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FINANCIAL PERFORMANCE ANALYSIS OF DEVELOPMENT AND INVESTMENT BANKS: TOPSIS METHOD

KALKINMA VE YATIRIM BANKALARININ FİNANSAL PERFORMANS ANALİZİ: TOPSIS YÖNTEMİ

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Abstract

The banking sector conducts many transactions and plays an important role in promoting individual and national well-being. The purpose of this study is to analyze the 11 development banks and investment banks operating in the Turkish banking sector from 2015 to 2021 using the SV-TOPSIS methodology, one of the Multi-Criteria Decision Making (MCDM) methodology. Analyzing a bank's financial performance. First, the criterion weights were determined with the SV method (statistical variance) for the 11 selected criteria and analyzed with the TOPSIS method. According to the results of the proposed model, the surveyed banks showed fluctuations in performance during the survey period, but the best performing banks were İller Bankası (regional bank) and Diler Investment Bank respectively.

Keywords: Banking, Development and Investment Banking, MCDM, SV, TOPSIS.

Jel Codes: G20, G21, G24

Öz

Bankacılık sektörü çok çeşitli faaliyetler yürütmekte, bireylerin ve ulusların refahını artırmada önemli bir rol oynamaktadır. Bu çalışmanın amacı, Çok Kriterli Karar Verme (ÇKKV) yöntemlerinden biri olan SV-TOPSIS yöntemi kullanılarak 2015 yılından 2021 yılına kadar Türk bankacılık sektöründe faaliyet gösteren 11 kalkınma ve yatırım bankasının sayısını tahmin etmektir. 11 kriter çerçevesinde önce SV yöntemi ile ölçüt ağırlıklarını belirledik ve ardından TOPSIS yöntemi ile analizi gerçekleştirdik. Önerilen modelin sonuçlarına göre, çalışmaya dahil edilen bankalar çalışma süresi boyunca performansta değişkenlik göstermiş, ancak en iyi performans gösteren bankalar sırasıyla İller Bankası ve Diler Yatırım Bankası olmuştur.

Anahtar Kelimeler: Bankacılık, Kalkınma ve Yatırım Bankacılığı, ÇKKV, SV, TOPSIS.

Jel Kodları: G20, G21, G24

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INTRODUCTION

Banks perform a number of crucially important transactions to integrate idle resources into the economy, support the segment in need of financing, financing investments for individuals and countries, and thus contribute the socio-economic development of a country (Haralayya & Aithal, 2021, p. 607). Presently, the banks have become indispensable institutions for our lives as they permeate every aspect of social life and are one of the main actors in all commercial activities. While it is seen that banks have robust structures in the financial system in the developed economies, various financial institutions have an important place in the financial system besides the banks.

In developing economies such as Turkey, the fact that savings are not sufficient to cover investments poses an important problem for the development of the banking sector. Since the economic, social and cultural development of countries is only maintained by the right investments, development and investment banks of great importance in this regard. It is especially important to support large-scale investments and projects, to encourage foreign investors to invest in the country and to ensure sustainable economic growth through these investments (Şenel & Şekeroğlu, 2019, p. 566). Although development and investment banks are similar in terms of some characteristics, they differ in terms of their activities and objectives.

Development banks have been established to resolve the disturbances that may occur in the financial markets of the developing economies. In this respect, these banks operate to meet medium and long-term financing needs and provide technical support for investments (Riadi, 2018, p. 1016; Takan & Boyacıoğlu, 2010, p.59).

Investment banks, on the other hand, intermediate the purchase and sale of securities and play an active role in meeting funding needs of companies, especially economies with developed capital markets (Geddes et al. 2018, p.158-159; Mamatzakis & Bermpei, 2014, p. 102).

As of June 2022, a total of 57 banks are operating in the Turkish banking system. There are 35 deposit banks, 16 development and investment banks and 6 investment banks. Looking at Table 1 in terms of total assets, custodian banks accounted for 86% of total assets, development and investment banks 6%, and private equity banks 8%. Furthermore, of the approximately 6.3 billion Turkish lira loans made in this sector, 85% were provided by deposit banks, 8% by development and investment banks and 7% by venture capital banks. In terms of capital, the Custodian Bank, Development Investment Bank and Investment Bank hold 85%, 8% and 7%

of the shares respectively. According to industry data, deposit banks account for almost 90% of the total sector.

