and understand it. IT administrators need to edit, clean, integrate data for KPIs, and this process will be repeated for each KPI when multiple KPIs are identified. This process can take months, and the resulting data may not be available. In summary, it is necessary to start with little KPI and renew quickly in case of need (Eckerson, 2007).

If a strategic target contains too many KPIs it can weaken this focus, and a large list of KPIs that do not have clear connections, it could be a sign of a larger problem with business goals. (Badawy et al. 2016).

2.4.2. Drillable

For the efficiency of the KPI, it is important to what extent the user can access the source of the data. However, how low should the user be able to drill? We see that it is not necessary to descend to the data strip/data source layer. It may be enough to get down to the user stage. For example, if the user separates their research from the overall cost category, they should be able to drill down to the invoice number, or invoice image (Presthus & Canales, 2015).

Administrators should be able to analyze the cause of a red alert in a graphical KPI impression by going into detail. To complete the analysis, and understand the problem, we need factors, we need detailed data in the reports. Therefore, the KPIs of the best performance indicator tables are broken (Eckerson, 2007).

2.4.3. Simple

It should be easy for users to understand KPI. Users and employees need to know, and understand what is measured. Goals that you don't understand how they're calculated negatively affect the result. With multiple computational methods, complexly calculated KPIs are difficult to understand and very difficult to determine as targets.

It's important to educate people about KPI goals. For example, is a high score good, or bad? If the measurement is customer loyalty, a high score is good, but if the measurement is customer confusion, a high score is bad. Sometimes a metric can mean more than one, for example, a high score is good up to a certain point, and then a high score may indicate inefficiency. For example, a telemarketer can be examined, a telemarketer can make 20 calls efficiently in an hour, while if it makes 30 calls, it may not be able to talk to customers efficiently, and 30 calls may be a poor performance for it. Simple, and easy-to-understand ratings are essential for an effective scoring, and coding system (Eckerson, 2007).

2.4.4. Actionable

All performance management practitioners underline the importance of building actionable metrics. KPIs are easy to understand, but users should also know how to positively affect the outcome of a KPI. Unfortunately, when many organizations publish KPIs, their users often do not know how to interpret them, what to do when there are results, or a KPI downward trend. This is especially true for new administrators.

When organizations publish KPI's, they must support users to take action. It is important that managers delegate authority to personnel, but in many companies, they are not transferred for reasons such as bureaucracy, regionalism, and adaptation. Organizations with hierarchical types have difficulty passing KPI usage permissions to the user. Administrators must delegate authority to workers to take the right actions to bring the organization to targeted levels. A different problem is a wrong action taken by the new staff against the incidents. In most organizations, analytical literacy is quite low, a newly hired staff member needs to be trained in analytical literacy so that the right action can be taken in the face of events (Eckerson, 2007).

Many organizations don't know how to interpret their KPI when publishing it. It is not known to many managers what action to take when there is also a downward trend. For example, an administrator may overreact when they see a red stoplight. Administrators can evaluate general trends instead of the current state of the KPI (for example, the percentage change in variance rates instead of red lights). This prevents the administrator from overreacting, allowing them to better evaluate the situation. Overreacting to a situation that is red sometimes makes the situation worse, performance dashboards are for empowering employees, if a controlling manager exaggerates this situation, the motivation of the staff may decrease.

2.4.5. Owned

For the evaluation of KPI, a responsible owner is required. Some organizations consider there should be one responsible, while others think it's better to have more than one. When a single KPI is responsible, the responsible can manage, and motivate the KPI. In contrast, when there is more than one responsible for a KPI, teamwork can also achieve success. You can achieve efficiency by evaluating people in different groups, which can also lead to conflicts of opinion. Usually, in many organizations, there is a responsible for a KPI. If there is a problem with how the KPI is calculated, and if there is a problem with what data it consists of, the KPI owner is the interlocutor (Eckerson, 2007).

2.4.6. Referenced

If the user does not trust the accuracy of the data, the user will not want to use that KPI. The data should be accurate, clean, and understandable. Users should ensure the accuracy of this data so that they can use existing tables, and electronic information, and interpret the data.

One way to trust your KPIs is to make available reference data about them. Users to right-click a KPI, or button to expose a dialog box that recognizes a business, and method KPI holders, and the origins of KPI, how they were calculated, when recently updated, and other relevant details (Eckerson, 2007).

2.4.7. Correlated

Organizations make up KPIs, but do not examine whether they have statistical relationships. However, a strategy map KPIs give administrators a high-level view of how goals relate to each other. We can also see the effect of an improvement on other processes. This ensures that the performance of KPIs is affected in the appropriate direction.

KPIs are affected by many internal, and external factors such as the economic situation of the company, and competition. KPIs may lose their effectiveness over time as a result of environmental interactions, so it is important to follow the KPIs. Many KPIs have a real lifecycle, they may need to be updated within a year, or two. We need to update targets, and KPIs in the face of changing situations so that they are better represented. If KPI is not valid, it will be wasted on the time, and energy spent on it. It is useful to determine the parties through negotiation together with the people who control them (Eckerson, 2007).

2.4.8. Balanced

In a single report, performance scorecard, financial, and non-financial criteria should be located in a "balanced" way. In the performance scorecard, all dimensions should be weighted in a balanced way with the measure of work performance (Uygun, 2009).

When making KPIs, a balanced set of KPIs must be created. Robert Kaplan and David Norton are the creators of a balanced scorecard methodology. They advocate a balanced approach to measurement, and KPIs should be created that focus on long-term, and sustainable goals.

According to Kaplan, and Norton, KPI's offer managers in businesses 4 different perspectives. These consist of the customer, financial, operation, growth, and learning. Organizations should provide managers with a picture of how goals relate to each other in order to achieve strategic goals, regardless of their perspective. In accordance with its purpose, the connection between each KPI should be shown on the map, so that the leading indicators for the strategic map will be defined. In the case where a new KPI should be determined, this map should be taken into consideration, and created in line with strategic goals (Eckerson, 2007).

According to Uygun, It should use the BSM when evaluating the performance of the enterprise in its performance scorecard. The Balanced Scorecard consists of 4 dimensions as follows.

Financial Dimension: How do shareholders see the business?

Customer Size: How do customers see the business? Business performance by customers.

Internal Process Size: Processes that the business needs to improve, What's all this? Financial, and customer purposes, short, and long-term tools for the realization

Learning, and Development Dimension: Creating, and improving value how can it be protected? Create, and improve value ability (Uygur, 2009).

2.4.9. Aligned

It is important that KPI is sorted according to their priorities, and not contradicted by each other. For example, the logistics group can be examined. It may aim to reduce inventory levels to reduce inventory costs, but in this case, staff may struggle to prevent fast-moving products from outflowing stock. In this case, the staff took an unexpected action to increase the measurement of the KPI.

It is not possible to make such determinations without starting to use KPIs. Necessary corrections should be made accordingly by understanding the problems that may occur. Therefore, the specialist should be careful about the control of the results, make the necessary corrections in such cases (Eckerson, 2007).

2.4.10. Validated

Balancing, and aligning KPIs is significant, but gaps in KPIs should be avoided, staff should not be able to deceive the systems. The way to solve this problem is to include employees as long as they occur. Employees know the processes and the difficulties that may occur better than the managers who create the KPIs. Therefore, it is important that the employees understand the KPIs given to them as targets, and create them together. Workers can ensure that measures are taken in advance for problems in the organization in KPI measurements. If organizations add monetary incentives to KPI (e.g. giving bonuses if a certain goal is achieved), employees tend to play with the KPI and deceive the system. For these reasons, the opinion of the personnel should be obtained when creating the KPI (Eckerson, 2007).

2.5. Reading KPIs

Reading KPIs should be simple. It is easy to interpret a KPI that is properly, and understandably encoded, but many employees do not know how to read KPI screens or interpret KPIs. A good performance dashboard carries 7 attributes.

- 1) Status: evaluates performance against the goal and is frequently presented with a stoplight
- 2) Trend: measures performance against the previous recess, or another time period.
- 3) KPI Name: The KPI name is usually easy to understand, and the user can easily understand, and click on the KPI.
- 4) Actual Value: This shows the value that the KPI is currently in
- 5) Target Value: indicates the desired value.
- 6) Variance: displayed using a text, or microbar chart, or the bullet by measuring the space between the real, and the target
- 7) Variance percentage: is the division of the calculated variance into the target (Eckerson, 2007).

The state is usually displayed as a stoplight or gauge, and it is the attribute that most people first respond to. A red stoplight on the dashboard attracts the user. Then, users can examine the percentage of variance, bad (or good) situations. After that, they look at the trend, which means new, or old, developing, or decreasing. In essence, the status indicates a problem, variance defines the distance to the target, and the trend indicates its movement.

Sometimes the signs get mixed up. For example, if the status of the KPI is red, but the trend is positive, what should the user do? Maybe someone found the problem first, solved it, and started seeing the consequences. On the contrary, what should be done if the status of the KPI is green, but the trend tends to decrease? A green light indicates that performance is above average, but may turn yellow if the user does not take the necessary precautions.

Interpreting KPI attributes becomes even more complicated when targets change each period or range. For example, if a KPI's status is green, and its trend is positive, but its variance is increasing,

alert the user? This signal combination indicates improved performance, but not fast enough to meet accelerated temporary targets. In this case, many companies highlight whether the gap between real, and target is growing is not real values, but the difference, or it's getting smaller over time. This excludes some of the estimates from interpreting KPIs, which is especially useful for new employees, or managers assigned to a new field (Eckerson, 2007).

2.6.Types of KPIs

There are four types of KPIs. Outcomes, and Drivers, Creating KPIs, Operational KPIs, Qualitative, and Quantitative KPIs

2.6.1. Outcomes and Drivers

There are two basic types of KPI as outcomes, and Driver KPIs. Outcomes KPIs usually measure the efficiency of the past. Sometimes they are also defined as lagging indicators. They are usually composed of financial data. Examples, revenues, customer satisfaction, margins.

The most basic approach to measuring financial performance is financial statement analysis. Business owners, managers, lenders, sellers, business interested customers, and all interest groups, such as employees, act by relying on the financial statements of the enterprise. Each group has a special reason to deal with financial statements, some follow for lending, some for investment. Business lenders can determine the reason for the business's borrowing, and financial statements and they decide whether to do it accordingly. Investors, business available whether it is likely to increase financial condition, income, or cash flow, to invest after examining the capital structure, and competitiveness within the sector, or decide not to. Financial statements are most intense users are couscous-free managers. Administrators, general financial to understand whether the performance is beneficial, and the reasons for this situation, uncover the weaknesses, and strengths of the enterprise, and to operate in the future determine what measures should be taken to improve performance financial statements (Coskun, 2005).

Driver KPS measures existing activities. It is also called the leading indicator. Like the number of sales today. Drive KPIs are stronger than outcomes KPIs. Because the driver KPIs ensure that they can reach the desired result, and help the managers.

These two species are often confused, but often there is not much difference between them. Neal

Williams, founder of Corda says “One man’s outcome measure is another man’s value driver. An outcome KPI in one dashboard could be a driver KPI in another.” (Eckerson, 2007)

2.6.2. Creating KPIs

Most organizations prefer to use the outcomes KPIs. It is easier for managers to see the desired status of a strategic goal with these KPIs. Most management reports measure financial reports.

Many companies have a hard time identifying the parts that will be used to measure future performance. These can take days, months, or even years to find related metrics. Initially, users should be brainstormed and discussed which KPI should be used for measurements. The question of which activities will allow us to reach the desired conclusion is the most important determinant question to be answered. After several position assessments, there will be one, or two main reasons that affect performance. The organization can choose one of these as affecting performance (Eckerson, 2007).

2.6.3. Operational KPIs

Some organizations think that nothing that is not related to their strategic objectives should be measured. Many organizations adopt this idea. In particular, lots of organizations do not use operational metrics that they think do not add value to the enterprise, they think of it as an unnecessary waste of time, and energy. In fact, it should be evaluated in many operational measurements. Various operational processes are important, although not strategic, they can damage the continuity of the business when a problem occurs, preventing things from working. Since cost and profit margins are considered more important, many users think that operational parts are insignificant, and a waste of time, but they ignore how important disruption in operational processes is (Eckerson, 2007). In order to maximize performance, it is necessary to ensure the correct and consistent operational process (Weber, and Thomas, 2006).

2.6.4. Qualitative, and Quantitative KPIs

Some parts of KPIs are quantitative, and some are based on qualitative data. Quantitative data can be measured. It covers data that can be counted and expressed numerically. The Quantitative KPIs are associated with the data can be expressed numerically, such as inventory, orders, procurement process (Eckerson, 2007).

Managers who focus on financial criteria, neglect some important dimensions that greatly affect, but are not easy to measure. As a result, the accounting system, and to show the results of past decisions financial indicators are over-emphasized. Will improve your future performance the necessary attention is not paid to the criteria. Traditional approaches include performance measurement, profit, and efficiency (Coşkun, 2006).

Most importantly, widespread use of financial performance criteria the reason is that they are precise, and objective. Financial performance criteria directly refer to their future objectives, and are holistic to the performance of the operator provides a view. A profit ratio below expectations strategies or tactics are insufficient, or means those appropriate tactics, and strategies are not followed. However, some problems with the use of financial performance criteria. General considerations for these criteria are:

Short-term, introverted, and narrow-minded financial performance criteria

Financial performance criteria, customer satisfaction, quality of goods, and services, employee morale is inaccessible in measuring such factors.

Financial performance criteria only show what happened in the past, I can't predict the future.

Since it takes a long time to collect, and report financial data, inadequate when decision-making is required.

Financial results indicate whether the problem exists, the source of the problem does not give any information directly about this.

Financial performance criteria are generally aimed at short-term goals. Therefore, research, and development, maintenance, education, and investment related to future subjects are left behind or postponed (Coskun, 2005).

Financial performance criteria are usually short-term and focus on the past. The need for non-financial indicators has increased in order to predict the future (Kaynar, 2010).

It is just as important in qualitative KPIs as quantitative KPIs. Customer satisfaction, employee satisfaction can be an example for qualitative KPI. This data explains why performance decreases

when all other KPIs look good. Many companies use customer satisfaction KPIs to improve their products, and increase satisfaction. These qualitative criteria are usually measured by the survey method. Subjective comments of customers, or employees are collected and evaluated through the survey. They make a significant contribution to companies running their business (Eckerson, 2007).

2.7. Creating KPIs

After defining, and understanding KPIs' characters, the next step is the creation of KPIs. In this process, it is essential to define KPIs in accordance with the organizational policies. The process of creating KPI usually consists of 3 stages. The first stage is the beginning of the project, the second stage is the project process, and the last stage is after the project.

2.7.1. Beginning of the Project

In order to successfully establish performance management, and ensure its effectiveness, the following stages need to be followed.

1. Determination of strategy
2. Creation of sponsorship
3. Determination of methodology
4. Creation of the framework of the project

2.7.1.1. Set the Strategy

Since KPI measures, and evaluates performance in accordance with the strategy, there should be clearly defined strategies. In general, it involves of a strategy, mission, vision, goals, and plans. Where the company wants to be in the future should be indicated in the strategy (Eckerson, 2009). Designing a set of indicators is the most time spending, and effort-demanding process. Indicators are designed by long term strategical and tactical plans (Kaya, 2008).

Strategic planning is usually the goals for the future set by managers in all companies, even social institutions. These goals will be realized through people (Fındıkçı, 2003). Performance assessment

in the company in the making of strategic planning results should be used as data. Thus, according to the evaluation results, there may be a good chance of success in the implementation of the strategic plan to be prepared (Yılmaz, and Unsar, 2007).

2.7.1.2. Obtain Sponsorship

“Without engaged, and committed senior sponsors at any level of the organization, it’s difficult to get anything done.” (Eckerson, 2009)

Sponsorship is critical to the performance management strategy. The best sponsors are those with fact-based experience, the measurement from a previous assignment in another company, or from a balanced scorecard workshop, or they are the ones who discuss the metrics of such initiatives with experts, and their peers. The sponsor must improve a KPI steering committee consisting of peers, and representing them all, organizations, and groups. The Committee serves as a board of directors oversees the direction of the initiative, secures financing, resolves disputes, and identifies the KPI development team (Eckerson, 2009).

2.7.1.3. Methodology

A methodology must be followed for performance management. A methodology helps the project to continue, and be efficient. It is necessary to educate the practitioners about methodology. A methodology applied, and clearly stated will prevent the formation of internal resistance. Some methodologies, such as balanced scorecard, or Six Sigma, are complex, and expensive to apply. They need a top-down approach. Many people, on the other hand, think that there should be approaches applied both from top to bottom and from bottom to top. According to the results of the TDWI research, it shows that a significant number of organizations use the technique of gathering traditional requirements. Below, according to the results of research on this subject, it is shown which method the enterprises follow when developing the KPI (Eckerson, 2009).

What approaches do you use to develop KPIs?



Figure 3: Develop KPIs

Source: Eckerson, W. W. (2009). Research Q&A: Performance Management Strategies. *Business Intelligence Journal*, 14(1)

2.7.1.4. Frame the Project

First of all, before a new project is created, the management committee and development team should be established, and the scope of the project should be determined. KPI development team, it usually consists of three to five business managers or analysts. The technology team is often working to encode and develop the devices with software. The less we determine KPIs, the easier it is to control their effectiveness. It is necessary to be slow, and careful when determining the KPIs (Eckerson, 2009).

According to one research, senior executives, managers, and business analysts are mostly responsible for defining and implementing KPIs. See Figure 4

Who is responsible for your KPIs?

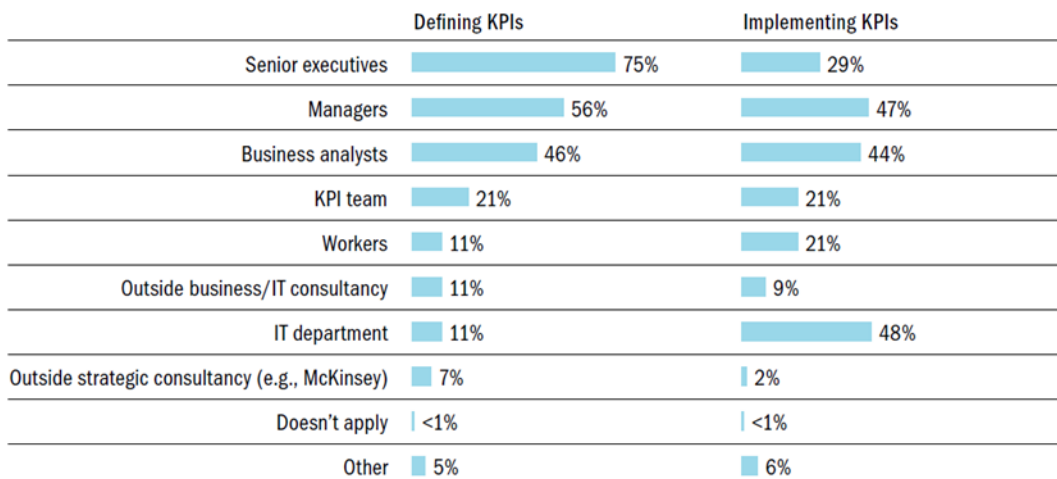


Figure 4: Who is Responsible for your KPIs?

Source: Eckerson, W. W. (2009). Research Q&A: Performance Management Strategies. *Business Intelligence Journal*, 14(1)

2.7.2. During the Project

The following are the things to consider during the project and in practice.

- Define requirements
- Prioritizing, and normalizing
- Collect data
- Improve the dashboard

2.7.2.1. Define Requirements

Concordia's Neal Williams created a new model that included a 10 step to benefit teams while defining business requirements (Eckerson, 2009).

- 1.) There should be a framework that defines your strategic goals.
- 2.) Questions appropriate to strategic goals should be created.
- 3.) Write down measurements within the framework of strategic goals

4.) Define the goal, and define benchmarks

5.) Detail with the diagram

6.) Define the behavior

7.) Check the data.

8.) Check compatibility.

9.) Check the balance

10) Identify users for KPI

Managers, and users, will develop indicators that will enable them to reach their preferences. Developed some of the indicators are generally accepted key point indicators. There will be indicators developed within the conditions during the application. Each indicator serves a specific purpose. When the goal is achieved, the target related to that indicator will be revised, or new indicators will be determined (Akal, 2000).

2.7.2.2. Prioritizing, and normalizing

It is necessary to remove the kps that are likely to be determined by the storm of the brain, and then decide which of these keys is more important, and apply them. For this, KPI is prioritized according to their status (Eckerson, 2009).

- Is it linked to the strategy?
- Can it be measured?
- Does it ensure the correct behavior?
- Is it understandable?
- Is it feasible?
- Is it available?

The complexity, and difficulty of selecting basic performance indicators will increase when systems that descend to units, and all levels in enterprises are examined. In order to ensure consistency between the goals of all targeted subsystems, and activity plans, KPIs should be selected in line with short, and long-term goals. The requirements for determining the indicators can be listed as follows.

1. In order to provide benefits such as problem-solving, and decision making in performance measurement, it should be compatible with the strategies, and objectives of the enterprise.
2. Indicators that really matter must be chosen, otherwise, time and resources will be lost.
3. Indicators should have the potential to affect organizational performance.
4. It is important that KPIs show improvements. It is very important in terms of performance appraisal that it states where needs improvement (Kaya, 2008).

2.7.2.3. Collect Data

After determining KPI, the next step is to collect the necessary data. Ideally, the information needed is the information kept in the database of the enterprise. Otherwise, it may be difficult to obtain the necessary information due to the complexity of the business (Mazlum, 2017).

