

ANALYSIS OF FINANCIAL SUCCESS SITUATIONS OF AVIATION SECTOR BUSINESSES BEFORE AND AFTER COVID-19

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Introduction

COVID-19, which first emerged in Wuhan, China in December 2019 and rapidly spread and became effective all over the world, was stated a pandemic by the World Health Organization on March 1, 2020, due to its global impact and public health risk; that is, it has been declared an international epidemic. The economic success of aviation sector businesses will be examined in this study by comparing the years before and after the COVID-19 pandemic.



Literature

During the COVID-19 pandemic, which affected the whole world, almost all airline companies faced an unprecedented financial crisis due to travel restrictions. These days, fierce competition and low profitability are the key elements that define civil aviation.

In response to these demands, large fixed capital investments have emerged, resulting in a high degree of technical infrastructure. Major airlines have created an uncompetitive environment in the industry, as have excessive government subsidies, seasonal fluctuations and the recent COVID-19 pandemic. The combination of all these factors created major problems for the industry (Dursun, 2021: 7214).

In his paper, Akca (2020) discussed the steps implemented in the aviation industry as a result of the COVID-19 pandemic, investigated the economic effect of the pandemic in the aviation sector, and provided analyses and assessments of the present situation using Turkish aviation sector statistics.

In his study, İloğlu (2020) employed the Altman Z Score model to forecast financial collapse of aviation industry firms in Turkey, England, and the United States. According to the findings of the study, enterprises that focus on domestic flights are less risky and more profitable.

In an analysis of the measures in the Turkish civil aviation sector against the consequences of the COVID-19 pandemic, Macit et al. (2020) assessed the measures to be taken by international health organizations and aviation organizations against the pandemic, as well as the management of the process in the Turkish civil aviation sector in the context of the measures that can be taken. The research disclosed the precautions and preparations for the pandemic to be taken in the sector, analyzed the financial character of the pandemic, and stressed the risk that the Turkish civil aviation sector would be severely affected by pandemic circumstances.

Sucu (2021) reviewed the impact of the global crisis experienced during the COVID-19 process on the aviation sector within the context of Turkish Airlines (THY), as well as the activities implemented during the crisis management process, as well as a case study, which is a qualitative research method, and Turkish Airlines' results in 2019 and 2020. The company's annual reports, press statements from top management, material on the business website, and data from the literature study were all examined. According to the findings of the study, THY management handled the crisis in accordance with its crisis management activities and responded similarly to the practices of international airline businesses in contingency planning.

In order to estimate the effects of COVID-19, Dağlı (2021) analyzed the financial performances of seven European airlines in terms of passenger counts in the second quarter of 2019, the fourth quarter of 2019, and the second quarter of 2020. The data received from the companies' financial reports were evaluated using the TOPSIS technique for each airline company in periods, and it was established that the businesses' financial performance diverged for the three periods acknowledged.

Hopancı et al. (2021) assessed the impact of the COVID-19 pandemic on the Turkish aviation business by addressing its impacts on air traffic, airline companies, and airports, and forecasted the industry's and aviation firms' recuperation.

Kalkın (2021) explored the situation in terms of organizational resilience in the aviation industry in his paper, in which he assessed the influence of the COVID-19 pandemic on the aviation sector on a worldwide scale. The current state of the aviation sector, economic and organizational losses, steps taken to handle the approaching crisis, and what can be done to analyze the opportunities that may occur in the crisis environment are all highlighted in the article.

Temel (2022) utilized ratio analysis management to look into the effect of the COVID-19 pandemic on the financial performance of Turkish Airlines and Pegasus Airlines, whose stocks are listed on the stock exchange. The study found that the COVID-19 measures had a negative influence on the liquidity structure, financial status, activity, and profitability ratios of airline firms, although it was established that Pegasus Airlines had a more adverse effect than Turkish Airlines.

Data Set and Method

The financial data of some companies in the study are as follows; Turkish Airlines Co. (THYAO), Pegasus Airlines Inc. (PGSUS), TAV Airports Holding Co. (TAVHL) and Çelebi Aviation Holding Inc. (CLEBI), which are listed on Borsa İstanbul and operate in the aviation sector. Data belonging to enterprises are shared by Borsa İstanbul A.Ş. <https://www.borsaistanbul.com>, Fintables Information Technologies Inc. <https://www.fintables.com>, İş Investment Securities Inc. gathered from <https://www.isyatirim.com.tr> and Public Disclosure Platform's (KAP) <https://www.kap.org.tr> online sources and archives. The accounting records of the associated firms between the years 2012 and 2022 were studied and evaluated in order to evaluate the performance of the enterprises (for the year 2022, the third-quarter balance sheets of the enterprises in question were used). To estimate the risk level in the pre- and post-COVID-19 periods, the firms in the sector were analyzed

using the Altman Z Score model, which is used to forecast the financial success levels of the corporations.