Table 1. Turkish banking sector

Type of Bank	Number of Banks	Number of Branches	Number of Employees	TotalAssets (TL)	Total Loans (TL)	Total of Shareholders' Equity (TL)
Deposit Banks	35	9.641	179.838	11.196.198*	6.212.408*	1.030.659*
Development and Investment Banks	16	71	5.575	755.943*	501.490*	84.527*
Participation Banks	6	1.346	17.224	1.500.118*	321.688*	150.683*
TOTAL	57	11.058	202.637	13.452.259*	7.035.586*	1.265.869*

Note:* The values given in the table are expressed in thousand TL. ** Data are shown as of October 2022.

Source: Turkish Banking Association Statistical Reports

According to the development and investment bank data presented in Table 2, public capital banks account for the largest share among development and investment banks in terms of number of branches and employees, total assets, loans and capital. followed by private capital banks and foreign banks.

Table 2. Development and investment banks*

Type of Bank	Number of Banks	Number of Branches	Number of Employees	Total Assets	Total Loans	Total of Shareholders' Equity
PuCB	3	43	3.632	504.760*	393.252*	61.017*
PCB	9	24	1.823	239.849*	104.253*	21.135*
FCB	4	4	178	11.334*	3.984*	2.375*
TOTAL	16	71	5.633	755.943 TL	501.490 TL	84.527 TL

* The values given in the table are expressed in thousand TL. ** Data are shown as of October 2022

Source: Turkish Banking Association Statistical Reports

The purpose of this study was to analyze 11 development and investment banks operating in the Turkish banking sector from 2015 to 2021 using the SV-TOPSIS methodology, one of the Multi-Criteria Decision Making (MCDM) methodology. is to Analysis of bank financial performance. In this analysis, the SV method, one of the CRM methods, was used to determine the standard weight, and the TOPSIS method was used for the analysis. Since this study is the first study conducted using the SV-TOPSIS model, it is expected to contribute in this field.

The study consists of five sections: introduction where background information on the subject is given, literature review of some previous studies on the field, data and method where

information on the data to be used and the method to be applied are presented, and application of the TOPSIS method where the method is applied and conclusion.

1. Literature Review

A survey of research in the banking sector shows a strong preference for the MCDM methodology. His SV-TOPSIS hybrid method proposed in this study was implemented to analyze the performance of development and investment banks and was supported in the literature for the first time. Some of the similar studies in this area are summarized in Table 3 below.

Table 3. Studies on the performance of banks using MCDM techniques

Researcher(s)	**Subject/ Purpose of the study**	**Results**
Dinçer & Görener (2011)	In this study, a multiple model consisting of multi-criteria decision-making methods was used to analyze the performance of the banking sector.	According to the analysis results obtained; foreign banks operating in the banking sector were the banks with the highest performance.
Gündoğdu (2015)	The performances of Turkish banks between 2003 and 2013 were analyzed using multi criteria decision making.	According to the results obtained, Deutsche Bank was the bank with the highest performance among foreign banks for the years 2003-2009. However, after the 200 crisis, it was concluded that this bank was 10th in the ranking.
Uludağ & Ece (2018)	The performance of 28 deposit banks in the years 2006-2016 was analyzed with the multi criteria decision making.	According to the results of the study, Ziraat Bank among state-owned banks, Şekerbank among private-owned domestic banks, and Finansbank among privately-owned foreign banks were analyzed as the bank with the best performance.
Ural, Demireli & Özçalık (2018)	Performance analysis of public banks was carried out.	The results of the analysis show that while the bank with the best performance in 2012 and 2013 was Vakıfbank, it was determined that Ziraat Bank was the bank in 2014-2015 and 2016.
Yalçıner & Karaatlı (2018)	The performance of commercial banks between 2002 and 2015 was analyzed using AHP-TOPSIS and ELECTRE methods.	The results indicate that Ziraat Bank was the best performing bank.
Altemur, Çevik & Karaca (2019)	An analysis of banks operating in the stock market was carried out.	The results indicate thatGaranti Bank was the best performing bank.
Aydın (2020a)	It is aimed to determine the performance of foreign capital banks operating in the banking sector between 2016-2019. For this purpose, SD and COPRAS methods from decision making methods were used.	The results indicate that Garanti Bank was the best performing bank.
Aydın (2020b)	Performance analysis of banks with different capital structures that	The results indicate that Ziraat Katılım had the best performance

	make up the banking sector was carried out.	in participation banking, while Vakıf Katılım had the best performance in deposit banking and Türk Eximbank was the best performing bank in development and investment banking.

