

CHAPTER 1

INVESTIGATION OF FINANCIAL MANAGEMENT OF COMPANIES IN THE BIST IZMIR INDEX: 2011-2015 PERIOD

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1. INTRODUCTION

Since the early 1980s, financial performance researchers were not interested in new methods because they used traditional control and performance measurement practices. Simple financial ratios were used to measure organizations' strategic initiatives, rather than combined useful financial reports. In today's world, with the development of technology, traditional financial performance evaluations can be converted into combined financial performance reports using statistical programs. In this study, a financial comparison report will be obtained by choosing the TOPSIS method of financial ratios data.

With the high level of competition and the decrease in profit rates compared to the past, companies are trying to maximize their financial efficiency today. İzmir, which has a share of 6.6% from the Turkish economy with 75.9 billion TL in 2011 in terms of Gross National Product (GNP), is one of the provinces that make a significant contribution to the country's economy. In addition, bank deposits in İzmir reached 69.7 billion TL as of 2015. In the report announced by the Standards and Poor rating agency in 2015, it was announced that the long-term rating of "AA+" was given to the Izmir Metropolitan Municipality. Within the clear explanation of financial information, while it is known that İzmir is a good place for the Turkish Economy, the financial activities of the companies in İzmir are not known. Borsa İstanbul İzmir index has a total of 23 participants. The 10 largest participants by market value of these 23 participants are given by the stock market code and respectively: "PETKM, TBORG, KOZAL, IZMDC, CMENT, EGEEN, PNSUT, BTCIM, PETUN, TUKAS". The purpose of the research is to

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determine and compare the performances of 10 companies financially. Within the following part of the study, respectively; In the literature section, the related studies will be examined, the content of the data to be used in the data section will be mentioned, the TOPSIS method will be clarified in detail in the method part, the first year's application will be shown as an example in the application and findings section, it will include the financial comparison of all companies, and the financial comparison evaluations will be summarized in the conclusion section.

2. LITERATURE REVIEW

Researchers use the methods of multi-criteria decision-making to compare the work force of many varied subjects. In addition, multi-criteria decision-making methods are mostly accustomed to appraise the performance of firms financially. Data Envelopment Analysis, Technique for Order Performance by Similarity to Ideal Solution (TOPSIS) and Gray Relational Analysis are the commonly used procedures in multi-criteria decision-making within the current literature. TOPSIS is a multi-criteria decision-making method in basic. The main principle of TOPSIS is that the main choice could be closest to the main ideal positive solution and also the farthest directly from the ideal negative choice (Hwang and Young, 1981). Karimi et al. (2009) examined 9 Southern Countries (Singapore, Malaysia, Thailand, Vietnam, Philippines, Cambodia, Myanmar, Laos) with TOPSIS from the point of view of Foreign Direct Investors between 2000 and 2005. Karimi et al. (2009) found that, Singapore is the most charming country from the rest of the investment countries. In addition, the results of other countries vary on a yearly basis.

Ustasuleyman (2009) investigated the service quality of 3 banks using the TOPSIS method. Furthermore, within this research, the data were obtained through a questionnaire form of 204 people. As a result, it was found that the most important element of service quality is reliability. Dumanoglu and Ergul (2010) compared the technology companies between the years 2006-2009, which are listed on the Borsa Istanbul, in terms of financial performance using the TOPSIS method. Arena Company has emerged as the most productive company between 2006 – 2009. In his study, Demireli (2010) examined the Turkish banking sector so as to compare the financial performances that banks use TOPSIS method between the years 2001-2007. According to the findings, the financial efficiency of banks varies from year to year. This means that each year a different bank has the most effective score.

Yayar and Baykara (2012) examined the Turkish Participation Banking sector to appraise the efficiency of banks using the TOPSIS method between 2005

and 2011 financially. According to the analysis results of Yayar and Baykara (2012), Albaraka Türk was selected as the most effective and efficient bank. In correspondingly with Kuveyt Türk's diversification of its instruments financially, it has been resolute that there has been a significant increase in efficiency and productivity.

Bağcı (2013) researched the Turkish banking sector so as to evaluate the bank efficiency of using the TOPSIS method between 2003 and 2011. It was also clarified that, the banks with the maximum level of performance scores were Bank Asya and Finansbank, and Bank Mellat had the minimal level of performance. According to Bağcı (2013), Islamic banks have achieved higher performance scores and as a result, they are making better profit from the commercial banks.

In the study of Çakır and Perçin (2013), the performances of logistics companies, which are within the top 500 firms announced by FORTUNE Magazine of Turkey for 2011, were investigated with a mixed method, including the TOPSIS method. For this mixed method, the results of the TOPSIS method are taken as input. This mixed method was used for the first time in the literature. According to the author, this new method is one of the ideal methods that can be used to compare the firms' performance.

In the research of Özçelik and Kandemir (2015), the performance of seven tourism firms financially traded in Borsa İstanbul (BIST) with the TOPSIS method for the period of 2010-2014 was investigated in terms of profitability, leverage, liquidity and activity indicators. According to the findings, the most effective company for 2012, 2013 and 2014 is MARMARİS ALTINYUNUS TURİSTİK TESİSLER A.Ş. In the study of Akbulut and Rençber (2015), the financial performance of 32 manufacturing companies traded in Borsa İstanbul (BIST) for the period 2010-2012 was investigated in terms of profitability, liquidity and activity indicators with the TOPSIS method. According to the findings, the most effective company is Adana Cement for 2010, 2011 and 2012.