Edward Altman's Altman Z Score model, published in 1968, was utilized for the first time between 1946 and 1965 to analyze the financial ratios of 33 successful manufacturing enterprises operating in the same industry and 33 financially failing manufacturing businesses. The financial ratios of the mentioned businesses were examined by taking the liquidity, profitability, efficiency (activity), leverage, and solvency ratios into account, and the ZScore model was developed by using the financial ratios that produced the best results in the estimation of financial failure. The primary characteristic of Altman's ZScore model was that it took into account the interaction between the financial ratios employed in the model (Altman, 1968: 589). The distinguishing function of the Z Score model and the financial ratios utilized in the formula are presented below.

$$\mathbf{Z\ Score = 0,012*X1 + 0,014*X2 + 0,033*X3 + 0,006*X4 + 0,999*X5}$$

X1: (Net) Working Capital / Total Assets

X2: Retained Earnings or Losses / Total Assets

X3: Operating Profit / Total Assets

X4: Market Value of Equity / Total Liabilities

X5: Net Sales / Total Assets

The reference ranges used in the evaluation and interpretation of the Z Score obtained from the formula are as follows.

Financially successful if $Z > 2,99$ (in green zone)

$1,8 < Z < 2,99$; financially uncertain (in grey area)

Financially unsuccessful if $Z < 1,8$ (in red zone)

When the Z Score is more than 2,99; the firm is economically secure; when it is less than 1.8, the company is financially unsuccessful; and when the Score is between 1,8 and 2,99; the financial uncertainty of the business is revealed. The Z Score approach has been recognized and favored since it is relevant through available data and financial ratios concentrating on factors such as liquidity, profitability, efficiency (activity), leverage, and business solvency (Kulali, 2016: 286).

The market value of the equity / total liabilities ratio of the firm was implemented in the initial edition of the Z Score model, and getting this figure is only available for publicly listed enterprises. This precludes the approach from being used by non-public companies. A subsequent study was carried out to fill this gap, and in this model, Altman produced an alternative Z Score model for non-listed enterprises, taking the book value of equity rather than the market value of stock into

consideration. The non-public enterprise ZScore function has been revised as follows (Altman, 2000: 25).

$$\mathbf{Z'Score= 0,717*X1 + 0,847*X2 + 3,107*X3 + 0,420*X4 + 0,998*X5}$$

X1: (Net) Working Capital / Total Assets

X2: Retained Earnings or Losses / Total Assets

X3: Operating Profit / Total Assets

X4: Carrying Value of Equity / Total Liabilities

X5: Net Sales / Total Assets

In the Z' Score model, the effects of the X1 and X4 ratios on the Z Score have decreased, and the reference intervals to be considered in the evaluation of the results have been changed as follows.

If $Z' > 2,90$; financially successful (in green zone)

If $1,23 < Z' < 2.90$ financially uncertain (in grey zone)

If $Z' < 1,23$; financially unsuccessful (in red zone)

Altman, who produced a model for public and non-public enterprises in the previous two models, built a model for service businesses in the third model. The values of the third Z Score model produced, as well as the proportion of financial ratios in the formula, are as follows.

$$\mathbf{Z'' Score = 6,56*X1 + 3,26*X2 + 6,72*X3 + 1,05*X4}$$

X1: (Net) Working Capital / Total Assets

X2: Retained Earnings or Losses / Total Assets

X3: Operating Profit / Total Assets

X4: Carrying Value of Equity / Total Liabilities

The X5 value is not encapsulated in the Z'' Score model, and the coefficients of the ratios have been re-evaluated. The reference ranges to be considered in the evaluation of the results are listed below.

If $Z'' > 2,6$; financially successful (in green zone)

Financially uncertain if $1,1 < Z'' < 2,6$ (in grey zone)

If $Z'' < 1,1$; financially unsuccessful (in red zone)

If the result acquired in the Z'' Score model is greater than 2,6; the company in question is financially successful, if it is less than 1,1; it is a financially unsuccessful company, and if the score obtained is between 1,1 and 2,6; described as the financial ambiguity of the business.

Findings

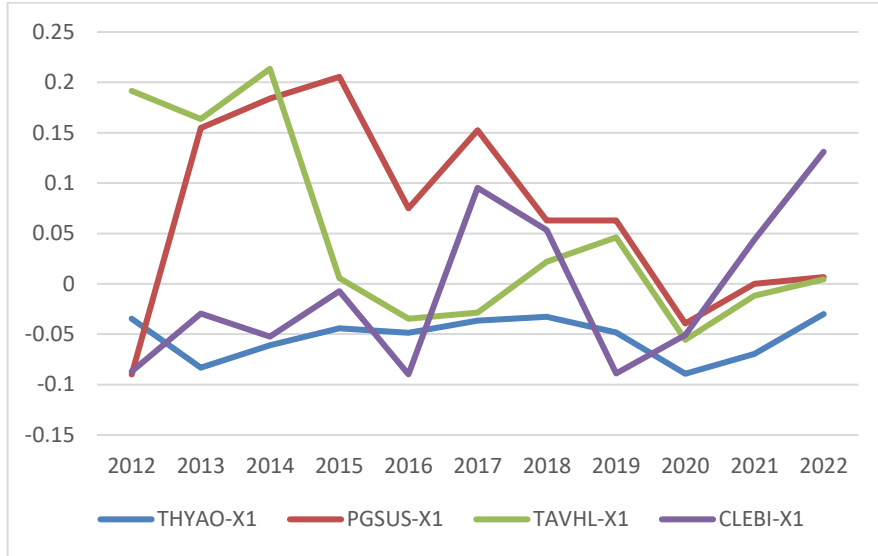
As the aviation sector businesses included in the scope of the study are service businesses, the Z" Score model was employed in the analysis. The Z" Score, as it is called, was created by Altman to assess the bankruptcy possibility of enterprises that do not engage in the manufacturing sector, in other words, their financial success, and is calculated using four financial ratios. The values of each financial ratio were treated independently in terms of the periods and companies covered in the study and the Z"Score of each firm was generated using the values collected and assessed in terms of the period before and after COVID-19.