Table 3 (Continued). Studies on the performance of banks using MCDM techniques

Ezin & Samırkaş (2022)	It is aimed to analyze the performances of 11 commercial and 9 investment and development banks between the years 2015-2022 using ENTROPI and TOPSIS methods.	According to the results obtained, it has been observed that the performance of private banks is better than public banks.
Erdoğan (2022a)	The performance of 9 commercial banks traded on the stock exchange between 2016-2020 was analyzed using the AHP-SD and PIV hybrid method.	The results indicate that the most successful banks were Garanti Bank and Akbank, respectively.
Erdoğan (2022b)	An analysis of the performance of state-owned commercial banks was carried out.	The findings obtained from the analyzes show that; The banking sector showed a negative performance in the covid-19 pandemic period. In addition to this situation, it was determined that banks showed fluctuations in terms of performance before and after the pandemic.
Korkmaz & Wolff (2022)	In this study, the performance of development and investment banks operating in the banking sector was analyzed.	The results indicate that public capital banks performed the best between 2011-2016 while private capital banks performed the best in the following years.

Source: Table 3. It is the table created by the author to show the studies on similar subjects.

2. Data And Method

2.1. Study dataset

Development and investment banks carry out a number of very important activities in the Turkish banking sector. In this respect, performance measurement of these banks is very important. In order to determine the performance of these banks, analyzes were carried out with the data used between 2015 and 2021. Within the scope of this analysis, the data of 11 banks operating in the sector were used. All data used in the study were obtained from the official statistics of the Turkish Banks Association.

The information on the banks analyzed in the study is presented in Table 4 and the information on the criteria used is presented in Table 5.

Table 4. Development and investment banks

Bank	**Abbreviation**	**Date of Foundation**

Bank of Provinces A.Ş.	FIRM1	1933
Türk Eximbank	FIRM2	1987
Türkiye Development and Investment Bank A.Ş.	FIRM3	1975
Aktif Investment Bank A.Ş.	FIRM4	1999
Diler Investment Bank A.Ş.	FIRM	1998
GSD Investment Bank A.Ş.	FIRM6	1998
İstanbul Exchange and Deposit Bank A.Ş.	FIRM7	1991
Nurol Investment Bankası A.Ş.	FIRM8	1999
Türkiye Industrial Development Bank A.Ş.	FIRM9	1950
Bank of America Investment Bank A.Ş.	FIRM10	1991
Standard Chartered Investment Bank Türk A.Ş.	FIRM11	1990

Source: Table 4 was created by the author to express the Development and Investment Banks used in the study.

Table 5. Study criteria

Criteria	**Code**	**Qualification**
Total assets	K1	Max
Shareholders' equity/ Total assets	K2	Max
Nonperforming Loans/Total Loans	K3	Min
Fixed Assets/Total Assets	K4	Min
Liquid Assets/Total Assets	K5	Max
Liquid Assets/Short Term Liabilities	K6	Max
Average Return on Assets	K7	Max
Average Return on Shareholders' equity	K8	Max
Other Operating Expenses / Operating Gross Profit	K9	Min
Operating Gross Profit/Total Assets	K10	Max
Net Operating Profit (Loss)/ Total Assets	K11	Max

Source: Table 4 was created by the author to show the criteria used in the analyzes by the author. (Aydın, 2020a, p. 166; Ertaş & Yetim, 2022, p.61; Gül & Erdem, 2022, p. 28)

2.2. SV method

In this study, the SV (Statistical Variance)method was preferred to determine the criterion weights. SV is a method that provides important information about the distribution of data. The application steps of the method are as follows(Rao & Patel, 2010, p. 4739; Rao et al., 2011, p. 368-369; Zardari et al., 2015, p. 35):

Stage 1.Creating Decision Matrices(1):

$$A = \left[a_{ij}\right]_{m*n} = \begin{bmatrix} a_{11} & a_{12} & \cdots & a_{1n} \\ a_{21} & a_{22} & \cdots & a_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ a_{m1} & a_{m2} & \cdots & a_{mn} \end{bmatrix} i = 1,2,\dots\dots m;\ \ j = 1,2,\dots n \qquad (1)$$

Stage 2. Since the units used in measuring the qualifications in the study are different, the decision matrix should be standardized in order to compare these qualities (Soba et al., 2020, p. 5). Therefore, the decision matrix is normalized with the following equation:

$$a_{ij}^{*} = \frac{a_{ij}}{\sum_{i=1}^{n} a_{ij;}} \; i = 1,2, \ldots m; \;\; j = 1,2, \ldots n \qquad (2)$$

a_{ij}^{*}valuea$_{ij}$. is the normalized value.