It is necessary to minimize the target in KPI projects, and not deal with uncertainties in data sources. When there are errors, and problems in the data to be used in the KPI, the IT team usually meets with the KPI steering committee to eliminate these uncertainties. If the data is not available to use in the calculation of KPI, and KPI committee insists to use the data, the data must be cleaned. If the resource cleaning and recovery costs are high, measurement can be achieved with another KPI. It would be more efficient to have the KPI representative be the IT representative regarding the cleaning, and editing of the KPI team's data.

Most of organizations do not have the necessary funds to improve or clean the data. Generally, A business shoots the messenger when an error in data is recognized from IT department. For avoid of blaming from management, when designating a dashboard showed KPIs, IT department is designed a note that included “no data yet”, or “data is not enough to see”. Users feel pressure from management to fix this problem (Eckerson, 2009).

2.7.2.4. Develop A Dashboard

“A dashboard is a visual display of the most important information needed to achieve one, or more objectives, consolidated, and arranged on a single screen so the information can be monitored at a glance.” – S. Few

Dashboards performed as very prevalent keys of data presenting. Dashboards provide actionable, and associated data in a designed format to users. These reports give information about how administration can be more efficient, and quicker (Čekerevac, 2013).

First, KPIs must be defined. It's very significant. The first step in designing the dashboard is to users are responsible, and want to manage dashboard analysis. Identifying the right KPIs is the most important step in design steps, because it is the basis for what information is displayed in the table later. In addition, to identify KPIs, it is useful to specify information that the user can identify status of the given KPI. Accurate KPI visualization components are important. Visualization components, and visualization tables are combined into two main categories: KPIs, and support logical analysis. In any case, it is important to choose the best image you need, depending on the information the end user watches, or analyzes (Mazlum, 2017).

Access to dashboards is for middle, and senior executives in most companies. It is usually designed for managers according to the needs of managers. Due to the costs, it is not easy to design a dashboard for all employees (Stoop, 2009).

According to Gonzalez (2005), There are five general visuals types using on dashboards.

Warning Icons: Warning icons may be the simplest. They are color-coded, shaped, or geometric. The most commonly known warning colors are yellow, green, and red, thus providing information about the status of the KPI.

Traffic Light Icons: An improved version of the warning icons. Unlike warning icons, traffic light icons are used. One of the most important advantages of the traffic light icon is that it is easy to understand in good, bad, warning situations. In fact, the simple warning icon can be more visual in the report, but the traffic light icon can be used because it is easier to recognize.

Trend Icons: Trend icon represents what the underlying performance indicator, or criterion is like

performs for a period of time. There are three situations: it moves towards the target, or away from a static target. Various symbols can be used to show them numbers, or arrow marks. Trend icons can also be combined with alert icons.

Development Bars: In the simplest way, the development bar provides a visual representation on the one-dimensional axis. With the addition of color, and warning, we can understand how close the target threshold is. It is often used to indicate relative change

Counters: It enable quick evaluation of positive, and negative values. Counters also enable the use of data that changes over time. It makes it easier for us to understand how far, or close we are from a certain value (Mazlum, 2007).

According to Eckerson, there are three types of dashboards. They are operational, tactical, and strategical dashboards.

Operational Dashboard shows detailed information about workers, and supervisors. It gives information about operational process, and it is generally revised on intraday basis.

Tactical Dashboards are used by mid, and top managers to see project's performance, and planning. This report are updated weekly, or daily.

Strategic Dashboards are used by top managers to reach strategical goals. The metrics are generally revised by weekly, or monthly.

2.7.3. After the Project

Once KPIs are determined on a dashboard, the real process starts! No software solution will be successful as long as it is not linked to users. The KPI project team must:

- Market the project
- Monitor, and revise KPIs
- Manage the process
- Coach Managers, and users

2.7.3.1. Market the Project

If the user does not know that the boards exist, they cannot use the dashboard. If the effect of using, and gathering information in decision-making is unknown, the dashboards are not used. If the user does not trust the data on the dashboards, they do not use the dashboard. Well-designed dashboards attract the attention of users. The KPI team's marketing plan creation helps the project plan, and key messaging for each group.

In the marketing plan of the KPI supplement, education, and post-training support must also be included. The KPI team provides training, and a variety of support to make dashboards understandable. Many KPIs practitioners sit side by side with the user, explaining how to use it. The KPI team can offer users the possibility of computer-based training on a web tab, or class basis. The KPI team should help users by creating a support line (Eckerson, 2009).

2.7.3.2. Monitor, and revise KPIs

It is unlikely that KPIs can be defined in the most accurate way at once. KPI teams, and technical teams often try to make decisions by meeting. It is not possible to understand the effect until KPI is applied. It is understood that the problems that will occur in the KPI application are usually after implemented, not before. It is necessary to be ready to make changes for the selection of the right KPIs. It is easy to determine whether a KPI presents the desired effect by looking at the results. If there are unaccepted results, It will be required to revise it. After fixing the KPI, it is decided whether to add financial incentives to them. If employees don't understand the KPIs, if they don't know how to affect them, it doesn't make sense to pay bonuses to KPIs. At the same time, employees should know that the targets set in the KPIs are achievable, otherwise the motivation, and productivity of the employee will decrease (Eckerson, 2009).

2.7.3.3. Manage the Process

After the dashboard is delivered to the KPI team, the KPI management monitors the effectiveness of the KPIs , changes in the KPIs, and guides them for the KPIs. Some companies even employ a performance chief to control the business (Eckerson, 2009).

2.7.3.4. Coach Managers, and Users

The most important feature of a performance is that it can provide to achieve strategic goals. Managers can overreact to fluctuations in key performance when given a KPI dashboard. Instead of focusing on short-term results, long-term performance should be looked at. Administrators should know that they use KPIs to improve performance. Managers should see the KPIs as an early indicator, and evaluate the results there early, and make positive progress. Without a meeting, reviewed performance may not be effective, it may be more efficient to meet with employees, and evaluate performance with a meeting (Eckerson, 2009).



3. BALANCED SCORECARD MODEL

KPIs enable organizations to measure, and evaluate their performance. After organizations have determined their mission, and vision, they need a method to measure the follow-up of these goals. Balanced Scorecard is one of these methods. The balanced measurement card asks us to examine the organization in four perspectives. Epstein, and Wisner in 2001, described advantage of BSM are: (Mazlum, 2017)

- Process costs reduction
- Reduce management costs
- Increase in share premium with the improvement in financial structure
- Product development, and innovation
- Market share increase
- Awareness raising
- Process Improvement
- Product Increase
- Increasing revenues with fewer resources
- Keeping waste to a minimum
- Using resources efficiently
- Staff satisfaction
- Increased learning rate

The performance scorecard, which consists of 4 dimensions, is formed in line with strategic

purposes. In the performance scorecard, in order to measure the strategic goals, the strategic goals, performance measurement method, and target performance value must be defined beforehand. The target performance should be compared with the actual performance. In addition, what needs to be done in order to achieve the goals stated in the performance report should be clearly stated (Horngren, and et al, 2003). The four dimensions that make up the performance scorecard are financial, customer, process, learning, and development. The goal of the performance scorecard is to increase the performance of the enterprise. In order to have a good financial performance, the relationship with the customers must also be good. Satisfying customers depends on well-functioning processes. Good functioning of processes also depends on learning, and development (Kaplan, and Norton, 2004).

With the performance scorecard, strategies are no longer a matter adopted by top managers, and are being adopted by all employees in the company. By reaching all important strategic points within the company, it contributes to the improvement of performance. The performance scorecard ensures that the strategic goals set by the top managers are clear, and understandable. According to a study conducted in the USA, performance scorecard is an effective management tool for strategic goals within the organization (Malina, and Selto, 2001). Performance scorecard enables the company to better understand the importance of strategic goals, and plans, and provides an understanding of the importance of interconnected processes of managers at different levels. It aims to harmonize the existing value system of the business with the strategic goals, and to ensure that its employees act in line with these goals. It is aimed to increase the performance in accordance with the purpose of the business.

Businesses can sometimes make sudden changes in their performance scorecard system. Companies want to make changes considering that the selected performance criteria do not match the mission, and vision of the enterprise, or there are too many performance criteria. Some businesses take the performance scorecard of successful companies, and try to apply it themselves. However, the fact that each enterprise has a separate mission, and vision, and different strategic goals do not make it possible to use the same performance criteria. For these reasons, the performance scorecard of each enterprise should consist of its own criteria (Rousseau ve Rousseau, 1999).

Performance scorecard focuses not only on financial aspects but also on non-financial aspects.

Although improvements, and developments in non-financial dimensions do not affect financial processes in the first stage, they increase financial efficiency in the following processes. Combining financial, and non-financial goals enables the examination of both short, and long term performance (MacStravic, 1999). Performance scorecard differs from traditional management models by including non-financial performance measures. Focusing only on financial targets limits the long-term development, and strategic success of the business. While businesses focus only on financial assets, intangible assets may miss the skills, and skills required. While the financial situation reflects only the past, or the current period, the performance scorecard gives targets for the future. Performance scorecard is used in the management accounting system in many businesses. It makes the data to be used for decision makers simpler. It transforms other reports used within the organization into a single report, and ensures that the data is more understandable, and target-oriented. In this way, managers can make their analysis, and determinations faster (Zaim, 2002).

Focusing only on financial processes misses many developments that will improve processes that contribute to the non-financial development of businesses. For example, reducing the completion time of a job from 1-2 months to 2-3 days is an important success, but if we do not focus on processes, and focus only on financial factors, we may have ignored the important factors that affect profitability (Klein, Delenay, and et al, 1999).

Performance scorecard has started to be used more with the technological developments, and has been a factor in the increase of the use of management accounting. With the performance report, managers make decisions easier, and faster, and at the same time, it makes it easier to provide the necessary information required by the manager by collating many reports within the company (Latshaw ve Choi, 2002).

While creating a balanced performance scorecard, the selected KPIs should not focus on a single dimension, they should be created in 4 dimensions. Norton's suggestion is as follows.

Table 1. Norton's Balanced Scorecard Report

Company Name	Financial Perspective	Customer Perspective	Internal Business Process Perspective	Learning and Growth Process
Brown and Root (Rockwater)	24%	19%	33%	24%
Chemical Bank	22%	22%	34%	22%
Cinga P&G	17%	26%	35%	22%
Mobil USM&R	21%	16%	59%	13%
Norton's recommendation	22%	22%	34%	22%

Source: Mark L. Frigo (2001). 2001 CMG survey on performance measurement: Trends, and challenges in performance measurement, Cost Management Update

The use of performance scorecard aims to be used in a balanced manner in four dimensions. To investigate this issue, Institute of Management Accountants conducted a study on its members (1300 members) in 2001. According to the results, large differences were detected in performance measurements between those who apply performance scorecard, and those who do not. It has been determined that businesses that apply performance scorecards use performance criteria in a balanced, and successful manner. It has been observed that businesses that do not apply performance scorecards focus on financial aspects, miss internal dimensions such as learning, and development, and move away from customer focus. According to the research conducted by Institute of Management Accountants (IMA) in 2001, the performance dimensions of the enterprises that use, and do not use performance scorecard are as follows (Frigo, 2001).

Table 2. 2001 CMG Survey on Performance Measurement

Performance Perspective	Those Who Use Performance Scorecard	Those Who Do Not Use Performance Scorecard	Norton's Recommendation
Financial Perspective	34%	63%	22%
Customer Perspective	21%	8%	22%
Internal Business Process Perspective	29%	20%	34%
Learning and Growth Perspective	16%	9%	22%
Grand Total	100%	100%	100%

Source: Mark L. Frigo (2001). 2001 CMG survey on performance measurement: Trends, and challenges in performance measurement, Cost Management Update

Performance report should be prepared in accordance with the following stages. Defining the sector in detail, defining its development, and explaining the place of the enterprise in the sector (Olve, Goran, and et al, 1999).

- Review of the vision of the business
- Defining the criteria to be used for performance measurement
- Separating the performance criteria into dimensions within the framework of the vision of the business, determining the strategic objectives suitable for these dimensions
- Explaining what the critical success factors consist of
- Explaining the relationships between criteria, and establishing a balance.
- Creating performance scorecard for the highest level.
- Separate performance scorecards, and performance measures should be determined for each unit within the business.
- Targets to be achieved for performance should be specified.
- Determining the action plan for the performance report
- Starting performance report application

Strategically visualized performance scorecards are better understood by employees, and managers, so it is important to include visual elements when designing performance scorecards. Strategic maps need to be created. Strategy maps should be created in a way that includes, and understands all employees in the organization, not just top managers. If the strategic objectives are not understood by all the personnel working in the organization, the expected results from the performance scorecard will not be obtained. In fact, it will only be seen as a reporting tool by the staff. For the successful implementation of the performance scorecard, Business-specific performance criteria should be established. The support of the top managers should be taken. The criteria should be selected in a balanced, and limited number of ways. Not all criteria in the

performance scorecard need to be numerical. The deficiencies that appear in the application should be corrected. Performance scorecards prepared for other units within the company, and performance scorecards prepared for top management should not conflict with each other. There may be problems in the process of applying the performance scorecard, and the necessary improvements should be made instead of removing the performance scorecard (Roest, 1997).

The application method of performance scorecard in enterprises is generally excel program. According to a study carried out in the USA in 2004, the most preferred methods in performance scorecard application are Microsoft office program, and most importantly excel (Lawson, Stratton, and et al, 2004).

3.1. Financial Perspective

The most using financial KPIs in airline industry is cost per available seat. Airline executives often see cost per available seat (cask) as the most important KPI that measures financial performance. The other key performance indicators are operational cost, cash flow rate, operational income, net income, return on invested capital, price earning ratio, dept/equity ratio, income/expenditure ratio, share price, earnings per share ratio. Above mentioned ratios are related to all sectors, but CASK (cost per available seat), and RPK (Revenue passenger kilometres) is specific for airline industry. (Francis, and et al, 2005).

Financial profitability, which is a dimension of the performance scorecard, aims to maximize profit in line with strategic goals. The financial dimension is also important for shareholders. Profitability in businesses depends on the increase in income, and productivity. Efficiency is generally achieved by reducing costs, and using assets efficiently. Increase in income is achieved by offering more valuable products to customers, and taking advantage of opportunities in the market (Kaplan, and Norton, 2004A).

3.2. Customer Perspective

Existing management philosophies prefer to be customer-oriented as a priority in every business. If the customer is not satisfied, it will be inevitable that customer prefers other companies. Policies of attracting, and retaining customers differentiate companies from their competitors. Therefore, the BSM cares about being customer-oriented (Mazlum, 2017).

Customer focus, another dimension of the performance scorecard, consists of activities aimed at increasing the value offered, relations with customers, and the image of the firm. The quality of the product, its availability in the market, the price, and variety of the service affect the relations with the customers. The image of the firm also consists of the brand perception created by the company in its customers (Kaplan, and Norton, 1996). Baggage fees, food service, baggage service, flight cancellations affect which brand customers prefer during the flight process (Khairat, 2016).

Revenue Passenger Kilometres, Service Quality in aircraft, Delivering time of baggage, numbers of lost, and damaged baggage items, check in time, number of customer complaints, Load factor (L/F), Market share are the customer perspective in airline companies (Erdoğan, and Kaya, 2016).

3.3. Internal Business Process Perspective

This method is more related to the internal process of the enterprise. It makes it easier for managers to better understand processes, and to understand how things work. It can also provide an understanding of whether products, and services are suitable for customer needs. When designing these processes, managers must be careful. It should be designed from an inside point of view, not from an outside point of view, or with a consultant. Most companies can move away from innovation-intensive strategies that add added value by focusing solely on cost, or operational quality in this measurement management. When implementing growth strategies, companies often face operational, and cost-effective challenges. The advantage gained by process improvement can facilitate the overcoming of the difficulties experienced in growth. Long-term revenue, and profit margins can increase with process improvements (Mazlum, 2007).

The process dimension deals with the internal structure of the company, and is supported by the customer dimension, and increases the share value of the business together with the financial dimension. In terms of processes, it is investigated which business process should be improved in order to increase efficiency. The activities, and the management process, the management process related to the customers, the innovation process, the legal, and social relations process constitute the objectives of the processes dimension (Kaplan, and Norton, 2004b). In administration, managers should not only focus on financial factors. They should also focus on internal business process perspective. If we focus solely on financial factors in determining policies such as rewarding employees, we miss out on investments that will benefit the business in the long run.

So non-financial factors should be included in the rewarding system (Banker, 2004).

On time performance, Average Fleet Age, Available Seat Kilometres, Turnaround Time, Break-up Occupancy Rate, Aircraft Productivity, Ground Handling Time are the internal business process perspective in airline companies (Erdoğan, and Kaya, 2016).

3.4. Organizational Learning, and Growth Perspective

The other 3 perspectives are usually short-lived. They are used for monitoring short-term processes, but organizational learning, and growth perspective, on the contrary, focus on the long-term process. In a changing competitive environment, it will not be enough just to focus on short processes. This percentage has gained importance in the trend of innovation, and learning. Companies attach importance to employee training, personal, and corporate development in order to adapt to the competitive environment, and to continue their services, and products. With technological developments, it has become inevitable that employees will improve themselves, and be in the process of continuous learning (Mazlum, 2007).

The learning, and development dimension shows the extent to which employees should specialize, and receive training in order to satisfy shareholders, and customers. Learning, and development dimension consists of 3 dimensions. It is human capital, knowledge capital, corporate capital. Investigates what kind of change, and development the business needs in order to achieve its strategic goals (Kaplan, and Norton, 2004c).

Personnel Satisfaction, Rate of Development of New Services, Personnel Productivity, Amount of Personnel Training, Accident, and Incident Ratio, Environmental Performance (Co2, noise, waste) are organizational learning, and growth perspective in airline companies (Erdoğan, and Kaya, 2016).

4. ANALYZING THY WITH ITS COMPETITORS USING KPIS IN A BALANCED SCORECARD METHOD

4.1. Information About THY

THY is Turkey's flag carrier, and largest airline operator. Founded on May 20, 1933 as The State Airlines Administration with a fleet of 5 aircraft, the business was renamed THY (THY) in 1955. Prior to the Covid-19 pandemic, THY served in 127 countries, 319 cities, and 323 airports, serving the title of the airline that flew to the most destinations in the world. All these services are based at Istanbul Airport with a total of 364 narrow, and wide-body aircraft, some of which are of their own, and some of which are acquired by the financial leasing method. The total number of personnel working in the Company is 28597 (THY, 2021a).

THY has adopted the traditional business model, and carries out passenger, cargo, and freight transportation activities. The shares of the company are traded in Borsa İstanbul, 49.12% of its shares are in the Turkey Wealth Fund, and 50.88% are open for public (THY,2021b). In 2008, the company created a sub-brand to compete with low-cost carriers, and named it AnadoluJet. AnadoluJet offers services at 43 airports, and 80 tracks with its narrow-body fleet of 36 aircraft (Anadolujet, 2021a).

4.2. Information About Competitors

4.2.1. Deutsche Lufthansa AG

Lufthansa Group is an aviation group with worldwide operations. With 110,065 employees, the Lufthansa Group generated revenues of €13.589 million in fiscal year 2020. Lufthansa Group consists of Network Airlines, Eurowings, and Aviation Services segments. Aviation Services consists of Logistics, MRO, Catering, and Additional Enterprises, and Group Functions segments. The latter also includes Lufthansa AirPlus, Lufthansa Aviation Training, and IT companies. All segments are leaders in their own markets.

Deutsche Lufthansa AG has typical management, and audit structures for companies in Germany. The Board of Directors is responsible for managing the Company, and defining its strategic

direction. In doing so, the aim is to increase the value of the Company in a sustainable way. The Supervisory Board appoints, advises, and supervises the Board of Directors. Deutsche Lufthansa AG is the parent company, and largest single operating company of the Lufthansa Group. Individual business segments are operated as separate Group companies, excluding Lufthansa Passenger Airlines. They have their own profit, and operating responsibilities, and are monitored by the relevant supervisory boards, where members of the Board of Directors of Deutsche Lufthansa AG are also represented. (Lufthansa, 2021a)

4.2.2. Air France-KLM Group

Since 1933, Air France has been promoting, and promoting France all over the world. Air France is an important air transport player, with an activity divided between passenger transport, cargo transportation, and aviation maintenance. The workforce of more than 42,000 staff is dedicated on a daily basis to providing each customer with a unique travel experience.

Air France, KLM Royal Dutch Airlines, and Transavia form the Air France-KLM Group. Air France-KLM, the leading group for intercontinental traffic as it leaves Europe, is an important player in the global air transport industry.

The Air France-KLM group relies on the strength of its headquarters in Paris-Charles de Gaulle, and Amsterdam-Schiphol to deliver a wide international network. The Flying Blue frequent flyer program has more than 18 million members. Air France, and KLM are members of the SkyTeam alliance, which has a total of 19 member airlines.

Air France places the health, and safety of its customers, and staff at the heart of its priorities, and has introduced exceptional measures grouped together under the Air France Protect label to ensure a stress-free journey from the onset of the health crisis. As part of the Horizon 2030 programme, Air France is committed to reducing CO2 emissions per passenger kilometre by 50% by 2030.

Air France's operations are based on four main sectors coordinated by the Operations Control Centre: passenger transport, cargo transport, maintenance, and ground management.