X1: Net Business Capital / Total Assets

Net working capital, also known as working capital, is an essential indicator for determining an enterprise's liquidity and the degree of risk it faces while carrying out its operations. It represents the difference between the enterprise's current assets and current liabilities. In the model, the correlation between the enterprise's liquidity level and size is taken into account by proportioning net working capital to total assets. In Table 1 below, the X1 (Net Working Capital / Total Assets) values of the enterprises discussed in the study, calculated between the years 2012 and 2022 are given. Graphic 1 presents comparatively the change in X1 values of companies during the period included in the study.

Table 1:X1 Values of Aviation Sector Businesses

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
THYAO	0,0346	0,0833	0,0608	0,0440	0,0485	0,0365	0,0327	0,0481	0,0892	0,0696	0,0299
PGSUS	0,0899	0,1548	0,1838	0,2054	0,0749	0,1524	0,0627	0,0628	0,0394	0,0001	0,0066
TAVH L	0,1916	0,1636	0,2134	0,0058	0,0345	0,0285	0,0219	0,0459	0,0555	0,0116	0,0043
CLEBI	0,0869	0,0294	0,0522	0,0072	0,0898	0,0954	0,0533	0,0890	0,0509	0,0439	0,1310

Graphic 1:Change of X1 Values Belong to Aviation Sector Businesses

The observed findings show that the X1 ration is negative for enterprises with negative balance net working capital and for the periods. Table 1 shows that Turkish Airlines has been on a downward trend in all periods, while Çelebi Aviation Holding Inc. has been on a downward trend except for the two years (2017 and 2018) included by the study. TAV Airports Holding Co., which does not have particularly high liquidity values, has positive values except for 2016 and 2017, while Pegasus Airlines has emerged as the firm with the highest average (0,0704) in terms of X1 values in the dataset.

When COVID-19 measurements were conducted in 2020, it was established that all aviation sector businesses had a negative value, and that all of the enterprises within the scope of the research had a shortage of liquidity for 2020, resulting in a more hazardous capital structure in order to carry out normal operations. However, as of 2021, X1 levels have begun to grow in all firms included in the research, indicating a trend toward greater net working capital and fulfilling short-term liabilities.

X2: Accumulated Profit/losses / Total Assets

The relation between a company's prior earnings capacity and total assets possessed is one of the metrics utilized in the Altman Z" Score model. This ratio depicts the revenue production capacity of the firms, taking into consideration the cumulative earnings of the enterprises, and the ability of newly founded old enterprises to have greater savings offers an advantage over new organizations (Zhang and Ellinger, 2006).

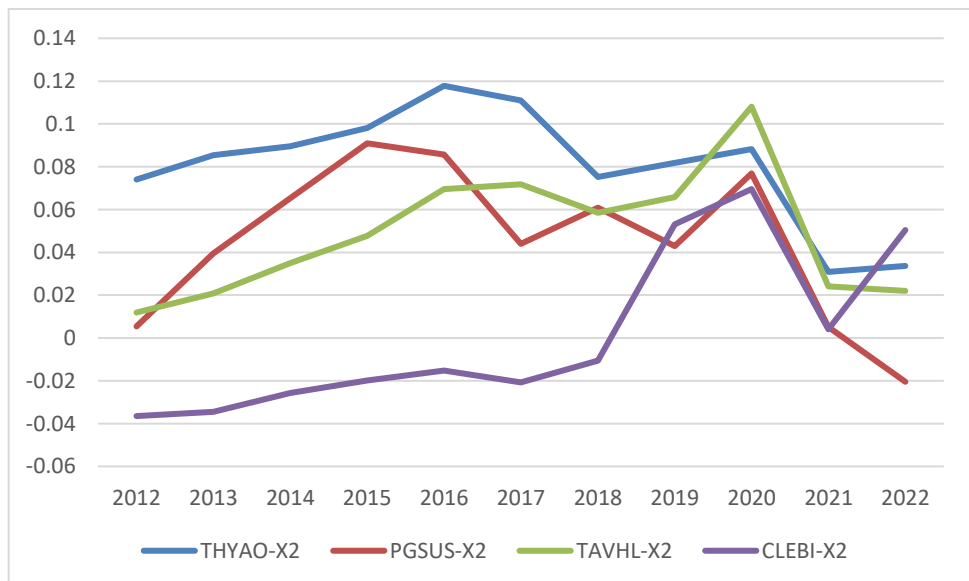
Businesses employ their unclaimed earnings for auto-financing, therefore the magnitude of this ratio also serves as a measure of the company's ability to make fresh investments.