Stage 3**.** The variance value for the criteria is calculated by the following equation:

$$V_j = \left(\frac{1}{n}\right) \sum_{i=1}^{n} \left(a_{ij}^{*} - (a_{ij}^{*})_{ort}\right)^2 \qquad (3)$$

(3). equation V_j, It is the variance of the data corresponding to the jth criterion.

Stage 4.The weighting coefficients of all criteria are calculated using the following equation (4):

$$w_j = \frac{V_J}{\sum_{i=1}^{m} V_j} \qquad (4)$$

Here wj, j. represents the objective weight according to the criterion.

2.3. TOPSIS method

TOPSIS (Technique for Order Preference by Similarity to Ideal Solution) method, one of the MCDM techniques, was used to analyze the bank data discussed in this study within the framework of the determined criteria. The TOPSIS method was developed by Hwang and Yoon (1981) and applied in many studies.

This method used aims to determine the option with the shortest distance to the positive-ideal solution and the longest distance to the negative-ideal solution (Hwang & Yoon, 1981, p.128; Zhu et al., 2012, pp.1258-1259; Özbek, 2017, p. 201; Ertaş and Yetim, 2022, p.61). TOPSIS method consists of the following stages:

Stage 1: Creating Decision Matrices: An m*n dimensional decision matrix is created based on the alternatives to be compared and the criteria to be determined. The relevant matrix is shown in equation 5.

$$= \left[x_{ij}\right]_{m*n} = \begin{bmatrix} x_{11} & x_{12} & \cdots & x_{1n} \\ x_{21} & x_{22} & \cdots & x_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ x_{m1} & x_{m2} & \cdots & x_{mn} \end{bmatrix} \qquad (5)$$

Stage 2: The decision matrix is standardized using Equation 6.

$$r_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^{m} x_{ij}^2}}, i = 1,2,3, \dots., m \text{ ve } J = 1,2,3, \dots, n \quad (6)$$

Stage 3: The weighted decision matrix is created using Equation 7.

$$v_{ij} = w_j x r_{ij}\ , i = 1,2,3, \dots., m \text{ ve } J = 1,2,3, \dots, n \quad (7)$$

Stage 4: The positive ideal solution is obtained using Equation 8 and the negative ideal solutions are obtained using Equation 9.

$$A^+ = \left\{v_1^+, v_2^+, \dots, v_j^+, \dots, v_n^+\right\} = \left\{max_i v_{ij} | j \in J_1), (min_i v_{ij} | j \in J_2, i = 1,2, \dots, m\right\} \quad (8)$$

$$A^- = \left\{v_1^-, v_2^-, \dots, v_j^-, \dots, v_n^-\right\} = \left\{min_i v_{ij} | j \in J_1), (max_i v_{ij} | j \in J_2, i = 1,2, \dots, m\right\} \quad (9)$$

Stage 5: Using Equation 10 and Equation 11, the distances to the positive ideal D_i^+ and negative ideal D_i^- points are calculated for all alternatives.

$$D_i^+ = \sqrt{\sum_{j=1}^{n} (v_{ij} - v_j^+)\text{^}2}, \quad i = 1,2,3, \dots, m \quad (10)$$

$$D_i^- = \sqrt{\sum_{j=1}^{n} (v_{ij} - v_j^-)\text{^}2}, \ i = 1,2,3, \dots, m \quad (11)$$

Stage 6: Using Equation 12, the closeness coefficient C_i is calculated for each alternative.

$$C_i = \frac{D_i^-}{D_i^- D_i^+}\ , i = 1,2,3, \dots, m \quad (12)$$

The value obtained by using Equation 12 is $0 \leq Ci \geq 1$. A Cicoefficient close to 1 indicates that the alternative is at the positive ideal solution point, while a value close to 0 indicates that the alternative is at the negative ideal solution point. The C_i values obtained using Equation 12 are compared with each other and the results are ranked in descending order. The alternative with the highest C_i value is considered as the alternative with the best performance compared to the other alternatives.