Passenger transport is the main business of Air France. It is mainly based on a balanced, and dense network structured around its headquarters in Paris-Charles de Gaulle, as well as its headquarters

in Paris-Orly, and Lyon-Saint-Exupéry. Passenger transport is the main business of Air France. It is mainly based on a balanced, and dense network structured around its headquarters in Paris-Charles de Gaulle, as well as its headquarters in Paris-Orly, and Lyon-Saint-Exupéry. (Air France, 2021a)

4.2.3. Southwest Airlines

On June 18, 1971, he made his first flight. By starting the affordable price period, it has caused prices to fall, and passenger traffic to increase in the places it serves. It also made a profit for 47 years until 2019. Southwest has a long history of returning value to its shareholders. Since 2010, Southwest has returned more than \$12.9 billion to Shareholders through share buybacks, and dividends through March 31, 2020. In the first quarter of 2020, Southwest returned \$639 million to Shareholders through the recapital of \$451 million of common stock, and a dividend payment of \$188 million.

In its 51st year of service, Dallas-based Southwest Airlines Co. (NYSE: LUV) continues to divest from other airlines with sample Customer Service, which more than 54,000 Employees offer to a Customer base of more than 130 million passengers in 2019. Southwest has a robust service network in the strong market, and entertainment spots.

Southwest is the only major U.S. airline that offers free flight bags to everyone (first, and second checked baggage parts, size, and weight limits apply, some carriers offer free checked bags on certain routes, or in qualified conditions), and while fare differences apply, there is no change fee. (Southwest Airlines, 2021a)

4.2.4. Research Method

First, researches published in the academic field were examined. As a result of these researches, the information obtained on KPIs will be used in performance efficiency measurement in airline companies. For the KPIs to be used in performance measurement in airline companies, the information was used from the annual reports published by the companies, and the studies shared on their own websites.

The obtained information was analyzed in excel. Airline companies' performance efficiency was measured with the Balanced Score Card method. As the term, 2017, 2018, 2019, and 2020 were

selected. Airlines were adversely affected by the pandemic in 2020. The performance efficiency of THY before, and during the pandemic has been analyzed with the KPIs.

4.3. Selected KPIs

KPIs were selected by examining the information published by the companies, such as annual reports, and financial reports. Selected KPIs are as follows.

Table 3: Balanced Scorecard KPIs

Financial Perspective KPIs	Customer Perspective KPIs
Passenger Revenue to Total Revenue	Revenue Passenger Km
Cargo Revenue to Total Revenue	Revenue Cargo Ton Km
Operational Cost to Total Revenue	Passenger Load Factor
Cash Flow to Total Revenue	Cargo Load Factor
Debt to Equity Ratio	Passenger Carried
Net Income to Total Revenue Ratio	Passenger Catering, and Service Expenses to Number of Passengers
EBITDAR Margin	On-time Departure Rate
RASK	
CASK	
Internal Business Process Perspective KPIs	Organizational Learning, and Growth Perspective
Available Seat Km	Number of Employees
Available Cargo Ton Km	Passenger Per Employees
Average Fleet Age	Staff Cask
Number of Aircraft	Fuel Cask
Number of Flights (Passenger)	Baggage Irregularity Rate (per 1,000 passengers)
	Average Personnel age

4.3.1. Financial Perspective KPIs

The summary of the data of the financial KPIs determined to analyze the performance of THY is as follows. Values that cannot be found in published reports are shown as "-".

Table 4. Financial KPIs-1

Financial Perspective KPIs	THY				Deutsche Lufthansa AG			
	2017	2018	2019	2020	2017	2018	2019	2020
Passenger Revenue to Total Revenue	0,86	0,85	0,84	0,56	-	-	-	-
Cargo Revenue to Total Revenue	0,12	0,13	0,13	0,40	-	-	-	-
Operational Cost to Total Revenue	0,93	0,91	0,96	1,08	0,91	0,92	1,02	1,53
Cah Flow to Total Revenue	17,26	12,73	15,69	26,89	5,95	0,59	0,56	27,00
Debt to Equity Ratio	2,40	2,49	2,60	3,74	2,93	2,99	3,16	20,74
Net Income to Total Revenue Ratio	2,04	5,86	5,96	12,41	6,58	6,09	3,33	49,49
EBITDAR Margin	27,53	26,05	23,49	27,71	-	-	-	-
RASK	6,33	7,06	7,05	8,98	12,44	11,97	11,36	14,17
CASK	5,87	6,42	6,74	9,69	11,34	11,02	11,58	21,74

Table 5. Financial KPIs-2

Financial Perspective KPIs	Air France-KLM Group				Southwest Airlines				Target Value for THY
	2017	2018	2019	2020	2017	2018	2019	2020	
Passenger Revenue to Total Revenue	-	-	-	-	0,93	0,93	0,93	0,85	0,85
Cargo Revenue to Total Revenue	-	-	-	-	0,01	0,01	0,01	0,02	0,13
Operational Cost to Total Revenue	0,93	0,95	0,96	1,41	0,84	0,85	0,87	1,42	0,85
Cah Flow to Total Revenue	2,62	0,43	1,42	51,06	7,07	8,44	11,36	122,27	15,00
Debt to Equity Ratio	11,38	14,58	12,38	6,58	1,60	1,66	1,63	2,90	1,63
Net Income to Total Revenue Ratio	0,63	1,54	1,08	63,88	15,88	11,22	10,26	33,97	12,45
EBITDAR Margin	-	-	-	-	-	-	-	-	27,71
RASK	10,20	10,68	10,16	9,19	13,75	13,75	14,26	8,75	12,00
CASK	9,44	10,14	9,73	12,96	11,53	11,74	12,38	12,43	6,34

Table 4 and Table 5 were created by the author in Excel.

4.3.1.1. Passenger Revenue to Total Revenue:

According to the result, both airlines were affected by the pandemic in 2020, and the share of passenger revenues in total revenues decreased. Passenger Revenue to Total Revenue in THY decreased by 33% in 2020 due to the pandemic effect. Returning to pre-pandemic levels approximately 0.85 may be target value for THY.

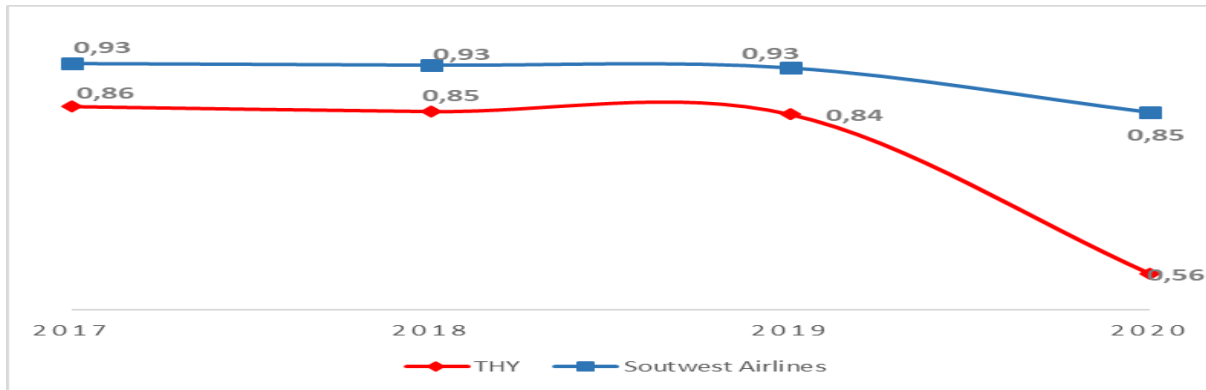


Figure 5: Passenger Revenue to Total Revenue KPIs

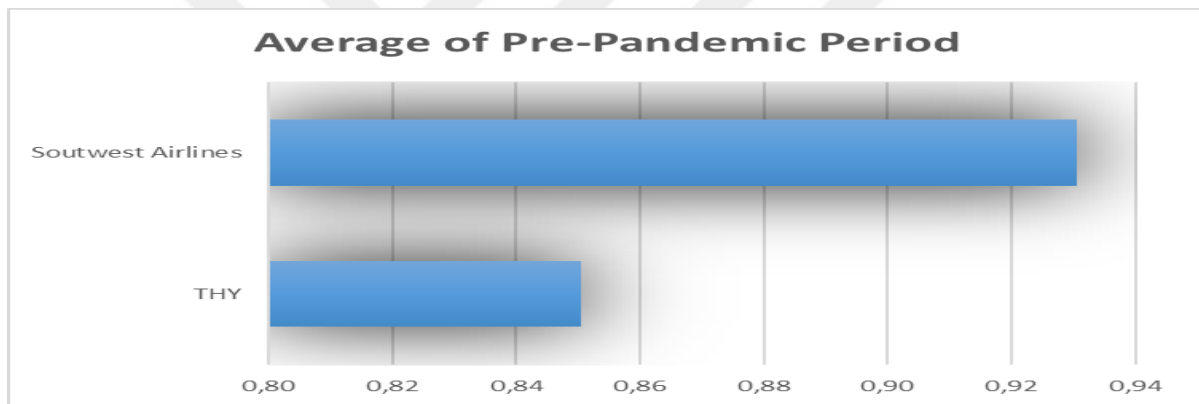


Figure 6: Pre-pandemic Passenger Revenue to Total Revenue KPIs

The share of passenger revenues in total revenue is higher in Southwest Airline, the fact that it is low in THY does not mean that THY is inefficient, it means that the share of other revenues and cargo revenue is higher in THY.

The protection of THY's average value of 0.85 for the three years before the pandemic has been set as the target value. Maintaining 0.85 levels can ensure the continuation of financial efficiency, as it is a prospective KPI target.

4.3.1.2. Cargo Revenue to Total Revenue

While the share of cargo revenue in total revenue was 0.13, the share of cargo revenues increased in Thy with passenger flights decreasing in the pandemic, and increased cargo operation. Southwest airlines has also increased its share of cargo revenues in passenger revenues. THY are

increasing more than the previous year. Protection of the cargo efficiency may be THY's forward target.

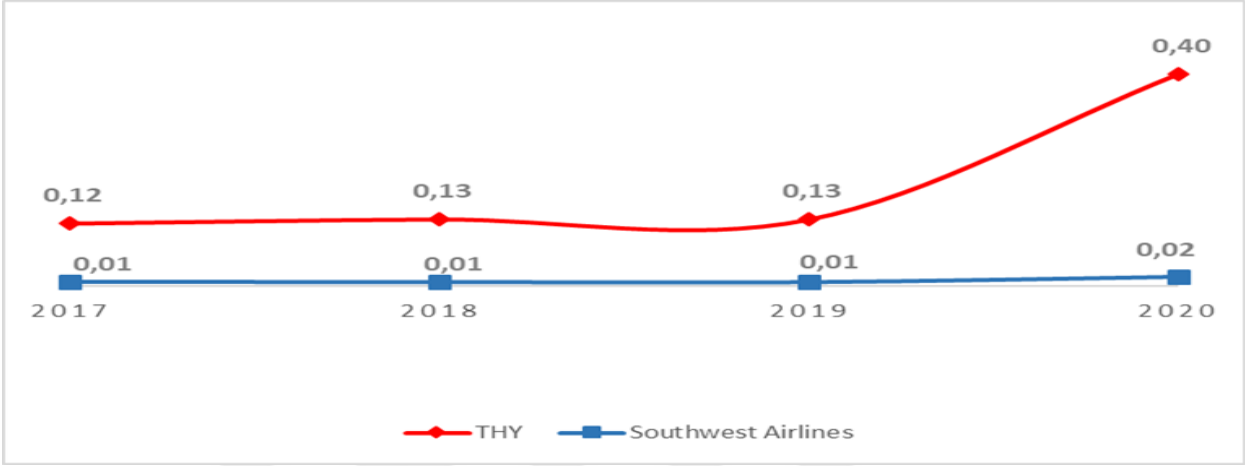


Figure 7: Cargo Revenue to Total Revenue KPIs

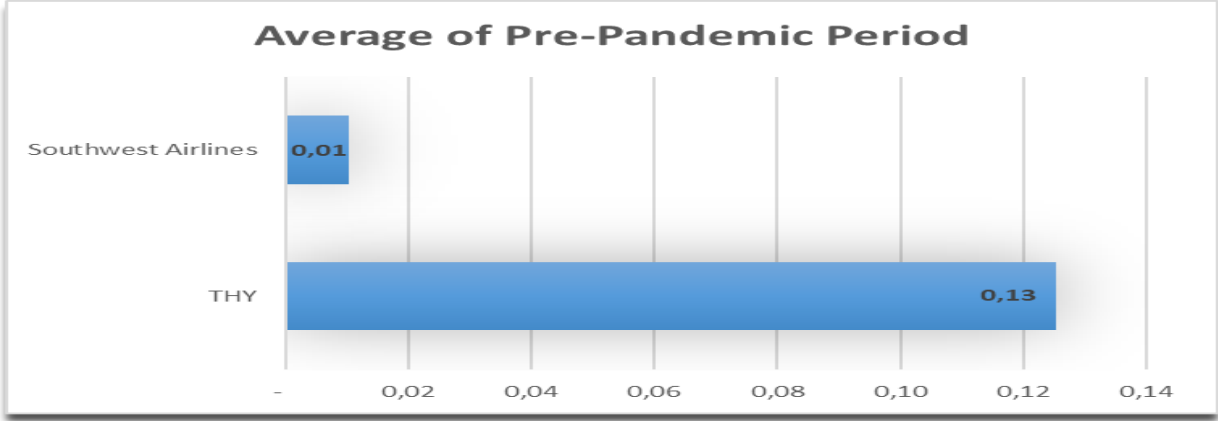


Figure 8: Pre-Pandemic Cargo Revenue to Total Revenue KPIs

When the pre-pandemic levels are examined, the rate on THY appears to be higher than southwest airlines. The higher revenue from cargo revenues can be positive for earnings, and the rate has been increased further by using this share in the market during the pandemic period. Cargo revenues provided an important support in the fight against the crisis of THY during the pandemic period.

The protection of THY's average value of 0.13 for the three years before the pandemic has been set as the target value. 0,13 level could be target KPI value for THY.

4.3.1.3. Operational Cost to Total Revenue

Operational profitability increase as the ratio of operational expenses to total revenues decreases, so airlines want this rate to be lower. While the rates were 0.9 before the pandemic, the rate increased with the decreasing sales with the pandemic, THY increased this rate less than the competitors, and this is an advantage for THY. In first stage, returning to the pre-pandemic level in the following years may be the forward target for THY.

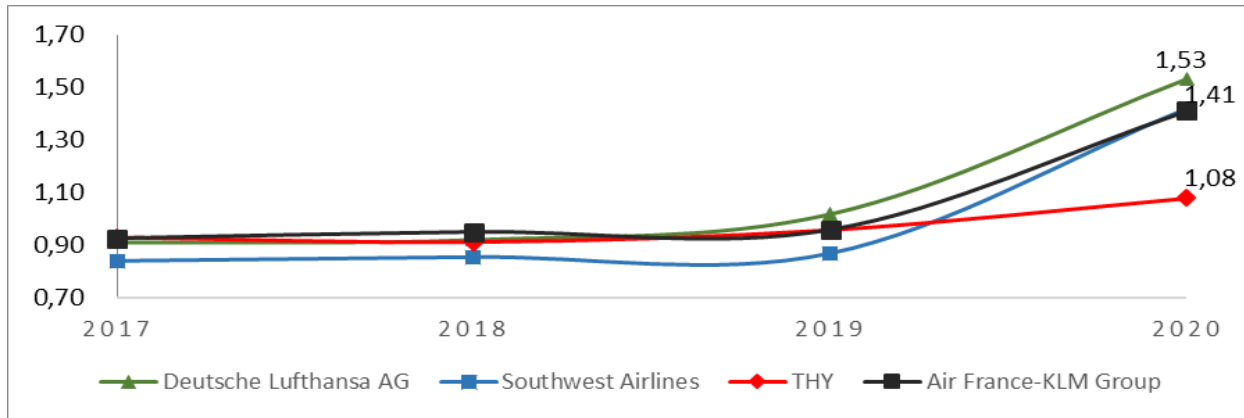


Figure 9: Operation Cost to Total Revenue KPIs

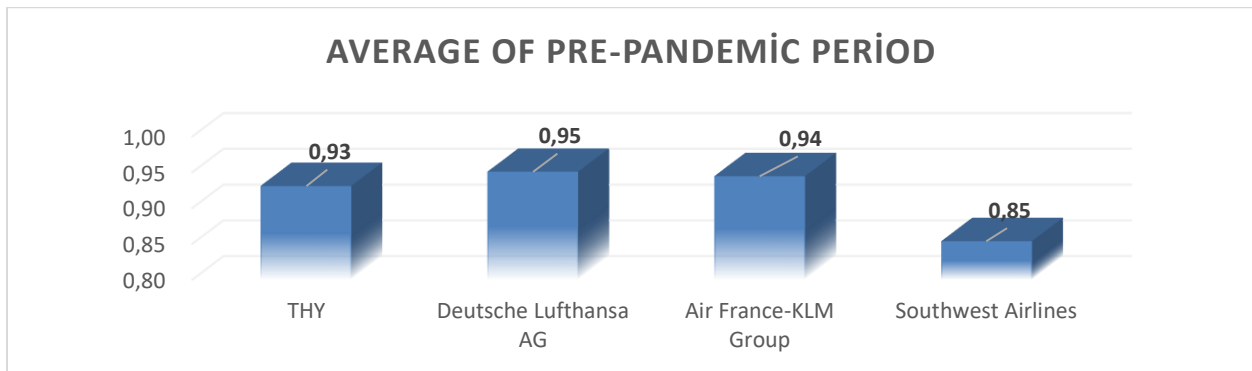


Figure 10: Pre-Pandemic Operation Cost to Total Revenue KPIs

When the pre-pandemic levels are examined, THY is in better position than Deutsche Luftansa Ag and Air France-KLM Group, but the ratio of southwest airlines' operational costs to revenue is lower.

For THY, reaching 0.85, the average value of Southwest Airlines for the three years before the pandemic, is set as the target value.

4.3.1.4. Cash Flow to Total Revenue

This high rate is a positive situation for companies. After the pandemic, this rate started to fall, THY is in better condition than other two airlines. Southwest Airlines increased cash flow ratio from financial activities which are issuance of common stock, proceeds from issuance of long-term debt, proceeds from term loan credit facility, proceeds from revolving credit facility, proceeds from convertible notes, proceeds from payroll support program loan and warrants in 2020.

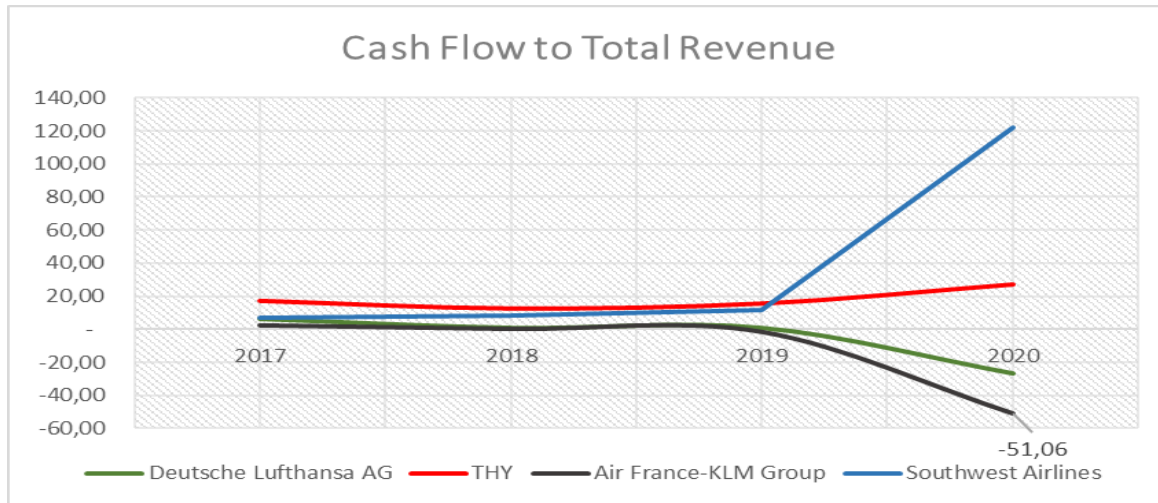


Figure 11: Cash Flow to Total Revenue KPIs

Prior to the pandemic, the ratio of generating cash from the revenue of THY is in very good condition compared to its competitors.

The protection of the value of 15, which is the average of THY's three years before the pandemic, has been determined as the target value.

4.3.1.5. Debt to Equity Ratio

Increasing the percentage of debt in the equity can force the company to manage cash, so it is advantageous that this rate is low. After the pandemic, the debt ratio increased in THY as well as other airlines. In first stage, returning to before pandemic level is target value.