Table 2 demonstrates how many of the previous year's earnings or losses were included in the overall assets of the aviation sector's firms. The change in the important variables over the research period is visually shown in Graph 2, and the change in the process can be noticed.

Table 2:X2 Values of Aviation Sector Businesses

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
THYAO	0,0740	0,0854	0,0895	0,0980	0,1178	0,1109	0,0752	0,0818	0,0882	0,0308	0,0335
PGSUS	0,0053	0,0394	0,0654	0,0909	0,0856	0,0439	0,0608	0,0429	0,0768	0,0051	-0,0204
TAVHL	0,0118	0,0207	0,0350	0,0477	0,0695	0,0717	0,0585	0,0658	0,1080	0,0241	0,0219
CLEBI	-0,0365	-0,0345	-0,0257	-0,0199	-0,0152	-0,0207	-0,0105	0,0530	0,0695	0,0041	0,0504

Graphic 2:Change in X2 Values of Aviation Sector Businesses



When the percentage of previous years' profits or losses in total assets of the sector's firms is investigated, it is discovered that Çelebi Aviation Holding Inc. has the lowest average values and positive values, indicating that cumulative profit accumulation was reached in 2019. Due to the significant profit accumulation of the previous years, Turkish Airlines has the highest average values and is one of the two firms that do not have a negative X2 value within the scope of cooperating with TAV Airports Holding Co. in terms of X2 values. Table 2 indicates that the levels began to fall after 2020, when the COVID-19 pandemic and limits were introduced. Chart 2 depicts the influence of past years' earnings or losses in 2021, as well as the breakdown experienced by all firms.

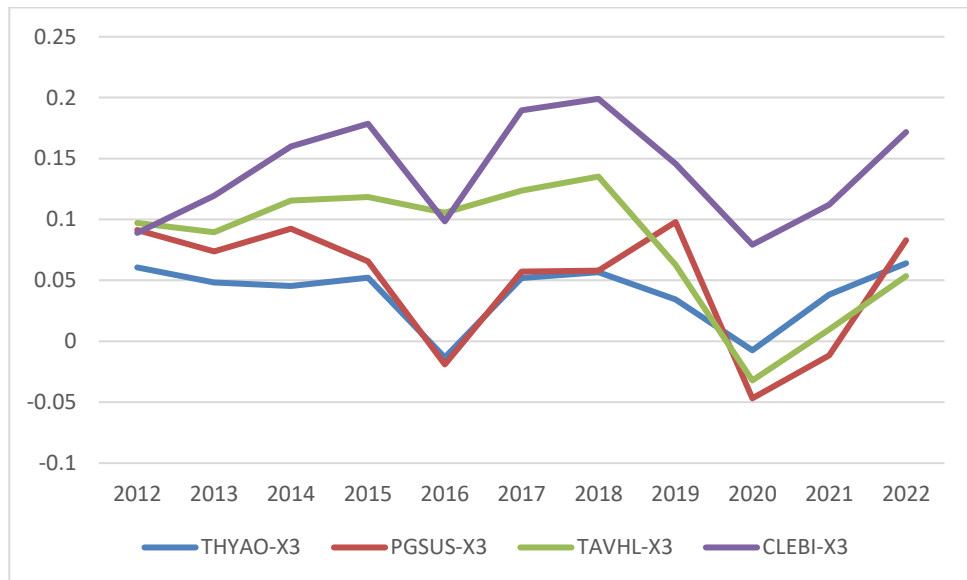
X3 Operating Profit / Total Assets

Profit earned by enterprises before interest and tax payments is known as operational profit, and it is a key measure of a company's efficiency in its core operations, irrespective of leverage and tax concerns. Altman Z" Score also analyzes the ratio of operational profit to total assets as a measure of overall asset efficiency.

In Table 3 and Graphic 3, the X3 values of the aviation industry enterprises and the graphical expression of the change in the related values are pointed out.