3. Application of SV-TOPSIS Methods

The purpose of this study is to analyze the performance of development banks and investment banks operating in the Turkish banking sector. Table 6 shows the weights of the criteria determined by the SV method used in the TOPSIS method.

Table 6. Criterion weights

	CRT 1	**CRT 2**	**CRT 3**	**CRT 4**	**CRT 5**	**CRT 6**	**CRT 7**	**CRT 8**	**CRT 9**	**CRT10**	**CRT11**
FIRM 1	0.000	0.015	0.000	0.001	0.030	0.933	0.000	0.001	0.019	0.000	0.000

FIRM 2	0.000	0.059	0.000	0.000	0.006	0.928	0.000	0.001	0.003	0.001	0.000
FIRM 3	0.000	0.001	0.000	0.000	0.000	0.999	0.000	0.000	0.000	0.000	0.000
FIRM 4	0.000	0.240	0.001	0.001	0.004	0.674	0.001	0.013	0.065	0.000	0.001
FIRM 5	0.000	0.010	0.000	0.000	0.002	0.985	0.000	0.000	0.001	0.001	0.000
FIRM 6	0.000	0.000	0.000	0.000	0.000	0.998	0.000	0.000	0.000	0.000	0.000
FIRM 7	0.000	0.259	0.002	0.001	0.625	0.057	0.000	0.043	0.013	0.001	0.000
FIRM 8	0.000	0.292	0.003	0.001	0.016	0.628	0.000	0.041	0.018	0.000	0.001
FIRM9	0.000	0.057	0.000	0.000	0.004	0.930	0.000	0.002	0.005	0.000	0.000
FIRM1 0	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000
FIRM1 1	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000

Source: Table 6. Created by the author to show the results obtained using the CRITIC method.

The decision (initial) matrix obtained using the TOPSIS method is shown in Table 7 below.

Table 7. Decision matrix created for BANK1

	CRT 1	**CRT2**	**CRT 3**	**CRT 4**	**CRT5**	**CRT6**	**CRT 7**	**CRT8**	**CRT9**	**CRT1 0**	**CRT1 1**
2021	0.741	45.095	0.000	6.198	37.347	195.872	4.836	10.113	14.231	7.692	5.660
2020	0.827	51.476	0.000	4.827	30.674	181.169	4.997	9.196	12.128	7.676	5.673
2019	0.858	58.067	0.000	4.803	15.811	98.450	5.217	9.015	14.176	8.798	6.325
2018	0.881	57.665	0.000	2.706	8.806	55.692	4.625	7.649	15.855	6.517	5.483
2017	0.807	64.080	0.000	0.591	7.123	45.352	4.210	6.543	28.196	7.396	4.933
2016	0.841	64.627	0.000	0.641	21.736	130.460	4.076	6.155	28.489	7.455	5.079
2015	0.824	68.130	0.000	1.817	26.645	187.468	3.317	4.822	34.900	6.777	4.231

Source: Table 7 was created by the author to express the data used in the analysis.

SV (Statistical Variance) method was used to determine the criteria weights using the data in the decision matrix shown in Table 7. After evaluating the determined criterion weights, the analysis was carried out using TOPSIS method. In the second step, the normalized decision matrix is obtained using formula 6. The results obtained are shown in Table 8.

Table 8. The Normalized decision matrix

	CRT1	**CRT2**	**CRT3**	**CRT4**	**CRT5**	**CRT6**	**CRT7**	**CRT8**	**CRT9**	**CRT10**	**CRT11**
2021	0.339	0.289	0.378	0.632	0.598	0.527	0.405	0.487	0.236	0.387	0.398
2020	0.378	0.330	0.378	0.492	0.491	0.487	0.419	0.443	0.201	0.387	0.399
2019	0.392	0.372	0.378	0.490	0.253	0.265	0.437	0.434	0.235	0.443	0.445
2018	0.403	0.370	0.378	0.276	0.141	0.150	0.388	0.369	0.263	0.328	0.385
2017	0.369	0.411	0.378	0.060	0.114	0.122	0.353	0.315	0.468	0.373	0.347
2016	0.385	0.415	0.378	0.065	0.348	0.351	0.342	0.297	0.473	0.376	0.357

2015	0.377	0.437	0.378	0.185	0.427	0.504	0.278	0.232	0.580	0.341	0.297

Source: Table 8 was created by the author to express the analysis results using the TOPSIS method.