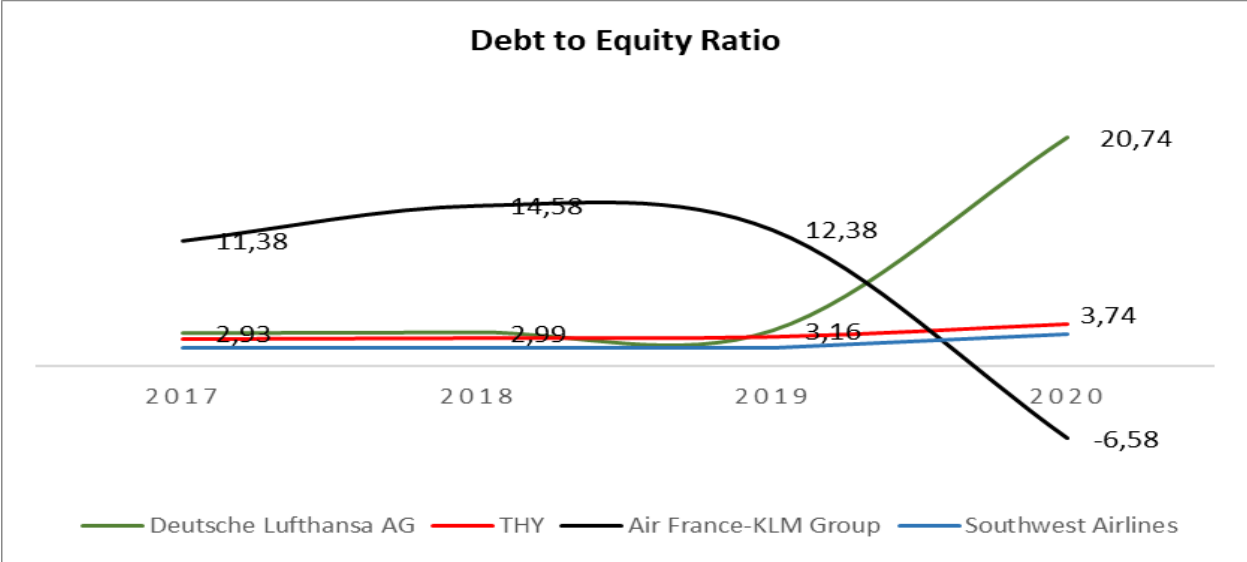


Figure 12: Debt to Equity Ratio KPIs

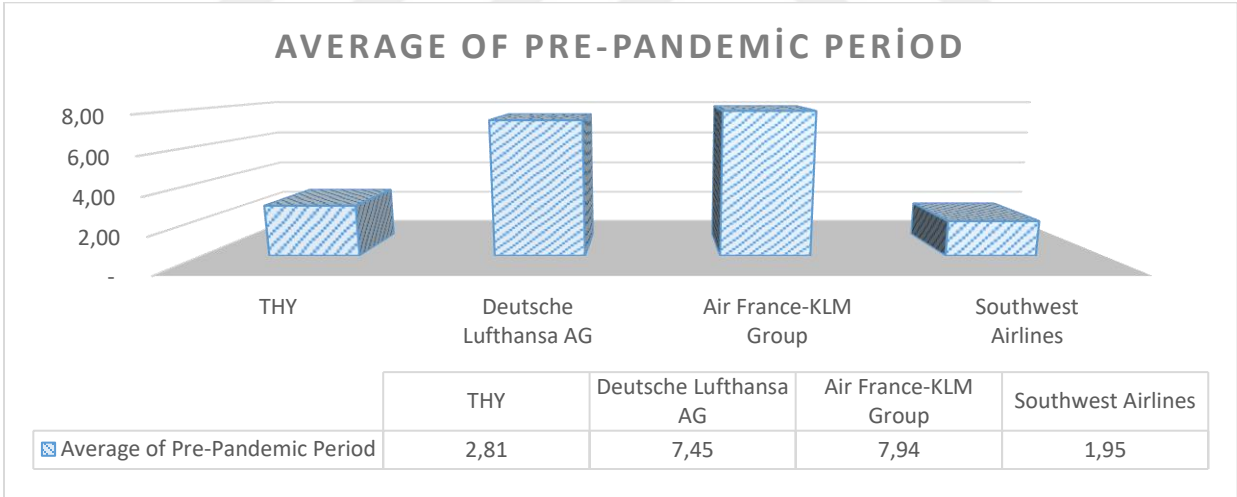


Figure 13: Pre-Pandemic Debt to Equity Ratio KPIs

Deutsche Lufthansa AG and Air France-KLM Group have a ratio of 7-8, while THY has 2.81. The low rate is a positive situation for THY. But Southwest Airlines' debt to equity ratio is lower, Reaching 1.63, the average of Southwest Airlines' three pre-pandemic years, is set as the target value for THY.

4.3.1.6. Net Income to Total Revenue

Both the decrease in net income, and the decrease in total revenue after the pandemic have turned the rate negative on the airlines we investigated, and the decrease in passenger, and related revenues has negatively affected profitability. The decrease in THY, is less than other airlines, with the increase in passenger revenues expected to be the goal of returning to its pre-pandemic level in the coming years.

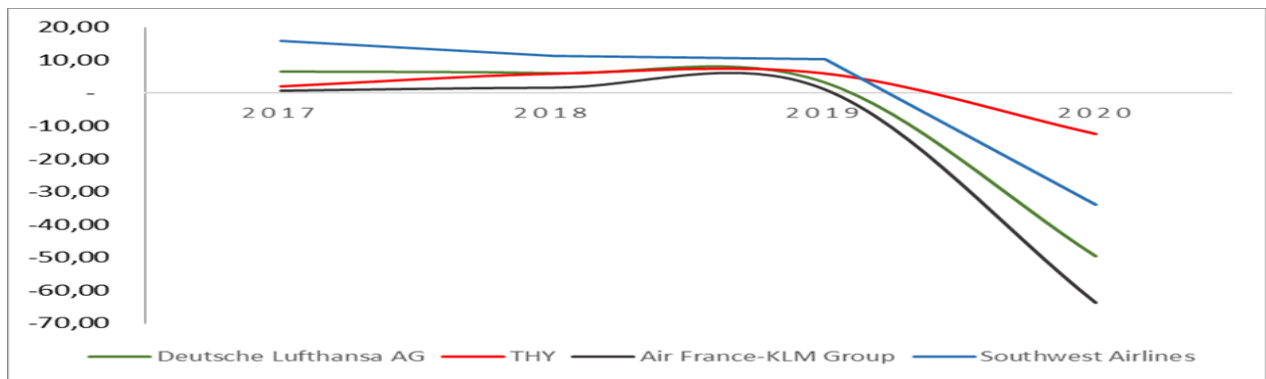


Figure 14: Net Income to Total Revenue KPIs

If we want to examine pre-pandemic levels and set a target rate, we can set southwest airlines' rate, 12.45 levels, as the target value. While the rate was positive for the airlines examined before the pandemic, there was a significant change in this rate after the pandemic. Prior to the pandemic, it was observed that Southwest Airlines managed this ratio well, so the target value for THY was determined on the average value of pre-pandemic period of Southwest Airlines.

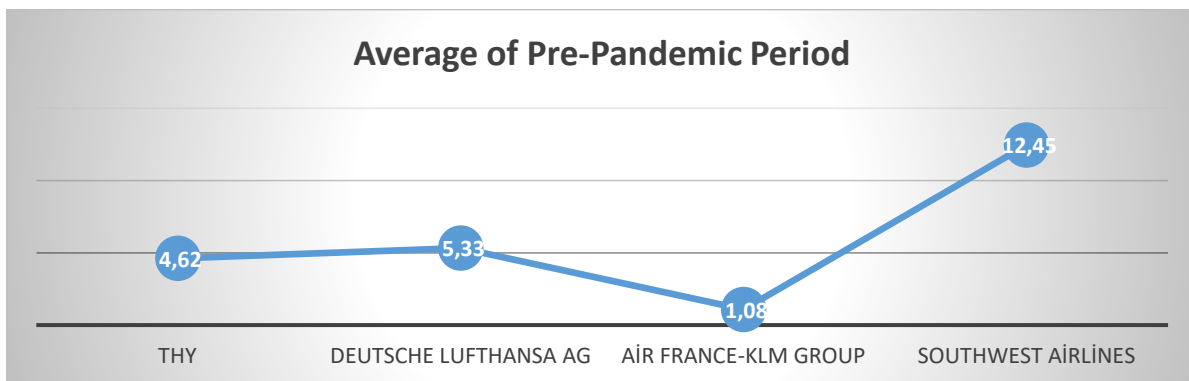


Figure 15: Pre-Pandemic Net Income to Total Revenue KPIs

4.3.1.7. EBITDAR Margin

The information about EBITDAR published by other airlines could not be reached. In the information obtained for THY, it shows that the ebitdar margin increased in 2020 compared to other years. It is desirable to increase the Ebitdar margin, and maintaining 2020 level (27,7) in the following years may be THY's goal going forward.

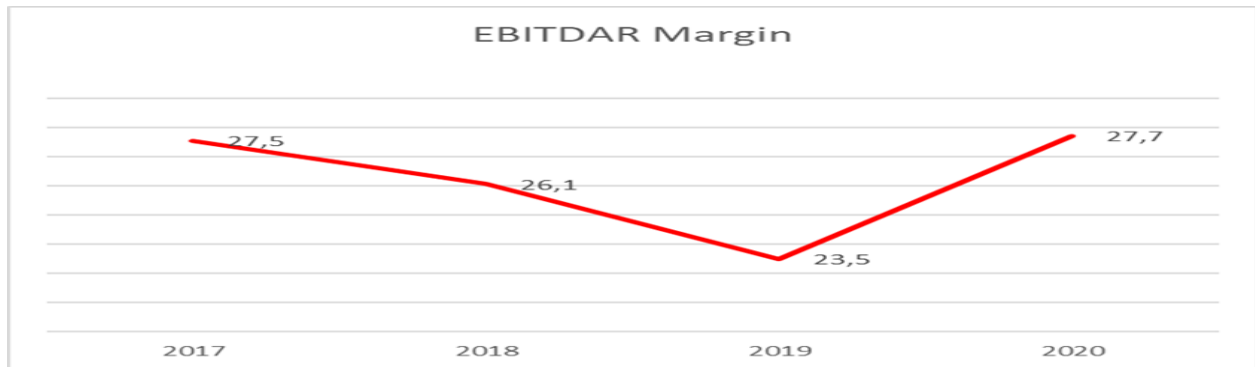


Figure 16: EBITDAR Margin KPIs

4.3.1.8. RASK

Rask value is calculated by dividing the revenue by ASK. Compared to other airlines prior to the pandemic, the RASK value is low on THY. In 2020, the RASK value in THY has not decreased with the decreasing ASK value.

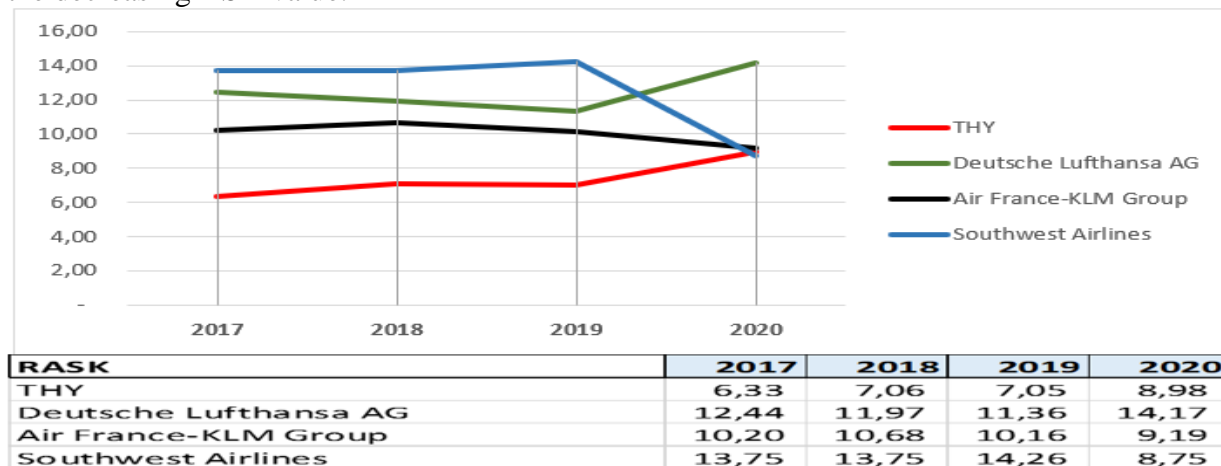


Figure 17: RASK KPIs

When the pre-pandemic level was analyzed, it was determined that the RASK value of THY was lower than other airlines, indicating that the revenue obtained according to the capacity produced was lower. The average value of the other three airlines in pre-pandemic period, is 12 levels, for

THY it is determined as the target to reach 12 levels.

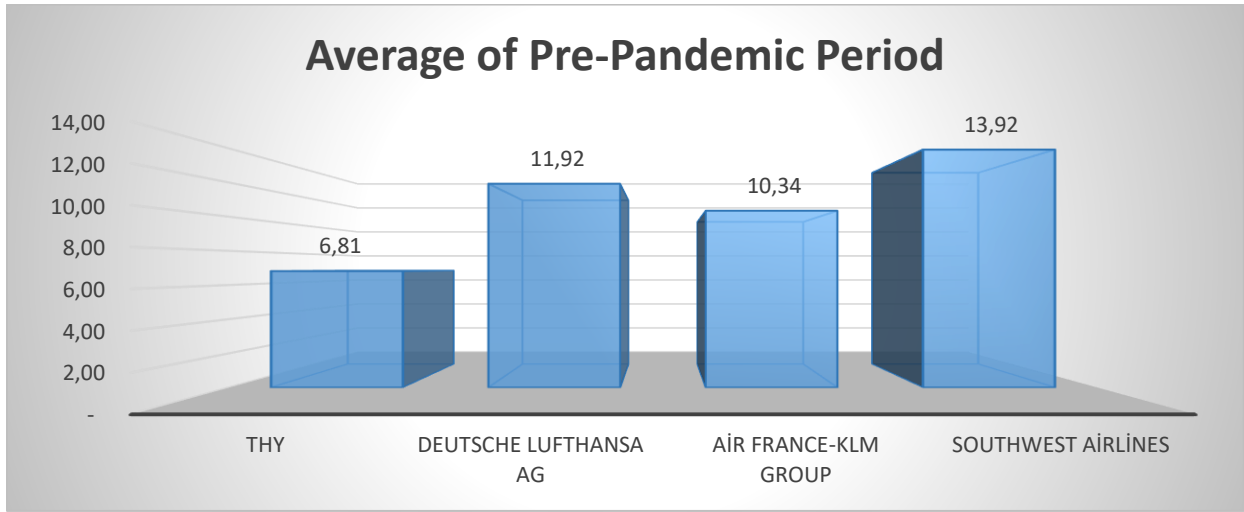


Figure 18: Pre-Pandemic RASK KPIs

4.3.1.9. CASK

CASK value is calculated by dividing the expense by ASK. The low CASK value is an important indicator for profitability. High risk, and low cask are financial targets of airlines. THY's cask value is low compared to other airlines. In 2020, like other airlines, cask value increased due to decreasing ASK value. In first step, returning to pre-pandemic levels may be among THY's goals going forward.

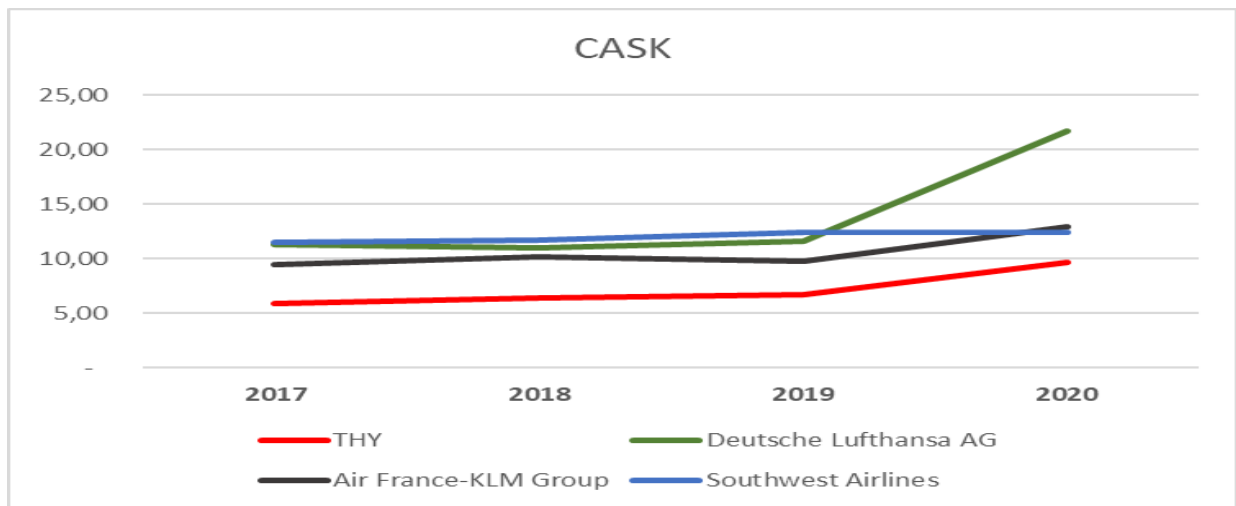


Figure 19: CASK KPIs

Compared to pre-pandemic levels, THY was observed to be in better condition in expense control than other airlines. While the average of the other three airlines is 11, THY is in very respectable condition with a level of 6.34, increasing the risk level and maintaining the cask level at 6.34 are important targets that will increase THY's profitability. The protection of the value of 6.34, which is the average of THY's three years before the pandemic, has been determined as the target value.

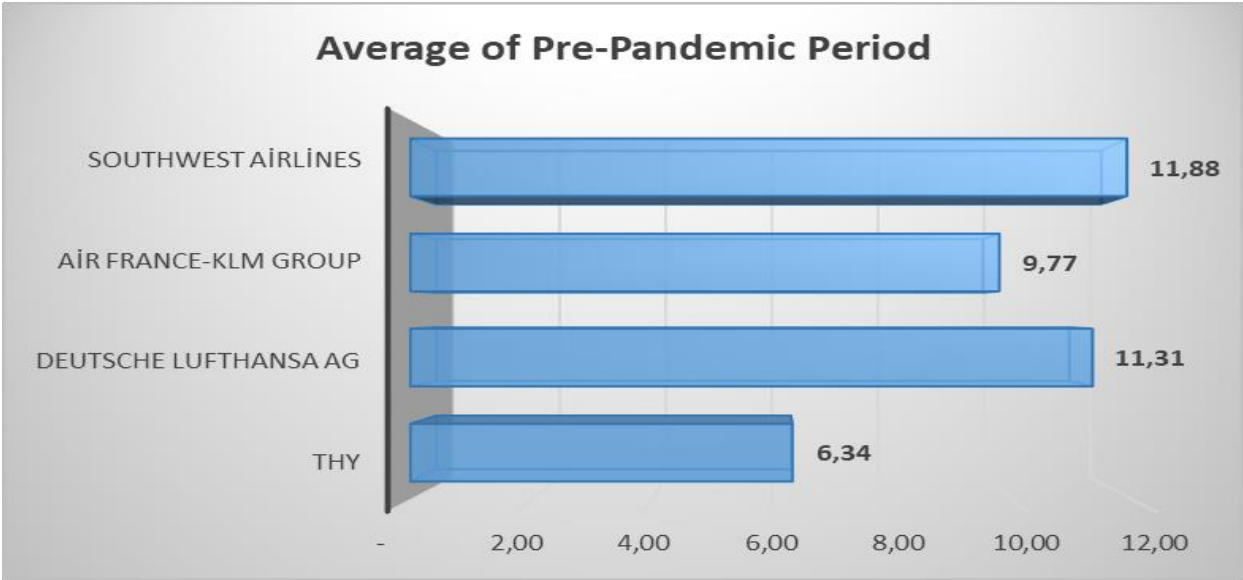


Figure 20: Pre-Pandemic CASK KPIs

4.3.2. Customer Perspective KPIs

The KPIs of THY, which are determined from a passenger point of view to measure their efficiency, are as follows. The values that cannot be found are shown as "-".

Table 6. Customer Perspective KPIs-1

Customer Perspective KPIs	THY				Deutsche Lufthansa AG			
	2017	2018	2019	2020	2017	2018	2019	2020
Revenue Passenger Km (million)	136.927	149.169	153.203	53.249	261.149	284.639	296.217	69.462
Revenue Cargo Ton Km (million)	-	-	-	-	10.819	10.896	10.664	7.373
Passenger Load Factor (%)	79%	82%	82%	71%	81%	81%	83%	63%
Cargo Load Factor (%)	-	-	-	-	69%	67%	61%	70%
Passenger Carried ('000)	68.632	75.168	74.283	27.950	129.300	141.900	145.300	36.400
Passenger Catering and Service Expenses to Number of Passenger	7.431	7.450	8.373	7.764	-	-	-	-
On-time Departure Rate (%)	80%	83%	81%	90%	-	-	-	-

Table 7. Customer Perspective KPIs-2

Customer Perspective KPIs	Air France-KLM Group				Southwest Airlines				Target Value for THY
	2017	2018	2019	2020	2017	2018	2019	2020	
Revenue Passenger Km (million)	248.475	255.405	263.509	81.212	129.041	133.322	131.345	54.221	180.630
Revenue Cargo Ton Km (million)	8.595	8.657	8.467	6.829	-	-	-	-	>10.793
Passenger Load Factor (%)	87%	87%	88%	59%	84%	83%	84%	52%	84%
Cargo Load Factor (%)	60%	60%	58%	67%	-	-	-	-	70%
Passenger Carried ('000)	98.721	101.447	104.214	34.065	130.256	134.890	134.056	54.088	124.454
Passenger Catering and Service Expenses to Number of Passenger	7.972	7.718	5.038	7.427	-	-	-	-	7.751
On-time Departure Rate (%)	-	-	-	-	-	-	-	-	>=90%

Table 6 and Table 7 were created by the author in Excel.

4.3.2.1. Revenue Passenger Km (Million)

Revenue Passenger Km (RPK) has increased over the years until 2019, and RPK has decreased due to the pandemic, and decreased passenger, and flight km. During the pandemic, Lufthansa's decline was less than that of other airlines and, southwest airline experiencing the most declines among them. Returning to the pre-pandemic level of 2019 may be among the forward goals of THY, and other companies.