Table 3:X3 Values of Aviation Sector Businesses

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
THYAO	0,0607	0,0482	0,0452	0,0521	-0,0132	0,0519	0,0567	0,0343	-0,0073	0,0383	0,0640
PGSUS	0,0913	0,0736	0,0923	0,0657	-0,0188	0,0570	0,0579	0,0979	-0,0468	-0,0115	0,0829
TAVHL	0,0972	0,0894	0,1156	0,1184	0,1054	0,1238	0,1352	0,0628	-0,0321	0,0095	0,0535
CLEBI	0,0889	0,1195	0,1600	0,1784	0,0984	0,1896	0,1990	0,1456	0,0792	0,1121	0,1716

Graphic 3:Change of X3 Values of Aviation Sector Businesses

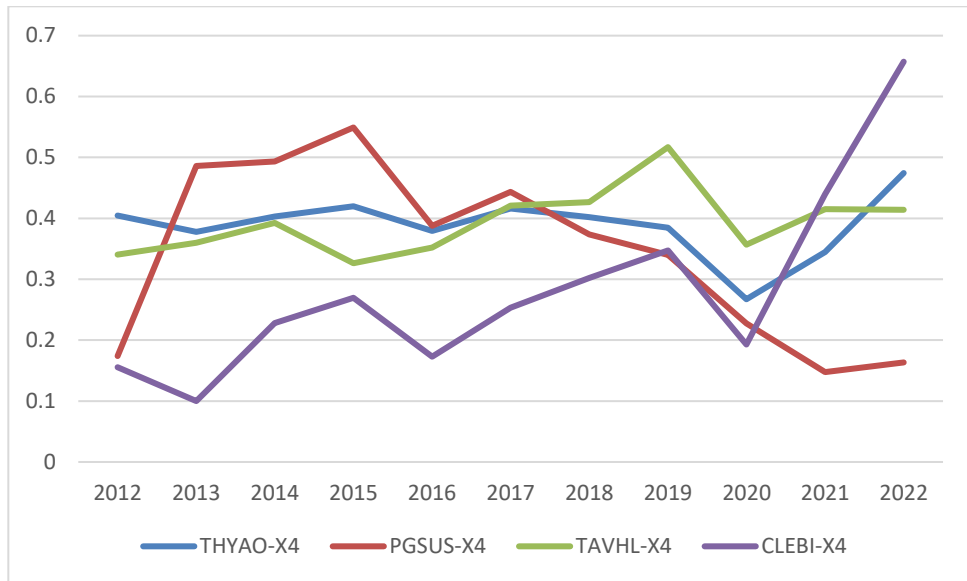
Despite the fact that the results show that Çelebi Aviation Holding Inc. has the highest operating profit values in return for its total assets, Turkish Airlines has emerged as the enterprise with the lowest operating profit ratio in terms of total assets in terms of average values over the study period. When all firms evaluated in Graphic 3 began their COVID-19 applications in the year 2020, it is seen that they had negative values due to a rapid break in the negative direction, and it is observed that they entered a recovery trend again when the measures were lessened.

X4 Carrying Value of Equity / Total Liabilities

The last financial statistic examined in the Altman Z" Score model is the ratio of the enterprise's equity to the sum of its short and long-term debt liabilities. The fact that this ratio, which is an indicator of the degree of financial leverage, is 1 indicates that the foreign resources utilized in the firm's financing and its own funds are equal, and the findings also disclose the adequacy of the equity in the event that the business has issue in paying. Table 4 shows the values of the total liabilities and shareholders' equity of the aviation industry firms included in the study, and Graphic 4 shows the change that happened over the study period.

Table 4:X4 Values of Aviation Sector Businesses

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
THYAO	0,4047	0,3775	0,4029	0,4199	0,3794	0,4161	0,4021	0,3845	0,2671	0,3446	0,4743
PGSUS	0,1739	0,4860	0,4933	0,5491	0,3876	0,4434	0,3734	0,3398	0,2274	0,1476	0,1632
TAVHL	0,3405	0,3599	0,3922	0,3262	0,3517	0,4208	0,4264	0,5169	0,3566	0,4152	0,4139
CLEBI	0,1553	0,0999	0,2280	0,2696	0,1729	0,2530	0,3020	0,3475	0,1927	0,4400	0,6572

Graphic 4:Change of X4 Values of Aviation Sector Businesses

The highest value recorded between 2012 and 2022 belonged to Pegasus Airlines in 2015 (0.5491), however the sector values throughout the examined period varied from 0,39 to 0,28 on average. As in practically all sectors, there has been a fall in equity values or a rise in the usage of foreign resources in the aviation industry as a result of the effect of COVID-19 on operating profits or losses. In Graphic 4, as in the previous Altman Z" Score model ratios, it is evident that the book values of all businesses' equity dropped compared to total liabilities in 2020, and that the relevant ratio is increasing in all firms save Pegasus Airlines in the required period.

Altman Z" Score Analysis of Businesses

Using financial data, the Altman Z" Score model gets essential information and estimates the financial structures and financial failures of firms in a multivariate manner (Thevnin, 2003: 152). Altman represented each variable in the model as X, and the coefficients of the X values and the distinguishing coefficients were calculated, and all variables were merged and assessed. The Z" Score model created by Altman (1993) for the aviation sector and applied for service firms was employed in the study. In the Table 5 the X values acquired above and the values obtained using the Z" Score model presented.