In the third step, the values calculated in the previous step are multiplied in order to obtain the weighted normalized matrix. The results matrix is shown in Table 9.

Table 9. TOPSIS weighted normalized matrix

	CRT1	**CRT2**	**CRT3**	**CRT4**	**CRT5**	**CRT6**	**CRT7**	**CRT8**	**CRT9**	**CRT10**	**CRT11**
2021	0.000	0.004	0.000	0.001	0.018	0.492	0.000	0.000	0.005	0.000	0.000
2020	0.000	0.005	0.000	0.001	0.015	0.455	0.000	0.000	0.004	0.000	0.000
2019	0.000	0.006	0.000	0.001	0.008	0.247	0.000	0.000	0.005	0.000	0.000
2018	0.000	0.006	0.000	0.000	0.004	0.140	0.000	0.000	0.005	0.000	0.000
2017	0.000	0.006	0.000	0.000	0.003	0.114	0.000	0.000	0.009	0.000	0.000
2016	0.000	0.006	0.000	0.000	0.010	0.327	0.000	0.000	0.009	0.000	0.000
2015	0.000	0.007	0.000	0.000	0.013	0.471	0.000	0.000	0.011	0.000	0.000

Source: Table 9 was created by the author to express the analysis results using the TOPSIS method.

The last two steps compute the ideal and negative ideal values using Equation 10 and Equation 11. Equation 12 is then used to determine the relative proximity of each choice. Table 10 shows these values and their ranking. Table 10 shows the values obtained from the analysis results (for 2015).

Table 10. S+, S- ve Cj Values for year 2015

Bank	**S +**	**S -**	**Cj**
FIRM1	0.1505	0.7821	0.8386
FIRM2	0.8959	0.2422	0.2128
FIRM3	11.0900	11.6246	0.5118
FIRM4	0.7600	0.1976	0.2064
FIRM5	0.3112	0.6854	0.6878
FIRM6	0.9792	0.3625	0.2702
FIRM7	0.5619	0.4691	0.4550
FIRM8	0.2984	0.6948	0.6995
FIRM9	0.1362	0.8398	0.8604
FIRM10	0.8171	1.3805	0.6282
FIRM11	22.1259	22.6604	0.5060

Source: Table 10 was created by the author to express the analysis results using the TOPSIS method.

The performance results of the 11 development and investment banks over the years are presented in Table 11.

Table 11. Rankings based on TOPSIS analysis results

	2021	**2020**	**2019**	**2018**	**2017**	**2016**	**2015**
FIRM1	**1**	3	5	6	7	4	2
FIRM2	4	**1**	3	7	6	2	5
FIRM3	4	**1**	2	3	5	6	7
FIRM4	6	2	5	7	4	**1**	3
FIRM5	**1**	5	4	3	6	7	2
FIRM6	3	7	2	**1**	5	6	4
FIRM7	7	6	4	**1**	3	2	5
FIRM8	4	5	6	7	3	2	**1**

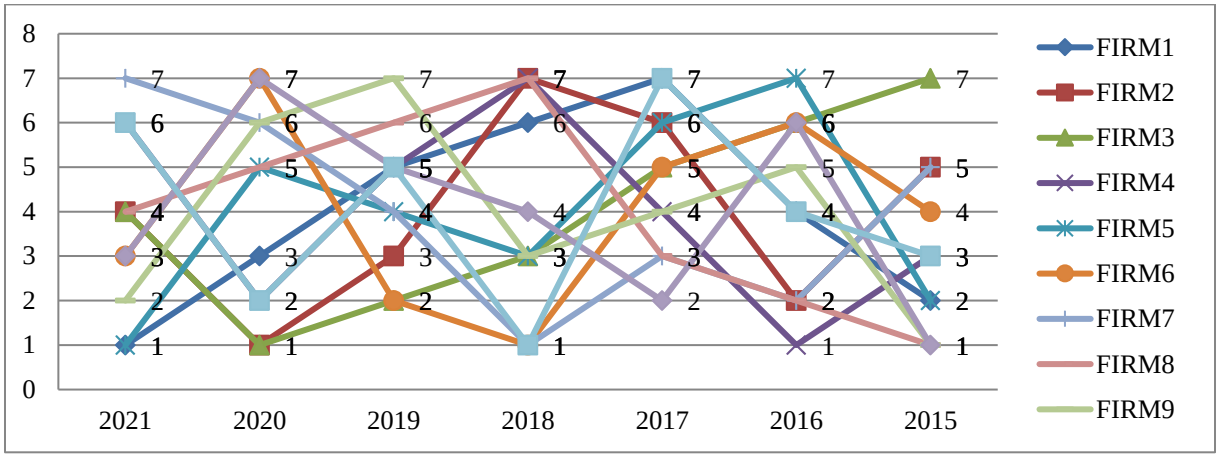
FIRM9	2	6	7	3	4	5	**1**
FIRM10	3	7	5	4	2	6	**1**
FIRM11	6	2	5	**1**	7	4	3