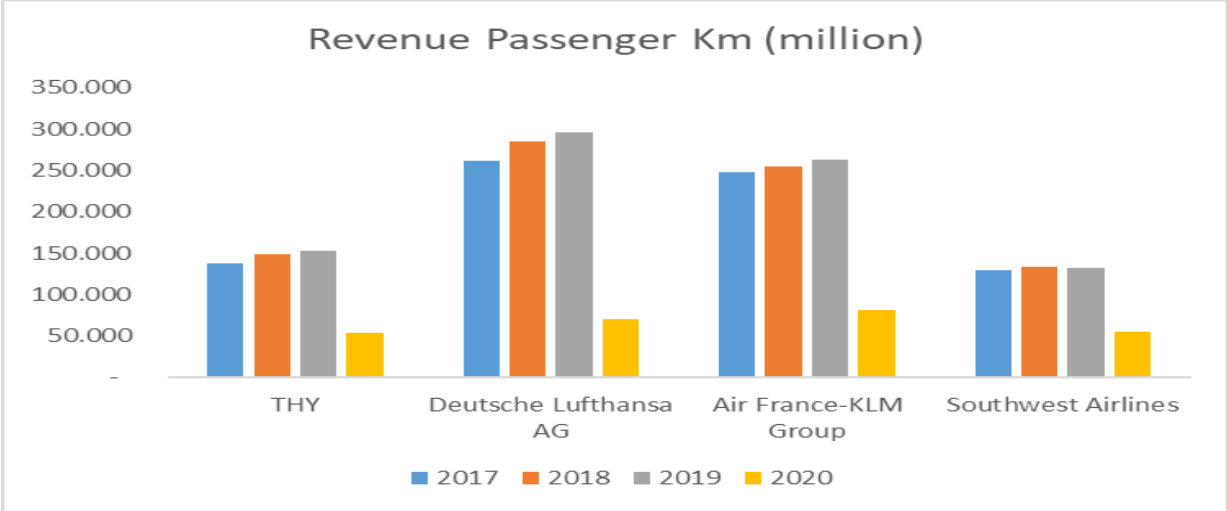


Figure 21: RPK KPIs

Before the pandemic, THY was at the lowest level of RPK data compared to other three airlines. The reason RPK data is low is also because the ASK data produced is low. Increasing RPK is possible both by increasing the ASK value and by increasing the preference of customers. The target KPI value is \$180630. It was calculated on 84% of the ASK (215036) specified in subsequent KPI, set as the forward target.

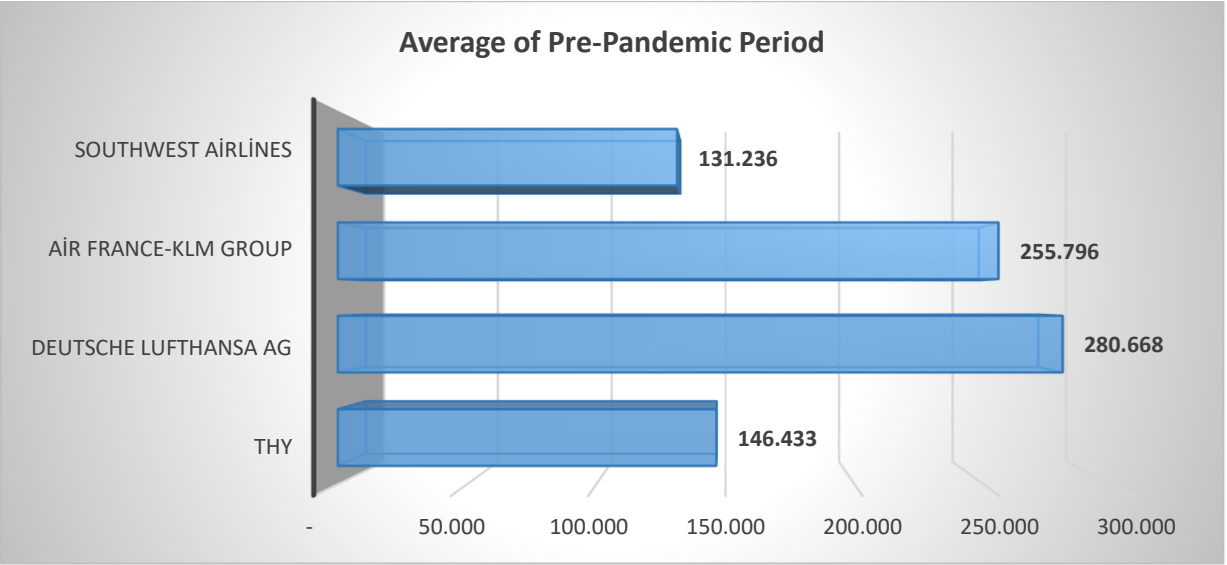


Figure 22: Pre-Pandemic RPK KPIs

4.3.2.2. Revenue Cargo Ton Km (RCTK) (million)

Information about RCTK could not be found on THY. Lufthansa, and Air France had little change over the years before the pandemic, but both airlines declined after the pandemic.

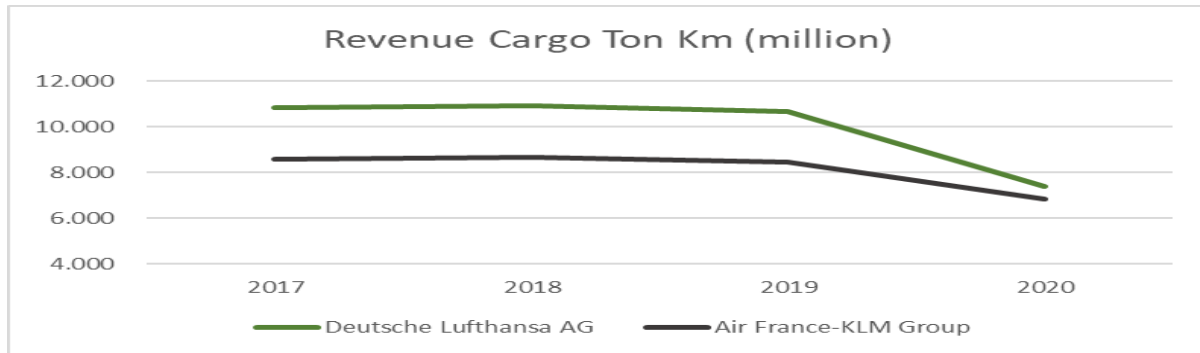


Figure 23: Revenue Cargo Ton Kilometers KPIs

Data from the pre-pandemic period could not be found for THY, so the target for THY was to produce higher Revenue Cargo Tons km than Deutsche Lufthansa AG.

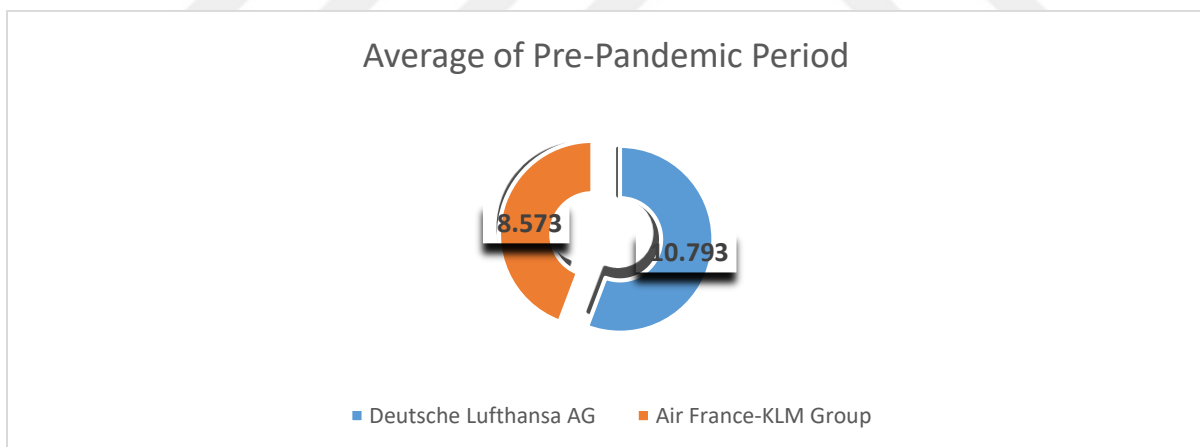


Figure 24: Pre- Pandemic Revenue Cargo Ton Kilometers KPIs

4.3.2.3. Passenger L/F

The high L/F rate indicates that capacity is used efficiently, and is preferred by the passenger, so airlines want to increase this rate. L/F rate before the pandemic in THY is between 79-81. THY's L/F value is close to Lufthansa but below other airlines. The decrease in THY in 2020 was less than other airlines, which is a positive situation for THY. Returning to the level of 2019 before the pandemic may be one of THY's forward KPIs.

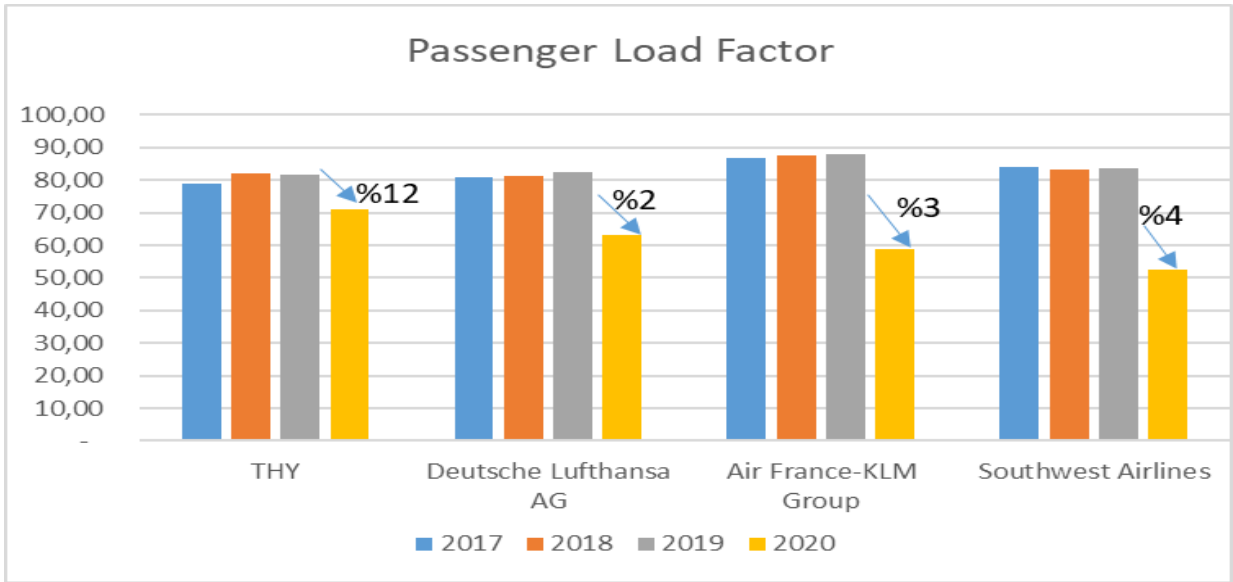


Figure 25: Passenger L/F KPIs

Prior to the pandemic, THY was the last in the L/F ratio, passenger L/F, affects profitability and increases RPK value. The average of the other three airlines in pre-pandemic period, %84 levels, can be the target KPI value for THY.

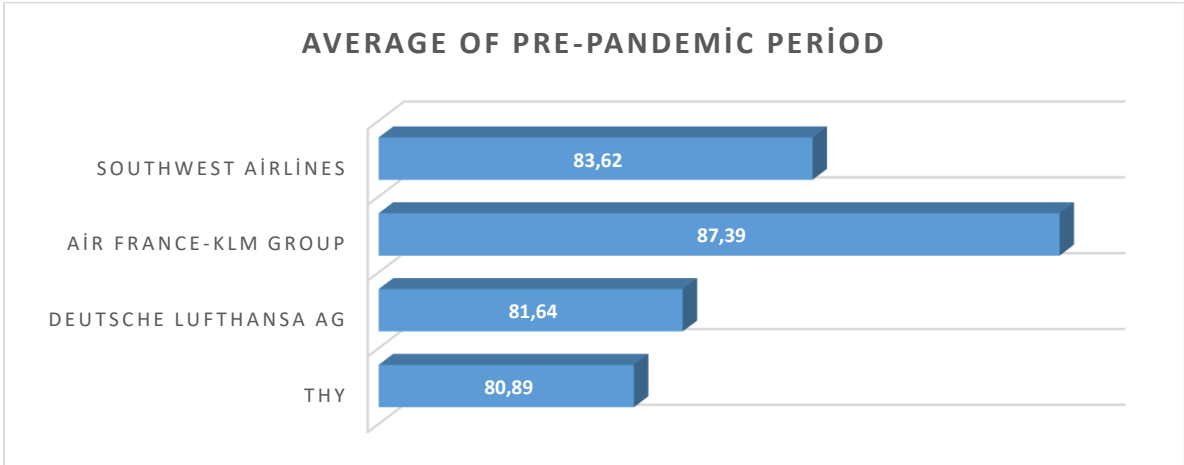


Figure 26: Pre-Pandemic Passenger L/F KPIs

4.3.2.4. Cargo Load Factor (Cargo L/F)

No information about cargo L/F was found in THY. In other airlines examined, cargo L/F decreased in 2019 before the pandemic, but cargo carried increased while the number of passengers decreased with the pandemic, so the cargo L/F increased, higher cargo L/F in THY than these two airlines can be determined as the target KPI.

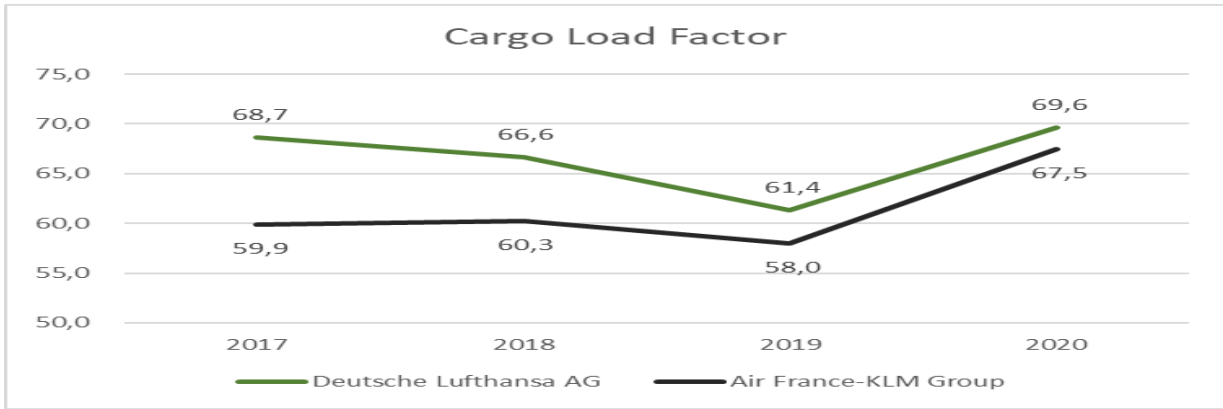


Figure 27: Cargo L/F KPIs

4.3.2.5. Passenger Carried ('000)

The number of passengers transported on THY is lower than other airlines, and thy, like other airlines, has experienced a significant decrease (62%) due to the pandemic effect. With the pandemic, there have been significant decreases in banned flights, and passengers fearing travel due to illness. In the following years, the availability of the vaccine, and the decrease in the impact of the outbreak, and the return of passengers to 2019 levels may be a target for THY, and other airlines.

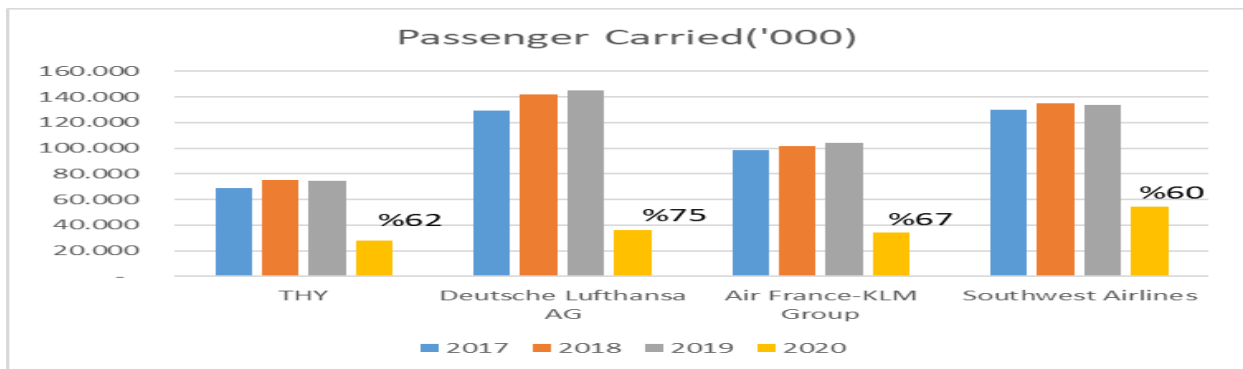


Figure 28: Passenger Carried KPIs

The number of passengers is lower in THY than the competitors, with the increase of this number, both passenger revenues will increase and the associated RPK value and L/F will increase. The number of passengers transported is an important KPI for airlines. It is an indication of how much it is preferred by customers. By the way, the number of passengers should not be evaluated on your own, but should also be evaluated according to the capacity produced. After the pandemic effect decreases, the average of the other three airlines in pre-pandemic period, 124,000 could be

set as a target for THY.

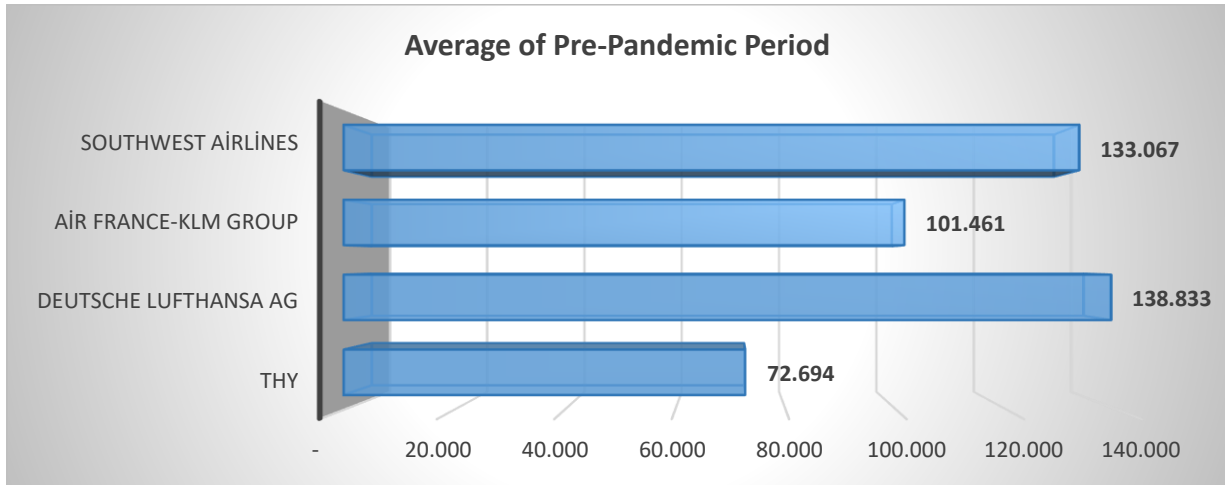


Figure 29: Pre-Pandemic Passenger Carried KPIs

4.3.2.6. Passenger Catering, and Service Expenses to Number of Passenger

Catering costs per passenger at THY increased in 2019, and decreased due to the pandemic in 2020, they have approximately the same costs as Air France in 2020. It is important for the passenger that this rate is high, shows the monetary amount of services, and shows the catering, and service expenses that companies make for their passengers.

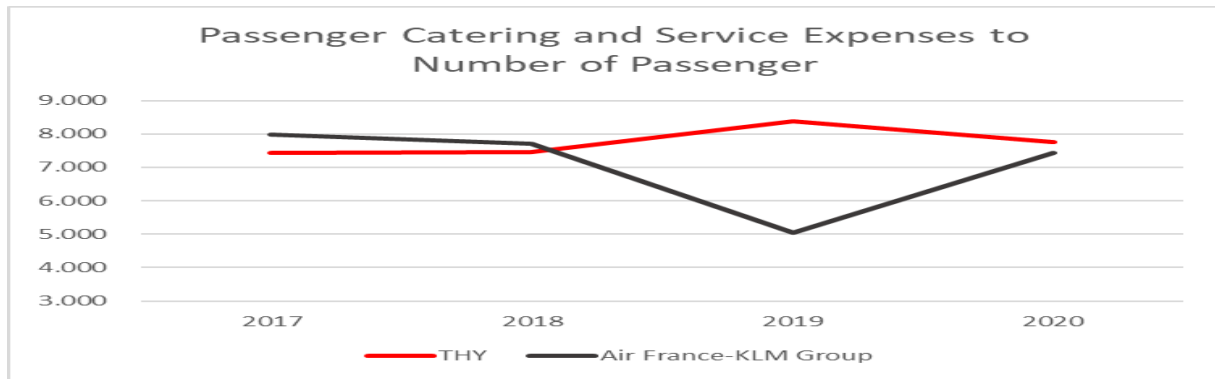


Figure 30: Passenger Catering, and Service Expenses to Number of Passenger KPIs

Catering also has a cost stage that affects profitability, so keeping it at high levels is risky for companies. Maintaining its continuation at the average levels in THY before the pandemic (7.751) is determined as the target KPI value for THY.