Table 5:Z" Score Values of Aviation Sector Businesses

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
THYAO	0,8474	0,4526	0,6197	0,8222	0,3746	0,9081	0,8344	0,5852	-0,0667	0,2627	0,8412
PGSUS	0,2239	2,1494	2,5578	2,6624	1,0511	1,9926	1,3917	1,5671	-0,0839	0,0948	0,7053
TAVHL	2,3068	2,1199	2,7032	1,3331	1,0781	1,3208	1,6913	1,4815	0,1463	0,5024	0,8946
CLEBI	0,0713	0,6024	0,8881	1,3698	0,2039	2,0988	1,9703	0,9329	0,6277	1,5173	2,8678

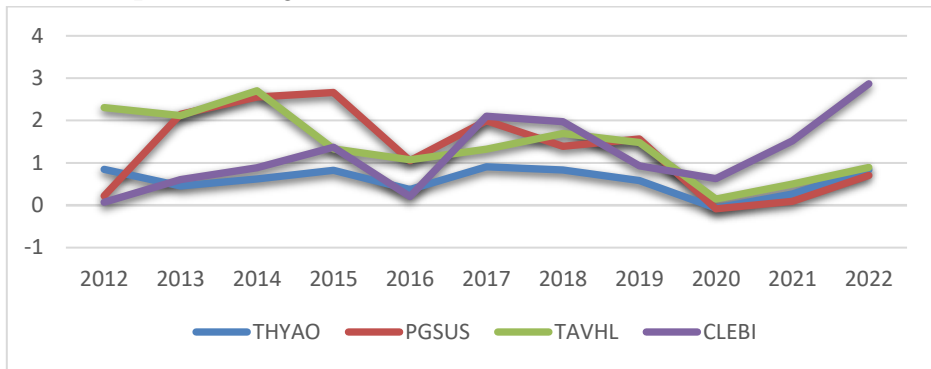
Using the Altman Z" Score model reference values, if the Z" Score value is between 1,1 and 2,6 in the forecast of financial collapse, the enterprise is in the grey zone; if it is greater than 2,6; the firm is in the green zone (safe). If it is less than 1,1; it suggests that you are in a financially high risk area. During the process of working on the green zone, which is defined as the safe zone when the Z" Score values of the enterprises operating in the aviation sector within Borsa (Stock Market) İstanbul and analyzed within the scope of the study, TAV Airports Holding Co. in 2014, Pegasus Airlines in 2015, in 2022, were calculated. Table 5 demonstrates that Çelebi Aviation Holding Inc. could only reach one location. Furthermore, Turkish Airlines has a Z" Score of less than 1,1 during the research period and is placed in the financially hazardous region known as the red zone.

The study's enterprises were all positioned in the financially dangerous zone in 2020 following the COVID-19 era, and even Turkish Airlines and Pegasus Airlines had a negative Z" Score value. While financial uncertainty (gray zone) was dominant in the Z" Score values until the pandemic period, with the exception of 2016, which was discussed in the analysis period, all businesses were located in the risky zone in 2020, when the COVID-19 applications began and began to show their social and economic effect. Only Çelebi Aviation Holding Inc. was in the gray zone, where the level of financial success was termed doubtful, with a Z" Score of 1,5173 calculated

in 2021, and in the green zone, where the level of financial success was named safe, with a Z" Score of 2,8678 calculated in 2021.

Furthermore, whereas the average Z" Score values of firms in the aviation industry were 1.29 before to the COVID-19 process (before 2020), it was assessed as 0,69 in the post-COVID-19 period, and the financial risk level of all enterprises in the sector rose throughout this procedure. However, as seen in Graphic 5, the Z" Score values of all enterprises are growing in the post-COVID-19 period.

Graphic 5:Change in Z" Score Values of Aviation Sector Businesses



In Graphic 5, it can be shown that Çelebi Aviation Holding Inc. Z" Score value increased from 0,0713 to 2,8678 over the research period, lowering the risk of financial failure as in the previous period despite the negative impact of the COVID-19 procedure. In contrast to Çelebi Aviation Holding Inc., TAV Airports Holding Co. demonstrated that the Z" Score value it had at the start of the research period declined from 2,3068 to 0,8946 lately, with the lowest value in 2020, when the influence of the COVID-19 procedure was most visible. It was specified that it was gathered with a value of 0,1463 in the year 2017.

Result and Evaluation

The COVID-19 outbreak, which began in China in December 2019 and has since expanded around the world, has had a wide-ranging detrimental influence on both the global economic and social life. Negative changes in the production and presentation of products or services, as well as in the mobility of commodities and humans, harmed the global economy, resulting in unanticipated and large-scale losses in company income. Aviation corporations, which are in the service sector and mostly involved in transportation, have also had challenges in their operations as a result of COVID-19 limits and pandemic procedures, and have moved away from producing projected revenue in the operation.

It is obvious that the aviation firms covered by the study and listed on the Borsaİstanbul are among those negatively impacted by this pandemic. Data from TAV Airports Holding Co., Turkish Airlines, Pegasus Airlines and Çelebi Aviation Holding Inc. were examined in the study, which spanned the years 2012 to 2022. The data for the enterprises were collected from the firms' declared financial statement data, and the enterprise was analyzed using the yearly balance sheet and income declarations. The Altman Z"Score model adapted for service firms was used in the study to estimate the financial failure risk of businesses. The model obtained the ratios of the firms' liquidity, profitability, and leverage ratios one by one, and the financial success and risk levels of the enterprises were disclosed using data produced by utilizing the rearranged Z" Score model for service firms.