Source: Table 11 was created by the author to express the analysis results using the TOPSIS method.

Given the rankings obtained as a result of the study, it is seen that Bank of Provinces (FIRM1) achieved its best performance in 2021, Türk Eximbank (FIRM2) in 2020, Development and Investment Bank of Turkey (FIRM3) in 2020, Aktif Investment Bank (FIRM4) in 2016, and Diler Investment Bank (FIRM5) in 2021, GSD Investment Bank (FIRM6) in 2018, Istanbul Exchange and Deposit Bank (FIRM7) in 2018, Nurol Investment Bank (FIRM8) in 2015, Industrial Development Bank of Turkey (FIRM9) in 2015, Bank of America Investment Bank (FIRM10) in 2015 and Standard Chartered Investment Bank (FIRM11) in 2018.

Chart 1 below shows the financial performance of all banks in 2015-2021.

Chart 1. Performance ranking



Source: Chart 1 was created by the author to express the results of the study.

CONCLUSION

In both developed and developing economies, the banking sector fulfills very important roles such as equitable distribution of resources, mobilizing savings, supporting investments and ensuring the continuity of development.

Development and Investment Banks play a vital role in supporting large-scale investments, especially in emerging economies such as Turkey. The effective and efficient operation of these banks is important for the sustainability of the national economy.

In this study, which was carried out to evaluate the analysis of the performances of development and investment banks over the years, the data of 11 banks determined were analyzed by obtaining from the financial statements. In order to carry out this study, first of all, the data of

the selected banks were used to determine the criteria weights by means of the SV method. Criterion weights are a very important step in the analysis of companies. After the criterion weights were determined, these weights were analyzed with the determined method, TOPSIS, and the results were obtained. Although the results cover the period of 2015-2021, they are very important in terms of showing before and after the covid-19 pandemic. Because the financial sector has a vital role to see how it stands against possible risks.

The results obtained from the study indicate that Bank of Provinces, Diler Investment Bank and GSD Investment Bank have shown a more stable progress in recent years although the performance of the banks has fluctuated over the years. On the other hand, Nurol Investment Bank, Türkiye Industrial Development Bank and Bank of America Investment Bank have some problems to some extent in terms of performance.

On the other hand, some negative effects have started to be seen in the markets as the COVID-19 pandemic, which has been effective since the last quarter of 2019, has disrupted trade intensively as of 2020. The study results show that the performance of Turk Eximbank, Development and Investment Bank of Turkey and Istanbul Exchange and Deposit Bank declined significantly during this period.

When compared with some studies in the literature, Çetinbakış and Bektaş (2023), according to the results of the study, Diler Investment Bank was the bank with the best performance between 2011-2021 working period. In this study, it was observed that Diler Investment Bank followed a fluctuating performance and showed a tendency to improve in recent years.

Korkmaz and Wolff (2022), the results obtained from the analyzes show that; state-owned banks operating in the sector experienced a performance loss during the working period. This result differs in that FIRM1, FIRM2 and FIRM3 banks show their best performance in recent years.

Yilmaz (2022), the results of the analysis made by the authors show that; The performance of the banks analyzed in this study has decreased over the years. These results showed similarities with the analysis results we have done.

The fact that the study is preferred for the first time in terms of the methods used is important in terms of contributing to the field. Although the study shows similar results to other studies using different techniques, it also differs in terms of the impact of the COVID-19 pandemic. In addition, the fact that the Turkish banking sector is a developing sector, the number of banks is

low and the available data are limited are the limitations of the study. Keeping theworking year longer in future studies may lead to different results.

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