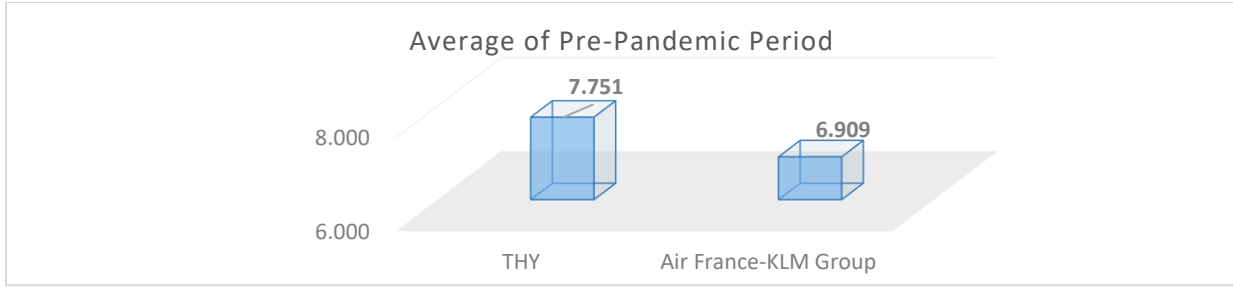


Figure 31: Pre- Pandemic Passenger Catering KPIs

4.3.2.7. On-time Departure Rate

The on-time departure rate in THY before 2020 was 80%, but after 2020, this rate increased to 90%. The on-time departure rate is an important KPI for passengers. Maintaining 90% levels, and reaching higher levels may be the target KPI for THY.

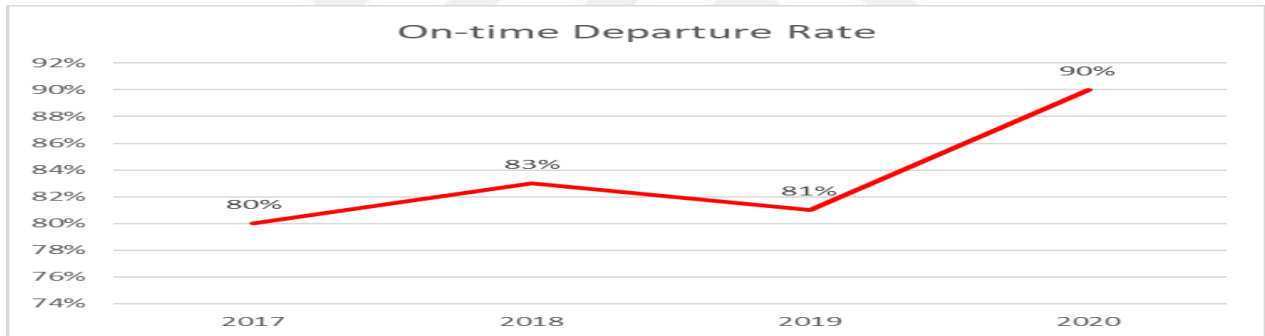


Figure 32: On-time Departure Rate KPIs

4.3.3. Internal Business Process Perspective KPIs

Companies should not only set financially oriented and customer-oriented targets, but also take care of internal processes such as capacity. The internal business process perspective KPIs designated for THY are as follows. The values that cannot be found are marked as "-".

Table 8: Internal Business Process Perspective KPIs-1

Internal Business Process Perspective KPIs	THY				Deutsche Lufthansa AG			
	2017	2018	2019	2020	2017	2018	2019	2020
Available Seat Km (million)	173.084	182.031	187.713	74.960	322.875	349.391	358.803	109.828
Available Cargo Ton Km	-	-	-	-	15754	16349	17379	10591
Average Fleet Age	7,7	8,2	8,3	8,4	11,4	11,9	12,1	12,5
Number of Aircraft	329	332	350	363	728	763	763	757
Number of Flights (Passenger)	469.580	493.876	486.940	209.581	1.128.745	1.163.565	1.187.728	390.900

Table 9: Internal Business Process Perspective KPIs-2

Internal Business Process Perspective KPIs									Target Value for THY
	2017	2018	2019	2020	2017	2018	2019	2020	
Available Seat Km (million)	286.190	292.184	299.624	138.167	153.811	159.795	157.254	103.456	215.036
Available Cargo Ton Km	14352	14365	14609	10121	-	-	-	-	>17754
Average Fleet Age	-	-	-	-	11,00	11,00	12,00	18,00	8,00
Number of Aircraft	545	548	554	546	706	750	747	718	401
Number of Flights (Passenger)	-	-	-	-	-	-	-	-	557.894

Table 8 and Table 9 were created by the author in Excel.

4.3.3.1. Available Seat Km (Million)

Before the pandemic, thy produced ASK above of Southwest Airlines, and below other airlines, one of the most important reasons why it is below other airlines is the number of planes, the number of planes of other airlines is greater. After the pandemic, the ASK value decreased with the reduction of flights on all airlines.

Thy's decline is 60%, Lufthansa's decline is 69%, Air France's is down 54%, and southwest Airlines is down 34%. Returning to 2019 level with normalization after the pandemic may be the goal of THY, and other companies going forward.

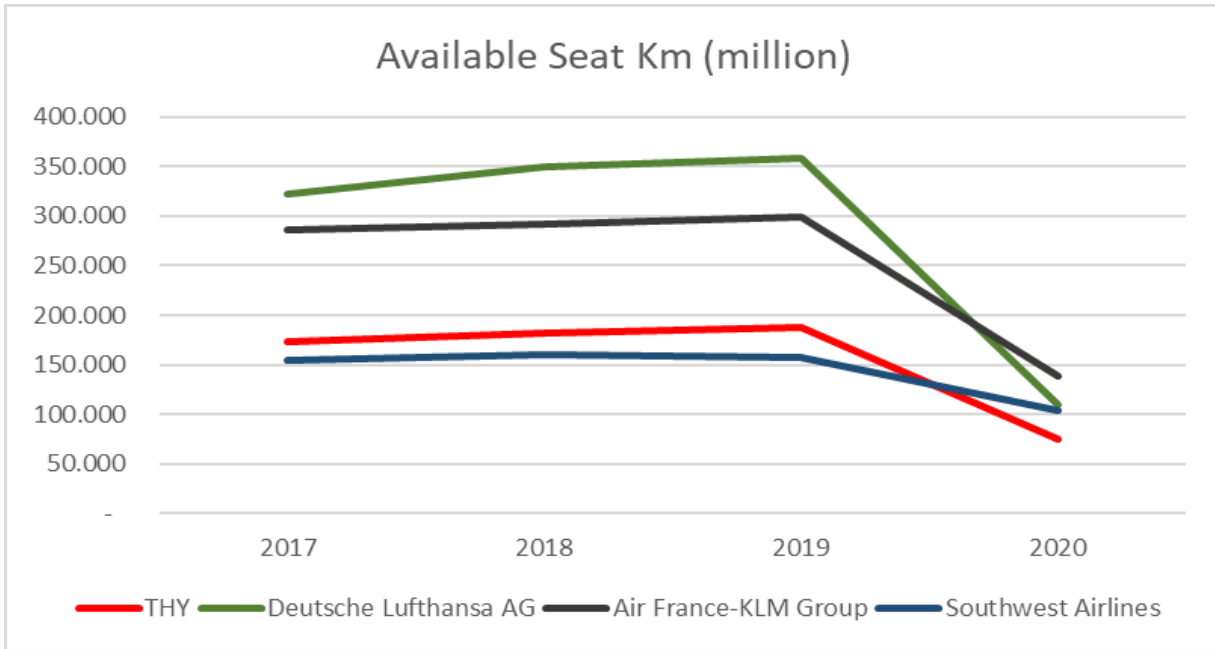


Figure 33: ASK KPIs

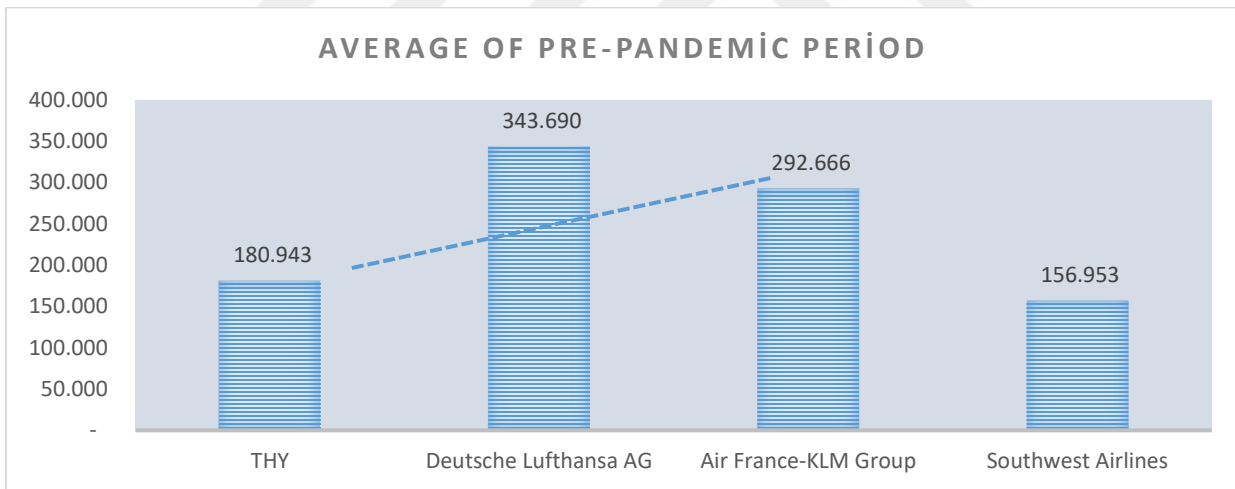


Figure 34: Pre-Pandemic ASK KPIs

The target value (215036) was calculated by multiplying the average (537) of the ASK value produced by Turkish Airlines per aircraft prior to the pandemic and the number of aircraft (400) to be determined in the other KPI.

4.3.3.2. Available Cargo Ton Km

Information about Available Cargo Ton Km could not be found for THY. Available Cargo Ton Km produced by Deutsche Lufthansa AG is more than Air France has produced. However, both

have experienced a decline during the pandemic period, and it may be THY's KPI goal to rise above the pre-pandemic level of Deutsche Lufthansa AG within THY.

4.3.3.3. Average Fleet Age

There is no significant change in the pre- and post-pandemic period. As the age of the aircraft increases, their efficiency may decrease. Modern, and new aircraft can consume less fuel, be more environmentally, and cost less, and lower maintenance costs. It is advantageous for THY to have a low average age of aircraft. With new planes coming in the future, this age may go even lower. For THY, staying at level 8 (THY's average value in pre-pandemic period) in the future may be the target KPI.

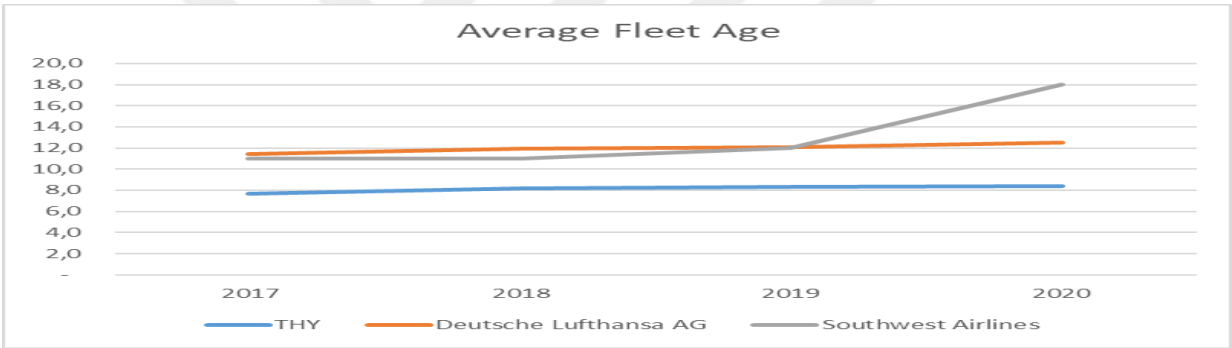


Figure 35: Average Fleet Age KPIs

4.3.3.4. Number of Aircraft

There is no significant change in the pre- and post-pandemic period. Among the airlines compared, the largest number of aircraft belongs to Deutsche Luftansa AG, and the lowest number of aircraft belongs to THY. The forward-looking KPI for THY is to increase the number of aircraft, and to increase the ASK, and RPK values produced accordingly.

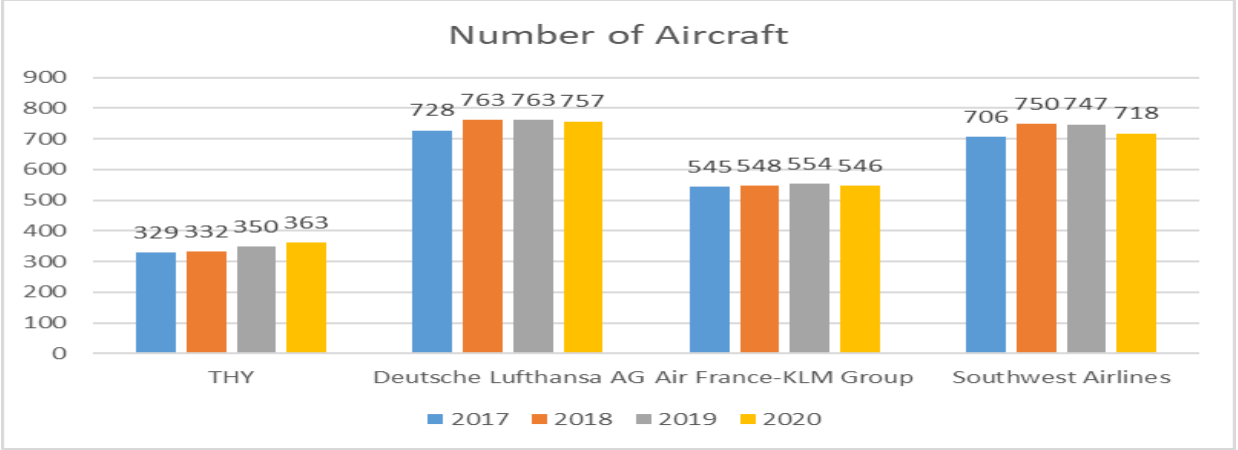


Figure 36: Number of Aircraft KPIs

The ratio of the number of aircraft in 2020 to the number of aircraft in 2017 is 10.33%. THY's number of aircraft in 2020 (363) was increased by 10.33% and the target value was set at 401.

4.3.3.5. Number of Flights (Passenger)

Prior to the pandemic, Deutsche Luftansa AG's ratio of passenger flights to THY' passenger flights on average was 2.4. After the pandemic, THY fell by 57%, and the other airline fell by 67%. THY's first goal may be to return to pre-pandemic levels. Then, if thy increases the number of aircraft, it can reduce the difference between it, and Lufthansa Airline, which could be the future KPI target.

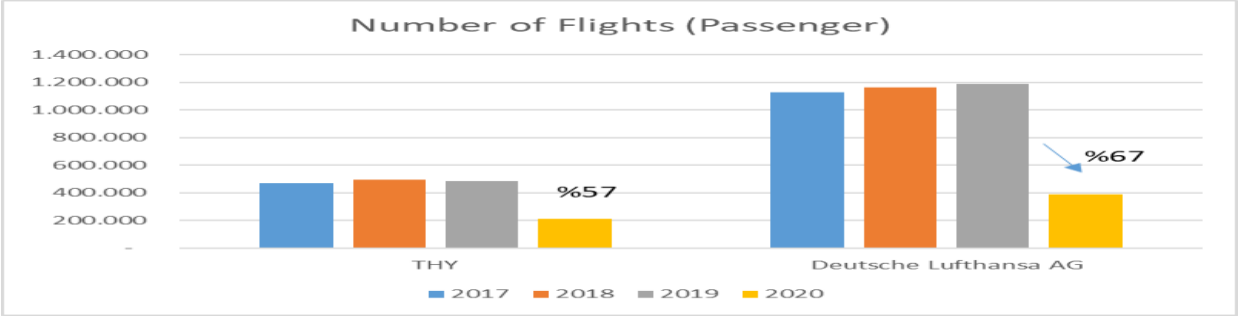


Figure 37: Number of Flights (Passenger) KPIs

Although the difference decreased after the pandemic, there are significant differences between Luftansa and THY before the pandemic. Reducing this difference will be possible with the aircraft to be taken. THY's goal after the normalization after the pandemic will be to increase capacity and increase the number of passenger planes associated with it.

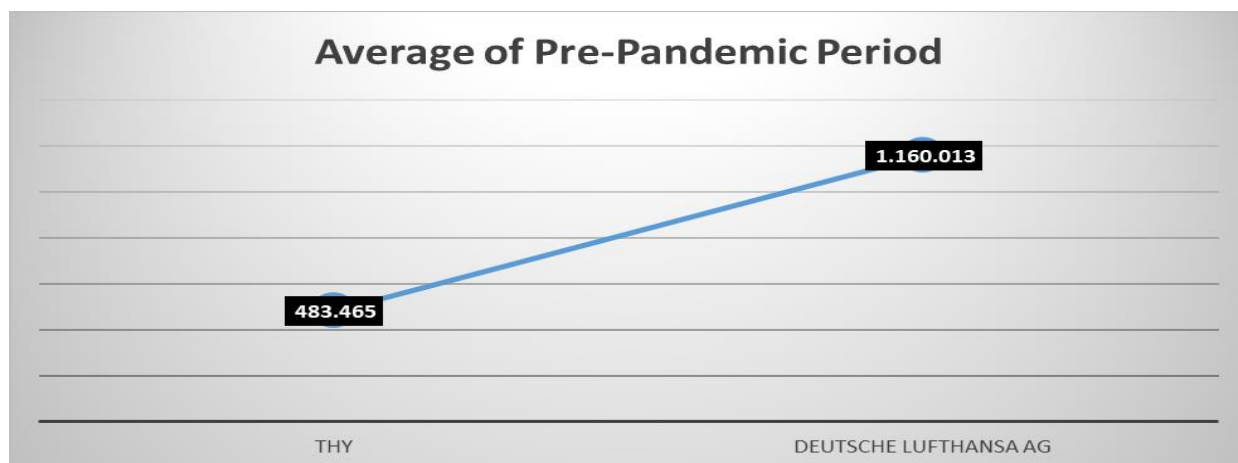


Figure 38: Pre Pandemic Number of Flights (Passenger) KPIs

In 2019, THY produced 1391 passenger flights per plane. The target value (557.894) was determined by multiplying the 401 aircraft designated as the forward target and by the number of passenger flights produced in 2019 (401*1391).

4.3.4. Organizational Learning, and Growth Perspective

The KPIs designated for THY in terms of organizational learning, and growth perspective are as follows. The values that cannot be found are marked as "-".

Table 10: Organizational Learning and Growth Perspective KPIs-1

Organizational Learning and Growth Perspective	THY				Deutsche Lufthansa AG			
	2017	2018	2019	2020	2017	2018	2019	2020
Number of Employees	31.543	35.275	38.804	37.841	128.856	134.330	137.784	125.207
Passenger Per Employees	2,2	2,1	1,9	0,7	1,0	1,1	1,1	0,3
Staff Cask	1,0	1,0	1,1	1,5	2,9	3,0	2,8	6,7
Fuel Cask	1,7	2,1	2,1	2,2	1,8	2,0	2,1	2,0
Baggage Irregularity Rate (per 1,000 passenger)	0,51%	0,52%	0,50%	0,39%	-	-	-	-
Average Personnel age	34,6	34,5	34,5	35,2	42,2	41,5	41,6	42,4
Total Revenue to Number of Employees	347.399	364.422	340.918	177.955	311.595	311.267	295.910	124.307
Staff Costs to Total Revenue	0,2	0,1	0,2	0,2	0,2	0,2	0,3	0,5
Social Responsibilities								

Table 11: Organizational Learning and Growth Perspective KPIs-2

Organizational Learning and Growth Perspective	Air France-KLM Group				Southwest Airlines				Target Value for THY
	2017	2018	2019	2020	2017	2018	2019	2020	
Number of Employees	83.522	84.714	86.138	82.167	56.110	58.803	60.800	56.500	38.804
Passenger Per Employees	1,2	1,2	1,2	0,4	2,3	2,3	2,2	1,0	2,3
Staff Cask	3,0	3,1	3,0	4,4	4,7	4,8	5,3	6,6	1,0
Fuel Cask	1,8	2,0	2,1	2,0	2,7	2,9	2,8	1,8	1,9
Baggage Irregularity Rate (per 1,000 passenger)	-	-	-	-	-	-	-	-	0,39%
Average Personnel age	-	-	-	-	-	-	-	-	35,2
Total Revenue to Number of Employees	349.499	368.215	353.308	154.558	376.867	373.535	368.882	160.142	373.095
Staff Costs to Total Revenue	0,3	0,3	0,3	0,5	0,3	0,3	0,4	0,8	0,2
Social Responsibilities									

Table 10 and Table 11 were created by the author in Excel.