When the X1 coefficient, calculated first in the Altman Z" Score model, and the ratio of the companies' net working capital, that is, the difference between current assets and current liabilities to total assets, are examined, it is clear that the companies under consideration have general liquidity issues. Taking into account the aviation sector firms described in the study, it was discovered that working capital was typically negative or extremely insufficient in the sector, and this component in the Z" Score model had a negative impact on the appropriateness of the results produced. Even though the enterprise X1 coefficients are not generally sufficient in terms of enterprise liquidity, negative values have emerged for all companies in the first year (2020) following the COVID-19 process, and it has been observed that all companies in the study have been affected by the COVID-19 applications and have liquidity problems. Although it is certain that the liquidity crisis will persist in the next months, it has also been found that the X1 values of the enterprises are growing.

The second ratio (X2) used by the Z" Score model is the enterprise's proportion of retained earnings in total assets. The cumulative worth of prior years' earnings or losses surfaced in 2021, while the effect of the COVID-19 procedure revealed in 2021. While the firms' undistributed profit values had a growing or changing pattern before to the COVID-19 procedure, they exhibited a significant fall in 2021 and could not show a quick gain the next year due to their cumulative value.

Regarding the coefficient (X3) procured by proportioning the amount of profit or loss achieved by enterprises in the aviation sector as a result of their major focuses to total assets; it has a slightly increasing trend in periods other than 2016; after the COVID-19 period, the ratio of operating profits to total assets decreased significantly, negative values emerged for three of the companies, and it began to show an increasing trend, close to other coefficients. The ratio of the firms' equity to total debt was also evaluated in the Z" Score model, and it was discovered that following the COVID-19 era, the total debt obligations of the enterprises within the scope of the research decreased, contrary to the pattern observed in prior years.

The Altman Z" Score model was employed to determine the financial success levels of the businesses discussed in the study, and the values of the model's scores were compared with those before and after the COVID-19 period, with the goal of determining the effect of the COVID-19 process on aviation sector businesses. The results achieved using the Altman Z" Score model, which depicts the probability of a company's financial failure, were likewise identical to the components from which the model's value was calculated. When the reference values of the model were taken into account, the Z" Score values of all the businesses studied were accepted only three times during the study period, with TAV Airports Holding Co. in 2014, Pegasus Airlines in 2015 and Çelebi Aviation Holding Inc. in the financially successful region in 2022. It was revealed that it had a Z" Score.

Furthermore, when the Z" Score values generated to reflect the financial success or financial risk level of all assessed organizations were compared before and after COVID-19, the scores of all businesses fell following the COVID-19 procedure. According to the data, Turkish Airlines was positioned in the red zone, which is known as dangerous, during the investigated time, while other firms were in the gray zone, where financial uncertainty is regularly expressed, but they were in the green zone once. It appears to be consistent with the findings and expectations of the investigations by Akca (2020), Macit et al. (2020), Dağlı (2021), and Temel (2022).

In terms of determining the overall impact of the COVID-19 procedure, the average Z" Score value for the pre-pandemic period was 1,29 when the Z" Score values of the firms were compared to the sector averages of the pre- and post-COVID-19 periods. Following the outbreak, the average value was found to be 0.69. Within the scope of the study, it was discovered that the probability of financial failure, namely the Z" Score values of the companies, decreased significantly in the first year following the COVID-19 process, in accordance with the results of the Altman Z" Score model used to measure the financial success level of the aviation industry. Although the study's methodology was designed to disclose the danger of financial disaster, it also demonstrated the efficacy of the firms' liquidity, profitability, and capital structure ratios.

Altman extended the model employed in the study for service firms, and it is not particular to aviation sector operations. Furthermore, while the scores computed within the scope of the research are low, it is clear that they are not far from the values of the enterprises in the industry, indicating that the industry has a low average. The results should be analyzed with the sector averages in mind, and it should not be forgotten that the total removal of the pandemic impact and the use of longer-term data will generate more effective results for the interpretation of post-COVID-19 data.

Disclosure statement

No potential conflict of interest was reported by the authors.

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Cite this article as : Bahadır.S.,Şahin.Y.,Analysis of financial success situations of aviation sector businesses before and after Covid-19.Journal of Science and Innovative Technologies.Number 26,2023.70-90. DOI: 10.30546/2616-4418.26.2023.70

XÜLASƏ

Aviasiya sektorundakı müəssisələrin Covid-19-dan əvvəl və sonra maliyyə uğurlarının təhlili