4.3.4.1. Number of Employees

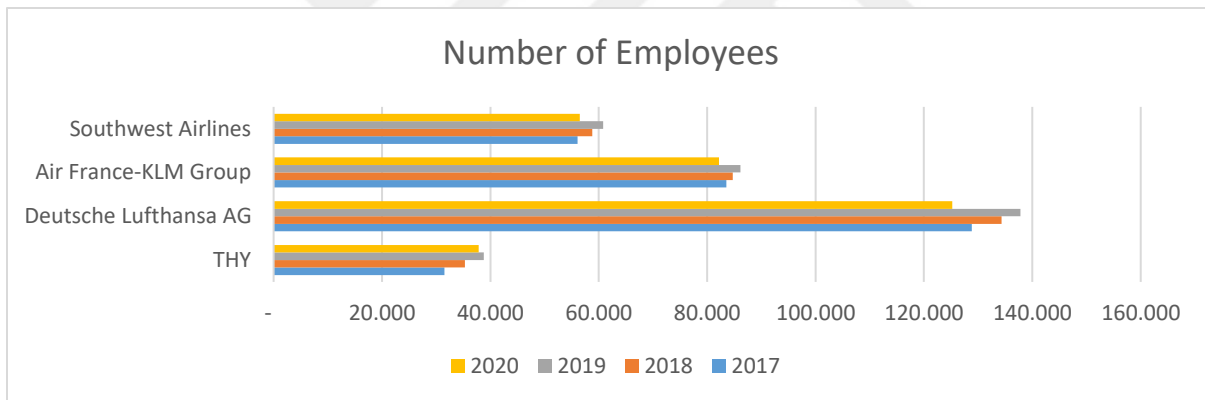


Figure 39: Number of Employees KPIs

As the operational operations, and sales of the companies increase, the number of personnel increases as new aircraft are purchased, and Deutsche Lufthansa AG, which has a high number of aircraft among the competitors, takes the first place in the number of personnel. THY ranked 4th, but all airlines saw a decrease in staff numbers with the pandemic. With the decreased revenues due to the pandemic, the number of personnel in their companies is decreasing. Returning to 2019 levels with increased flights going forward may be a forward-looking goal for THY, and other companies.

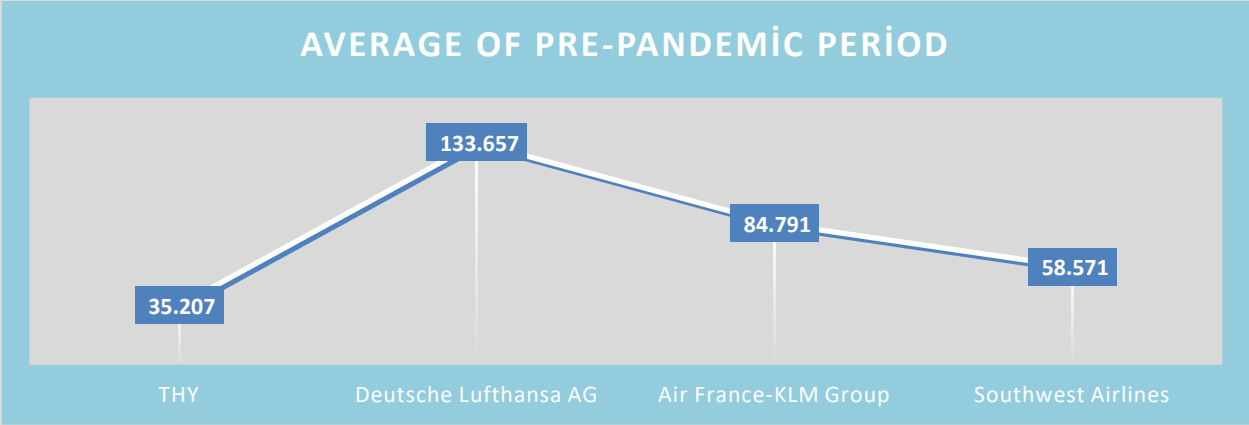


Figure 40: Pre-Pandemic Number of Employees KPIs

When looking at the pre-pandemic levels, the minimum number of employees appears in THY. The low number of aircraft also depends on the low capacity of the aircraft. It is aimed to increase the number of personnel by increasing the capacity. Increasing the number of aircraft and the number of personnel above 2019 levels may be the goal of the post-normalization future.

4.3.4.2. Passenger Per Employees

The number of passengers per staff started to decrease on THY in 2019. In 2020, with the impact of the pandemic, it fell by 61%. In 2017, and 2018, THY is above the average of its competitors. Returning to 2017 may be a forward-looking KPI target for THY.

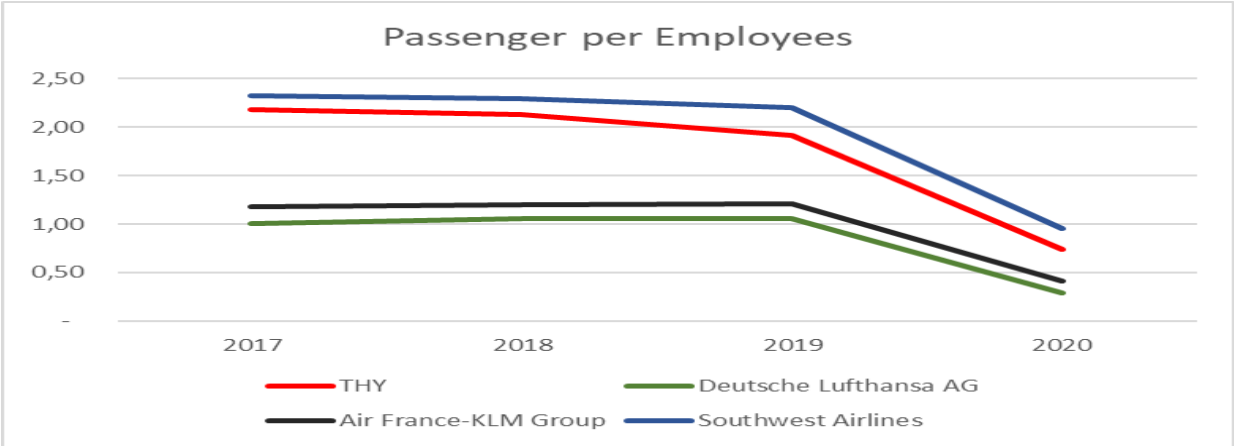


Figure 41: Passenger per Employees KPIs

Prior to the pandemic, the number of passengers per staff member was higher than the average value of its competitors on THY. Southwest has the highest rate, so Southwest’s average value in

pre-pandemic period “2,3” has been designated as the target.

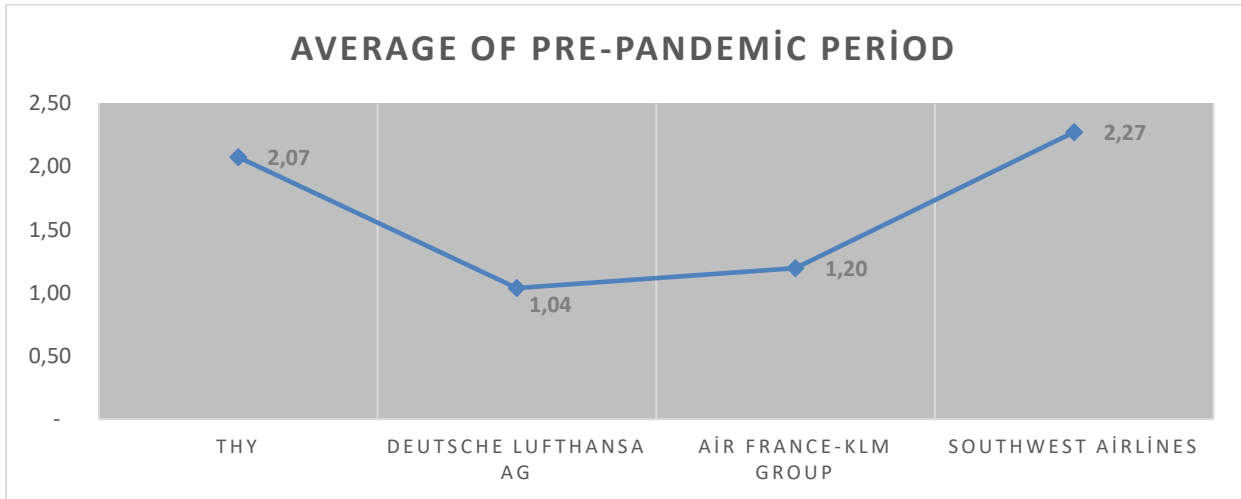


Figure 42: Pre-Pandemic Passenger per Employees KPIs

4.3.4.3. Staff Cask

Low cask values indicate that companies have low costs, so companies aim for low cask high risk. THY's staff cask is lower than other airlines, even increased after the pandemic, is lower than other airlines.

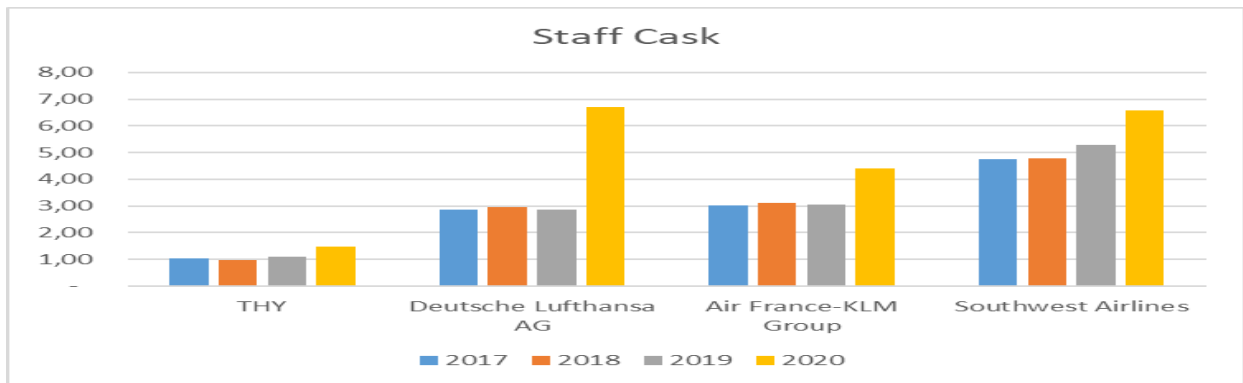


Figure 43: Staff Cask KPIs

When the value of personnel CASK is examined before the pandemic, the figure is lower in THY than other competitors. It is good financially that THY has a low cost of personnel, but it is important not only to evaluate the situation financially, but to provide trainings to support the personnel in terms of knowledge. Protection of the cask value of THY before the pandemic can be

determined as the target.

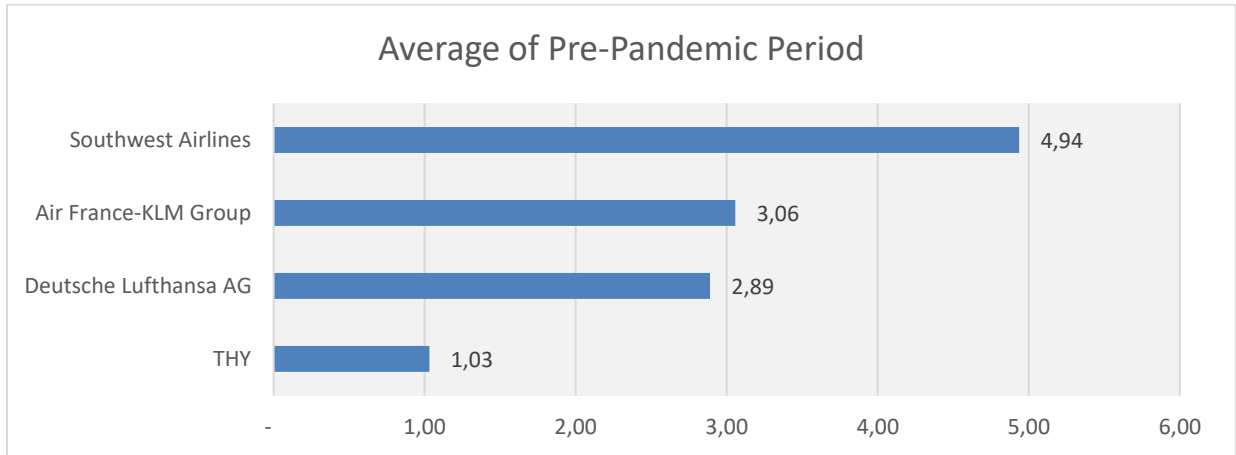


Figure 44: Pre-Pandemic Staff Cask KPIs

4.3.4.4. Fuel Cask

Increasing fuel casing leads to both increased costs, and increased environmental damage (increased fuel used). Other airlines, except Southwest Airlines, are about 2 in the fuel cask. In 2020, flights decreased with the pandemic, but thy increased in 2020 because the fuel drop was less than the ASK drop. Cargo planes have an impact on the increase in this rate. Cargo planes do not have ASK, but fuel costs are in place.

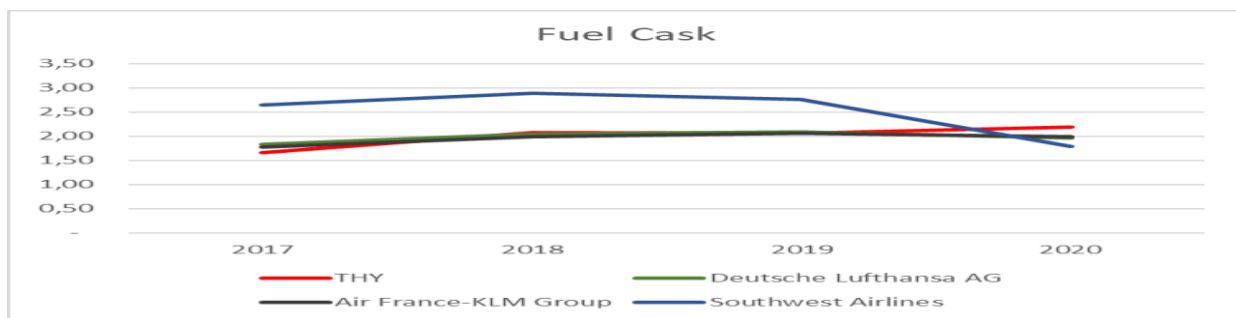


Figure 45: Fuel Cask KPIs

When the value of fuel CASK is examined before the pandemic, the figure is lower in THY than other competitors. This shows that the damage to the environment is also less, the protection of pre-pandemic levels can be determined as the target value for THY.

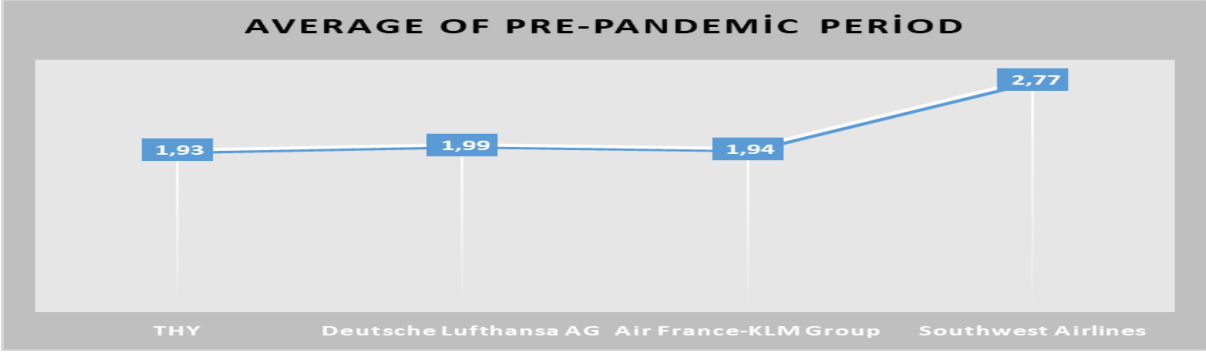


Figure 46: Pre-Pandemic Fuel Cask KPIs

4.3.4.5. Baggage Irregularity Rate (per 1,000 passenger)

Baggage Irregularity Rate (per 1,000 passenger) was 0.50 -0.52% in 2019 in before pandemic period, but decreased in 2020. The decrease in this rate indicates that THY increases efficiency in baggage performance. Maintaining the level of 0.39%, or going below 0.39% may be the forward target.

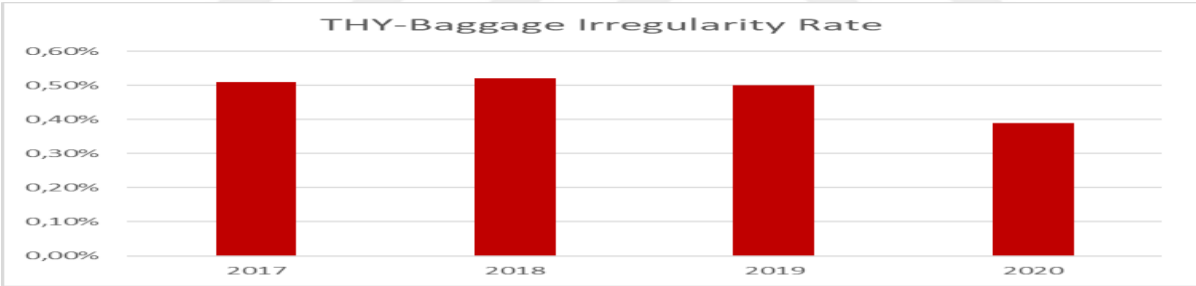


Figure 47: Baggage Irregularity KPIs

4.3.4.6. Average Personnel Age

There are no significant differences in the pre-pandemic and post-pandemic period. The average age of THY is approximately 35, while the average age of Deutsche Lufthansa AG is 42. The lower average age of the employee means that younger staff are employed. There is also the advantage of having a low average personnel age. The high average age is advantageous in terms of experienced personnel, but it can be a disadvantage in terms of cost, the higher the average age, the higher the rate of personnel approaching retirement, which may lead to the company paying more severance pay. Maintaining 35 levels may be a future target for THY.

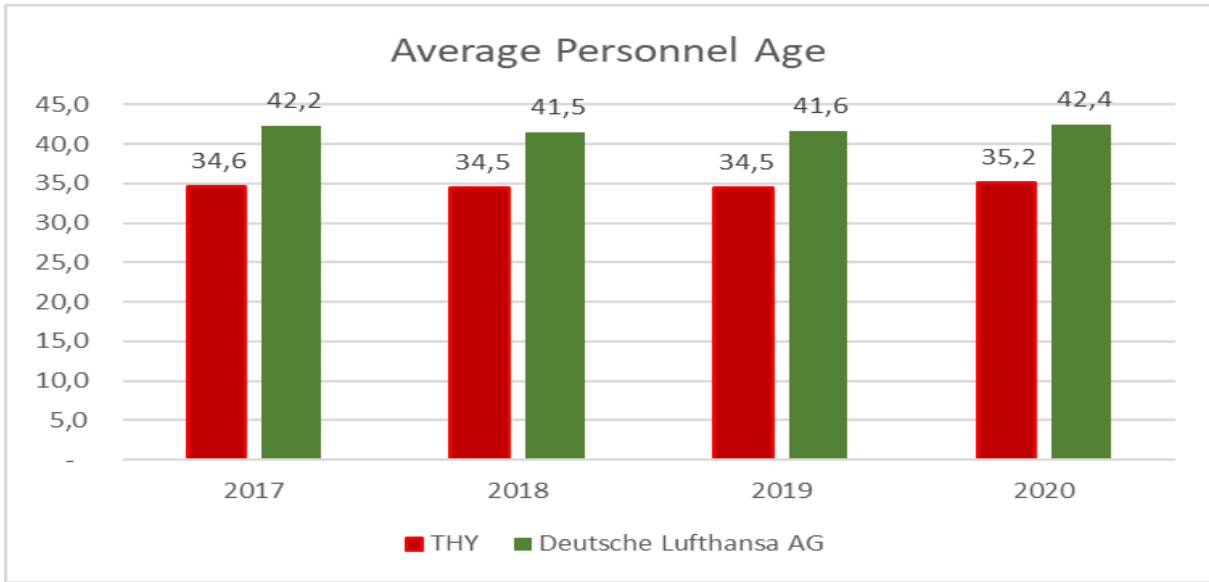


Figure 48: Average Personnel Age KPIs

4.3.4.7. Total Revenue to Number of Employees

THY is in a similar position to its competitors in total revenue to number of employees, even with a lower rate of decline than its competitors in 2020. While THY's staff numbers are below its competitors, total revenue to number of employees is at a similar level to its competitors.

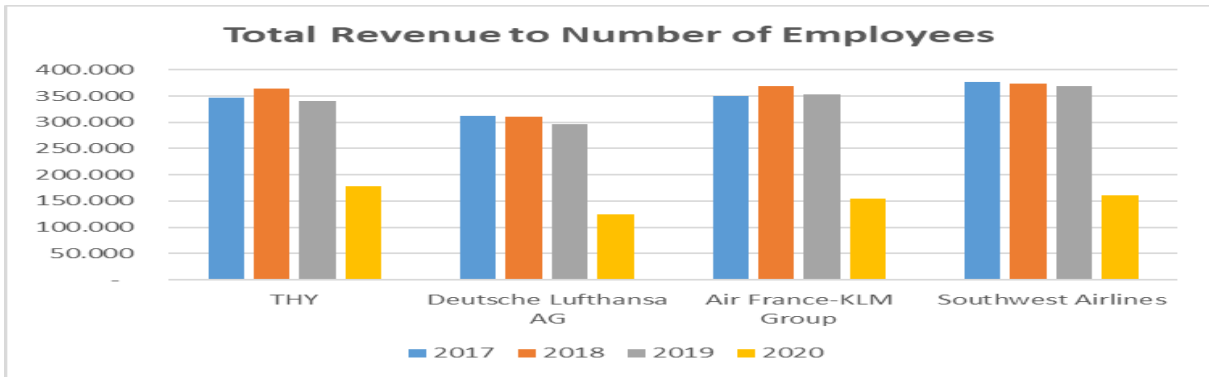


Figure 49: Total Revenue to Number of Employees KPIs

When the pre-pandemic period is examined, it appears that THY is close to Air France KLM group and below Southwest Airlines. Southwest Airlines' average value of 373,095 can be set as the target value.

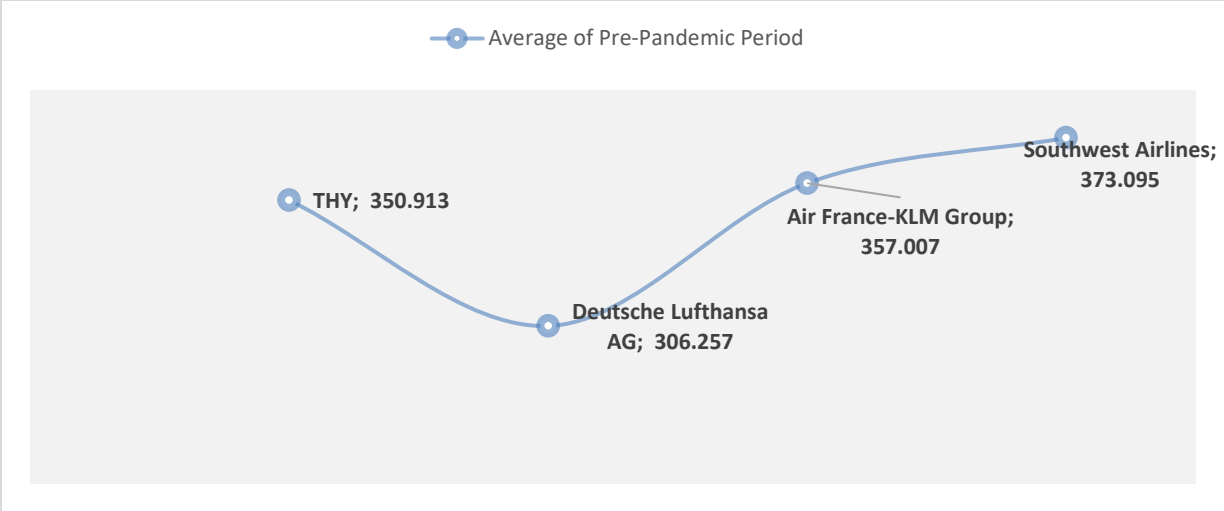


Figure 50: Pre-Pandemic Total Revenue to Number of Employees KPIs

4.3.4.8. Staff Costs to Total Revenue

It is understood that the ratio of personnel expense to total income is low, the company generates high income with a small number of personnel, uses its staff efficiently. THY's Staff Costs to Total Revenue ratio is well below its competitors, and this is a positive situation for THY. In 2020, its competitors increased the Staff Costs to Total Revenue rate very much, which indicates that the impact of the pandemic was felt quite a lot, but THY maintained this rate at 16% during the pandemic period without raising it.

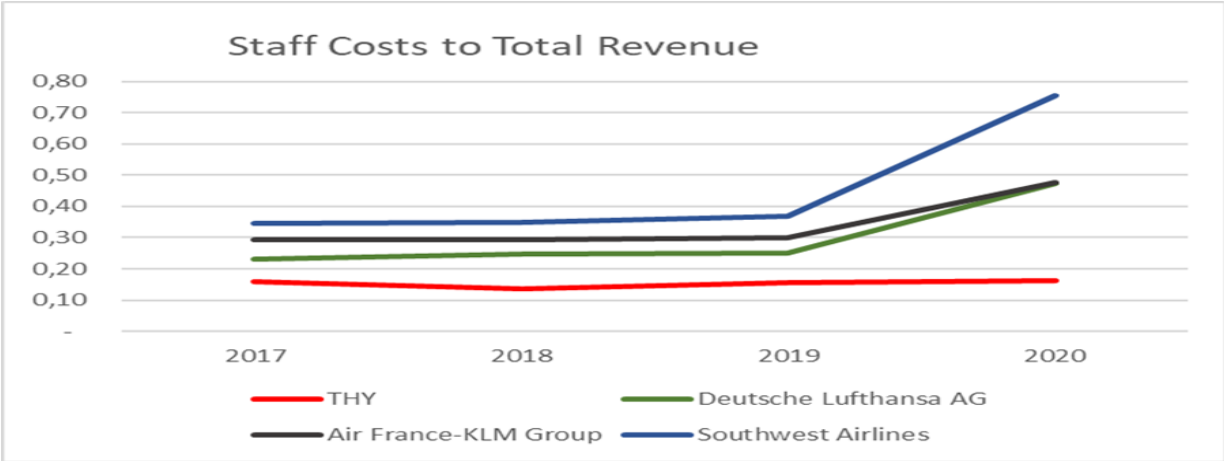


Figure 51: Staff Costs to Total Revenue KPIs

When the pre-pandemic period is examined, it appears that THY is at the lowest value and the protection of these levels is determined as the target value.

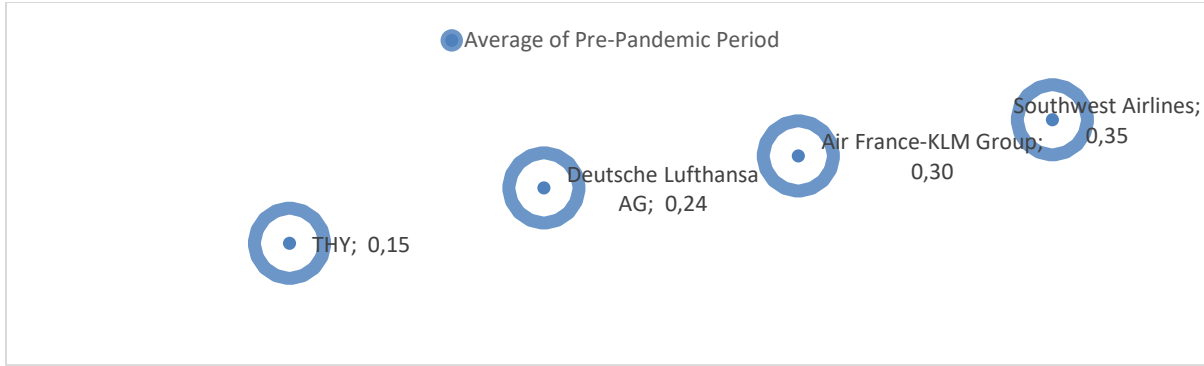


Figure 52: Pre-Pandemic Staff Costs to Total Revenue KPIs

4.3.4.9. Social Responsibilities

Airlines are more environmentally conscious, and develop social responsibility projects due to increasing climate crises, water crises, natural disasters, and environmental pollution. A few of the social responsibility projects of THY, and other airlines are listed below, the forward-looking social responsibility KPI for THY may be the continuation of environmental projects, and the addition of new ones.

- **THY**

THY manages its commercial activities socially, economically, and environmentally responsively. Environment, culture, art, science, and technology, human aid, equal opportunity are the principles of responsibility.

For these purposes, studies are carried out with domestic, and international civil organizations, foundations, universities, humanitarian organizations. The main goal is to maintain a sense of unity, and to find solutions to global problems for our country, and the world.

THY is aware of climate change, and is working to mitigate the impact of climate change. Supports fuel efficiency initiative, takes measures to reduce greenhouse gas emissions Supports sustainable biofuel research, and development.

THY calculates, monitors, and reports greenhouse gas emissions generated as a result of its flight operations, and other business activities in its Istanbul, Ankara, and Izmir work sites within the framework of TS EN ISO 14064-1 Standard for Quantification of Greenhouse Gas Emissions, and Removals at the Organization Level.

- **Deutsche Lufthansa AG**

- Lufthansa Group commits to sustainability, and CO2 reduction
- CO2 neutral aviation until 2050
- 50% reduction of net emissions against 2019 until 2030
- Active noise reduction
- Absolute CO emissions of Lufthansa Group aircraft in 2020 11.4 million tons (previous year: 33.1 million tons)
- The most important driver to reduce CO emissions from flight operations is to continuously invest in modern, especially fuel-efficient aircraft, and engine technologies. At the same time, efficient concepts are applied for takeoff, and landing, and the digitization of approach technologies is progressing.
- 45.3% of employees are women.

- **Air France-KLM Group**

- 30% lower CO2 emissions per passenger km compared to 2005
- 31% less recycled waste compared in 2011
- 32% less CO2 emissions generated by land operations compared to 2018
- 22% newer, quieter, more efficient aircraft added to fleet
- 15% employee participation improvement
- 33% female top 10% management level
- 40 training hours per employee

- **Southwest Airlines Co.**

Southwest is working with government leaders to achieve net zero carbon emissions by 2050. Less CO2 emissions will be released when MAX aircraft are included in the fleet as less fuel-burning aircraft. Installation of blended winglets on aircraft in the company's fleet that reduce drag, and improve fuel efficiency. The Company conducts environmental studies, including state, and local laws, and regulations. These laws, and regulations govern aircraft disposal of materials such as

drinking water, emissions, storm water discharges from operations, and jets fuel, chemicals, hazardous waste, and aircraft deicing fluid.



5. CONCLUSION & FINDINGS

THY has been analyzed with three other airlines with balanced scorecard method analysis. The balanced scorecard method was selected to examine the performance, and efficiency of airlines not only financially but also from a non-financial point of view, and KPIs were analyzed under four headings. These topics include financial perspective, customer perspective, internal business process perspective, learning, and growth perspective. THY has not only been compared with other airlines in terms of performance by KPI but has been tried to be determined in the forward target KPI.

The primary sources for the study were obtained from financial statements, annual reports, and other secondary data. The study focused on the time between 2017, and 2020, and analyzed both the company's financial, and non-financial KPIs. 2019, 2018, and 2017 periods of the selected periods constitute the pre-pandemic period, and in 2020, airlines, and many companies were plunged into crisis due to the pandemic effect. It has been observed how the targets of airlines are also affected by the pandemic.

5.1. Limitations

There are some limits in this study. The data consists of financial statements, annual reports, and published presentations of companies, information published on the websites of companies. The financial statements of the airlines may differ from each other, for example, an expense that appears in the personnel expense may appear in a different group on the other airline, which may change the analysis. Some companies have published reports in USD, and others are in EUROS. Therefore, the currencies were converted into dollars by calculating the parameter at the central bank exchange rate of the Republic of Turkey.

Financial KPIs can be obtained from financial reports, but non-financial KPIs have been found by reviewing annual reports, or other reports published by companies. This caused the analysis to take time. In addition, companies are selected not from a particular region but from different regions around the world, which also makes it difficult to study.

Some KPIs were not obtained from the reports published by the companies. In some cases, the performance of a single company has been evaluated over the years. Four years were used for data study, but using more years could be useful for more detailed analysis, but four years were selected because the tables of the companies were limited, and the selection of more years made the analysis difficult.

Four airlines were selected for the study, which could have provided a more detailed analysis of other airlines besides these airlines, but because the reporting method of some companies is very different, or the differentiation of the reports they publish over the years makes the analysis difficult.

5.2. Discussion

This research has shown the availability of KPIs in comparison with international competitors with the balanced scorecard model with THY example in the aviation sector and compared to the use of pre-pandemic and pandemic period KPIs. A forward target for THY has been set using KPIs. It contributes to the academic literature by examining the THY sample through KPIs before and during the pandemic period and setting the target value for THY.

The study, published by Ghada Mohamed Khairat in "The Balanced Scorecard Approach as a Tool for Performance Evaluation in the Airline Companies", also mentioned that the balanced scorecard model can be used to measure performance in the aviation sector. He mentioned in his study that not only financial factors should be taken into account, but also non-financial factors. It stated that other factors that affect customer preferences, such as flight operation and service quality, should be included in the performance measurement. In the study, the target audience was 87 airline executives. As a method, the survey method was used. He investigated the KPI methods used in aviation and the balanced scorecard model. As a result of the study, it was determined that financial factors are used more than non-financial factors. Of those who responded to the survey, 52.9% said they did not know about the balanced scorecard model. It is understood that the balanced scorecard model is a newly used model among those who responded to the survey. Respondents noted that customer focus and financial focus were the most used of the four methods in the balanced scorecard model. According to the results of his research, internal business is in third place and learning and growth perspective is in fourth place. The study suggests that management

should be supported to include more non-financial factors in the reporting. It is consistent with our study by showing that airline companies can use the balanced scorecard model.

The "Development of Balanced Score Card Framework for Performance Evaluation of Airlines" study by Yandava Karun Kumar and V.V.S. Kesava Rao was investigated. It is an article written on a balanced scorecard model. Between 2009 and 2013, performance data from 100 major airlines were evaluated with a balanced scorecard model. This research suggests that the eight-point four-factor model was successful. Integrated CFA and CRITIC methods were used as methods. This study was conducted over a general assessment using excess airways. In our study, Balanced Score Card model was analyzed by more KPI using specific samples.

"Understanding Performance Indicators of Organizational Achievement in Turkish Airline Companies" published by Dilek Erdogan and Ergün Kaya in 2014, the study was analyzed. Balanced scorecard model has been applied on airlines in Turkey, and has contributed to the literature with its application to airlines in Turkey and A study named Evaluation of Balanced Scorecard Applications as a Performance Measurement Tool in Airline Companies in Turkey prepared by Ahmet Selim Süzer in 2020 was analyzed. This research analyzes how the balanced scorecard model is used in performance evaluation in enterprises and in the performance evaluation in the aviation sector in Turkey. They found that the balanced scorecard model is used in two of the three airlines in Turkey. He stated that the literature uses the balanced scorecard model to measure business performance in four dimensions: finance, customer satisfaction, process improvement, training and development. In their study, it is important because it shows that the balanced scorecard is applied on eight strategic focuses in an airline and that the airline that implements the differentiation marketing strategy focuses on the customer satisfaction dimension in the performance measurement in the balanced scorecard application. According to the results of this research, it is seen that the application of the balanced scorecard is different for cost-oriented airlines and airlines that implement differentiation marketing strategies. In addition to financial data, other airlines operating in an intensely competitive environment are used in performance evaluations. It has been concluded that analyzing the data in different dimensions will contribute to the success of the business. In the studies conducted by Ahmet Selin Süzer and Dilek Erdoğan, Ergün Kaya, the airlines in Turkey were compared in themselves and it is compatible with our study by showing that it can use the balanced scorecard model in the airlines

in Turkey, but in our study, it was added in foreign companies and the pandemic period was analyzed and determined at the target values.

5.3. Recommendation

The aviation sector is affected by many factors, political problems, economic crises, epidemics. Many factors are deeply felt in the aviation industry. With the pandemic crisis affecting the aviation sector in 2020, the importance of performance in the aviation sector has increased even more.

The statements are our comments formed as a result of the examinations and should not be considered as certain ones, and it is not aimed to give any direction to the decision-makers with our comments. We would like to state once again that the expressions in the study are not intended to guide, but only our comments.

As of 2017, the performance of THY has been evaluated by comparing it with its competitors annually. With the Balanced Scorecard method, the performance method under four headings was examined with KPIs and as a result of these reviews, target KPI values were tried to be determined. Our recommendations on how the aviation sector is affected by the pandemic and the improvements that can be made for future processes are as follows.

The first of the four main dimensions used to examine target KPIs is financial KPIs. Our comments for financial KPIs are as follows.

Cargo revenue has increased its proportion on THY with the total revenue during the pandemic. With this rate increasing, THY was less affected by the crisis. However, with the increase in passenger income, this rate will decrease, it is determined as the target value to return to the pre-pandemic level of 0.13 in KPI of cargo revenue to total revenue and to return 0,85 level in KPI of passenger revenue to total revenue without reducing the revenue and market share to be obtained.

The small share of operational cost in total revenue is an advantage for THY, reaching 0.85, the average value of Southwest Airlines for the three years before the pandemic, is set as the target value.

THY was valuable at debt to equity ratio KPI, but southwest is in a better position. Reaching

Southwest's 1.63 levels could be the target KPI for THY.

Both revenues and net incomes fell significantly with the pandemic. During the pandemic, the decrease in Net Income to Total Revenue Ratio KPI on THY was less than that of other airlines. For THY, it may be the goal to return to the pre-epidemic period in the first stage and then reach 12.45, average value of Southwest Airlines in the pre-pandemic period.

It has been observed that the EBITDAR KPI value of THY has increased with the outbreak, since this rate is intended to be high, the target is to maintain the levels of 27.7.

RASK and CASK are frequently used in aviation management. High RASK is targeted by low cask airlines to increase profitability. CASK value has increased considerably with decreased production during the pandemic process. In the pre-epidemic period, THY is more protected with a low cask value in the cask target compared to its competitors. Maintaining THY's pre-epidemic average of 6.34 may be the target KPI value.

The high RASK value indicates that revenues are increasing. There have been deviations in rates due to changing ASK values during the pandemic period. Prior to the outbreak, the average value of the three airlines, level 12, can be selected as the target KPI for THY.

Our comments for customer-oriented KPIs are as follows.

THY has the lowest value compared to its competitors in RPK value. The reason for the low RPK value is not only the number of customers but also the ASK value produced. The target KPI value is \$180630. It was calculated on 84% of the ASK (215036) specified in subsequent KPI, set as the forward target.

Since detailed information about the RCTK and cargo L/F cannot be found on THY, it is determined as the target to produce values above the average of the values belonging to Deutsche Lufthansa AG and Air France KLM.

In the pre-pandemic period, the passenger carried KPI value of THY was lower than its competitors. During the pandemic period, like other airlines, THY had serious falls. Therefore, both increasing capacity and increasing the number of passengers will be the goal of THY, and the

target KPI value is 124.454, which is the average of the other three airlines in the long term.

Increasing the L/F KPI value means increasing the number of passengers and increasing the company's preferability. The L/F rate is close to Lufthansa before the pandemic but below other airlines. The first goal for THY is to reduce the impact of the pandemic and then reach the average value of the other three airlines, %84.

The services and catering services offered by airlines are an important KPI that affects the preference of airlines. However, there is also the cost process of these services offered by airlines. Therefore, the benefit and cost must be compliant. Maintaining the average level of 7,751 in the pre-epidemic period can be set as the target value for THY.

With the transition to the new airport, THY has increased its timely departure rate. Keeping this rate at 90% or even increasing it to higher levels is set as the target value.

Our comments for internal business process perspective KPIs are as follows.

The available seat KPI value is associated with the number of aircraft and the mileage flown. As this value increases, the number of available seat increases, but with the outbreak, the value of ASK produced on THY, like other airlines, has decreased expressively. THY is below Lufthansa and Air-France AG in ASK, the difference with Air-France is less. The target value (215036) was calculated by multiplying the average (537) of the ASK value produced by Turkish Airlines per aircraft prior to the pandemic and the number of aircraft (400) to be determined in the other KPI.

With the increase in the revenue from cargo in the post-pandemic period, cargo KPIs for airlines increased. For THY, producing cargo tons of km higher than the average value of Deutsche Lufthansa AG and Air France-KLM group can be set as a target.

THY has the fewest aircraft compared to the three airlines compared. Increasing the number of aircraft can also contribute to increasing capacity, and increasing ASK values. With the increased ASK value, the number of passengers and passenger revenues will also increase. The ratio of the number of aircraft in 2020 to the number of aircraft in 2017 is 10.33%. THY's number of aircraft in 2020 (363) was increased by 10.33% and the target value was set at 401. However, THY has

newer aircraft than its competitors, and maintaining these levels could be set as a target value.

In the number of flights (passenger) KPI, THY is below Deutsche Lufthansa. In 2019, THY produced 1391 passenger flights per plane. The target value (557.894) was determined by multiplying the 401 aircraft designated as the forward target and by the number of passenger flights produced in 2019 (401*1391).

The last of the four main dimensions used to examine target KPIs is organizational learning, and growth perspective KPIs. Our comments are as follows.

When the pre-epidemic period was examined, the minimum number of employees in THY was determined. It could be aimed to increase the number of staff KPI with increasing capacity with the reduction of the impact of the epidemic in the following periods.

Passenger Per Employees KPI is targeted at a high rate. THY is below southwest airlines' target value, although it is worth more than its two competitors. 2,27 For THY, the target value can be determined and performance can be improved.

At staff cask KPI value, THY is in respectable condition compared to its competitors, maintaining this rate can be determined as the target value.

During the pandemic period, fuel cask value varied with increasing ASK. When the pre-pandemic period was examined, it was observed that THY was more successful than its competitors in fuel cask KPI. Maintaining pre-pandemic levels is set as the target value.

During the pandemic period, there was a positive improvement in the baggage irregularity rate KPI compared to before the pandemic and the rate decreased. Maintaining this low (0.39%) can be selected as the target value. The age of THY's employees is younger than Deutsche Lufthansa AG. The fact that the staff is young indicates a more dynamic structure, so THY's average age of 35 could be determined as the target value.

The ratio of total revenue to passenger numbers means that the KPI is high and the income from passengers is also high. At this KPI, THY is close to the Air France KLM group, but under Southwest Airlines. Choosing Southwest Airlines' average value as a target value of 373,095 could

provide performance improvements.

For THY, when the ratio of personnel expenses to total income is analyzed, it is observed that the ratio is lower than its competitors. This ratio can be kept low by increasing the income with the existing personnel, however, it may be the target value to keep this ratio low with the number of personnel to be recruited due to growth in the future.

Airlines are more environmentally conscious, and develop social responsibility projects due to increasing climate crises, water crises, natural disasters, and environmental pollution. In terms of social responsibility in terms of organizational learning, and growth, THY, and other competitor airlines are developing many projects. The goal of the forward-looking social responsibility KPI for THY may be to continue existing projects and to be involved in new social responsibility projects that are beneficial for the environment.

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