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2019-cu ilin dekabr ayında Çində başlayan və o vaxtdan bütün dünyaya yayılan COVID-19 epidemiyası həm qlobal iqtisadi, həm də sosial həyata geniş şəkildə zərərli təsir göstərdi. Müəllif bu məqalədə COVID-19 pandemiyasından əvvəlki və sonrakı illəri müqayisə edərək, aviasiya müəssisələrinin iqtisadi uğurlarını araşdırıb. Araşdırmada iştirak edən bəzi şirkətlərin maliyyə məlumatları belədir; Türk Hava Yolları (THYAO), Pegasus Hava Yolları Inc. (PGSUS), TAV Hava Limanları Holding Co. (TAVHL) və Çelebi Aviasiya Holding A.Ş. (CLEBI) Borsa İstanbul birjasında qeydiyyatda alınmış və aviasiya sektorunda fəaliyyət göstərir. COVID-19-dan əvvəl və sonra risk səviyyəsini qiymətləndirmək üçün sektordakı firmalar korporativ maliyyə uğurlarının səviyyələrini proqnozlaşdırmaq üçün istifadə edilən Altman Z qiymətləndirmə modelindən istifadə edərək, təhlil edilmişdir.

Aydındır ki, tədqiqatın əhatə etdiyi və İstanbulda qeyd olunan aviasiya şirkətləri bu pandemiyadan mənfi yöndə təsirlənənlər arasındadır. Müəssisə məlumatları firmaların hesabat maliyyə hesabatlarından toplanmış və illik balans, mənfəət hesabatlarından istifadə edərək, təhlil edilmişdir. Tədqiqatda müəssisələrin maliyyə çökməsi riskini qiymətləndirmək üçün xidmət firmaları uyğunlaşdırılmış Altman Z' Score modelindən istifadə edilib. Model ardıcıl olaraq, firmaların gəlirlilik əmsallarını, eləcə də maliyyə uğuru və riskini əldə etmişdir. Müəssisə səviyyələri xidmət firmaları üçün yenidən işlənmiş Z" Score modelindən istifadə edilərək, əldə edilmiş məlumatlardan istifadə etməklə açıqlanmışdır.

Araşdırmada istifadə edilən Altman modeli xidmət firmalarına tətbiq edildi və aviasiya sektorundakı əməliyyatlara şamil edilmir. Bundan əlavə, tədqiqatla hesablanmış ballar aşağı olsa da, sənayedəki müəssisələrin dəyərlərindən çox da uzaq olmadığı aydın görünür ki, bu da aşağı sənayenin orta göstəricisini göstərir.

Nəticələr sektorun orta göstəriciləri baxımından təhlil edilməlidir və unutmaq olmaz ki, pandemiyanın təsirini tamamilə aradan qaldırmaq, daha uzunmüddətli məlumatlardan istifadə etməklə, COVID-19-dan sonrakı məlumatların şərh üçün daha yaxşı nəticələr verəcəkdir.

Açar sözlər: Aviasiya sektoru, Aviasiya menecmenti, hava nəqliyyatı, COVID-19, vəziyyət təhlili

РЕЗЮМЕ

Анализ финансового успеха предприятий авиационного сектора до и после Covid-19

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Вспышка COVID-19, которая началась в Китае в декабре 2019 года и с тех пор распространилась по всему миру, оказала широкомасштабное пагубное влияние как на глобальную экономическую, так и на социальную жизнь. В этом исследовании был изучен экономический успех предприятий авиационного сектора путем сравнения лет до и после пандемии COVID-19. Финансовые данные некоторых компаний в исследовании следующие; Turkish Airlines Co. (THYAO), Pegasus Airlines Inc. (PGSUS), TAV Airports Holding Co. (TAVHL) и Çelebi Aviation Holding Inc. (CLEBI), котирующиеся на бирже Borsa İstanbul и работающие в авиационном секторе. Для оценки уровня риска в периоды до и после COVID-19 фирмы сектора были проанализированы с использованием модели оценки Альтмана Z, которая используется для прогнозирования уровней финансового успеха корпораций.

Очевидно, что авиационные фирмы, охваченные исследованием и зарегистрированные на Borsa İstanbul, относятся к числу тех, на кого негативно повлияла эта пандемия. Данные по предприятиям были собраны из данных заявленной финансовой отчетности фирм, и предприятие было проанализировано с использованием годового баланса и деклараций о прибылях и убытках. В исследовании для оценки риска финансового краха предприятий использовалась адаптированная для сервисных фирм модель Altman Z' Score. В модели были последовательно получены коэффициенты ликвидности, прибыльности и леввериджа фирм, а также финансовый успех и риск. уровни предприятий были раскрыты с использованием данных, полученных с использованием переработанной модели Z" Score для сервисных фирм.

Альтман распространил модель, использованную в исследовании, на сервисные фирмы, и она не относится к операциям в авиационном секторе. Кроме того, хотя баллы, рассчитанные в рамках исследования, низкие, ясно, что они недалеко от значений предприятий в отрасли, что указывает на низкий средний показатель по отрасли. Результаты следует анализировать с учетом средних показателей по сектору, и не следует забывать, что полное устранение влияния пандемии и использование более долгосрочных данных позволит получить более эффективные результаты для интерпретации данных после COVID-19.

Ключевые слова: Авиационная отрасль, Авиационный менеджмент, воздушный транспорт, COVID-19, ситуационный анализ.