3. MANAGEMENT SIDE OF BIST

According to Ergun (2021), Borsa İstanbul stands apart between the most present day besides high-evaluated liquidity exchange stages giving powerful admittance to the creating Turkish capital marketplace with the incorporated construction with post-exchange organizations, extensive marketplace, and item variety. 24 years prior, its excursion has begun by way of an associate expert in famous foundation, a vital segment of our monetary framework, that it was partake in the turn of events, innovative and institutional change of the administrative

framework with incredible joy. Thus, it feels respected to help the advancement of the monetary business sectors as a CEO at Borsa Istanbul. Because of the profound scaled variation besides improvement, it goes through; the capital market has huge possibility as far as the organic market sideways. It immovably accepts that by viably satisfying this potential, it will acquire critical ground for the stock trade and country. To understand this objective, it is imagined a region where more organizations have the chance to obtain assets and arrive at a bigger financial backer base, foster items and administrations in accordance with the market needs, and do drives that make esteem in the monetary biological system.

The improvement of the inventory side to be specific the backer base will be guaranteed by rising subsidizing of organizations by means of capital market instruments. Accordingly, it will altogether work on the capacity of the drawn-out asset acquirement of the organizations, the train of the country's maintainable turn of events, and add to development through speculation, business, creation, and fare. To this end, it effectively partakes in the advancement of public contributions and impetuses with successful means. On the other hand, it firmly underlines that public contribution empower asset acquirement as well as increment maintainability, organization, believability, and brand worth of organizations. On the interest side, it is expected to extend our homegrown and unfamiliar financial backer base. To draw in more financial backers, it accepts that monetary proficiency in the nation ought to be improved. To this end, it means to arrive at more financial backers explicitly by utilizing innovative freedoms, to advise them regarding capital business sectors, and to assist with expanding their speculations with capital market tools in the forthcoming time frame. Likewise, it takes measures inside the structure of reconnaissance exercises completed with a proactive methodology inside the Exchange to guarantee that the business sectors work in a dependable, straightforward, productive, reasonable, and stable climate, and it further find ways to reinforce our market observation exercises, including continuous checking and recognition of market-twisting exchanges. Other than upgrades in the observation framework, it gives research help to business firms, hold occasions and preparing, highlight recordings, make declarations about monetary speculations to advise and bring issues to light. It is anticipated that the investors should reinforce their degree of monetary proficiency and follow monetary data and declarations from solid sources like KAP. It is added to both public and global scholarly examination with Borsa Istanbul Review, which it distributes to help scholastic exploration in our nation and become the most unmistakable money magazine in the country lately. While it proceeds with our endeavours in all circles to guarantee that the financial backers' approach dependable data. It has a scope

of undertakings that it has achieved up until this point and keeps on achieving for the improvement of monetary engineering. Correspondingly, the attention on new items and administrations will be to find market-accommodating ways to support usefulness by substitute in accordance with the necessities of the marketplace. It is most extreme significance for employees to exploit items exchanged the Derivatives Market (VIOP) to deal with their dangers and to contribute too. Inside this system, it keeps up with our endeavours to grow the item scope of Derivatives Market to give market members admittance to additional hidden resources. Expecting a significant job in the improvement of valuable metals showcases just as capital business sectors, the Exchange pioneers' practices and advancements that also guarantee straightforwardness and continuation of all cycles of the mindful inventory network of valuable metals and appearance of valuable metallic element from the source to purchaser, in the state, which is perhaps the main gold habitats within the planet.

Succinctly, it has been trying to achieve adding to monetary steadiness by advancing the item range in the business sectors and work on its own working and boosting the premium of every one of the partners, particularly guarantors and financial backers, in the capital market. Alongside further developing the administration limit, which will try to reinforce the participation with the partners as far as record and information benefits just as the business sectors, and it will attempt to dispatch new items. It will essentially meet the item, administration, and information requests that the market will need, and it will make topical records to which reserves or monetary items can be created. It will keep on sharing the list estimation ability and foundation with the partners who wish to have records determined for their sake for their utilization in monetary items. It will upgrade the consistence of the records with worldwide principles, fit them with IOSCO and meet the ESMA measures. It moves forward making the interests in innovation to guarantee the powerful and controlled coherence of algorithmic exchanges, whose offer is expanding in our business sectors just as from one side of the planet to the other. Inside this system, it has added and keeps on adding new provisions to the Pre-Trade Risk Management (PTRM) Claim that will show up the requirements of the marketplace. It will likewise dispatch fresh items it has produced for checking and testing algorithmic cycles. With the colocation region, it has extended in the Primary Data Centre; it is boosting the administration limit. Alongside that, it keeps up with the participation with worldwide organization and stage suppliers. The coordinated efforts with worldwide organizations and stage suppliers keep on expanding the global openness of the business sectors. As it completes such mixes, it will advise, through declarations. The point is to foster Borsa Istanbul

information and make it accessible to more extensive crowds. Alongside that, it gives reference information, intermittent reports, and also information to clients who demand through the Datastore side. It also keeps on working by staying in contact with the partners to make esteem additional information bundles and information examination that the financial backers need. The advancement of the country's business venture biological system holds most extreme significance. By further developing the BIST Private Market stage, where financial backers and business people gather and the administrations it gives through this stage, it also continues to add to the development and improvement of the area. In this sense, it holds gatherings with area agents and focus on necessities. It will go the business venture biological system of the state up with the models; it also shapes in accordance with the requirements. Drawing explicitly on the natural, social, and administration zeroed in speculations that also have expanded on a worldwide scale lately, it will focus on manageability, which won't just help the feasible improvement of society and the climate yet additionally increase the drawn-out corporate worth of recorded organizations. To this end, it will keep on gaining ground. it will improve long haul speculation choices of our financial backers with investable lists that include organizations that show superior in ESG issues.

Alongside fostering the monetary design, it does the worldwide exercises and stays informed concerning the world too. As an individual from the World Federation of Stock Exchanges, it effectively takes part in working gatherings where complete exercises are done on monetary innovations, supportability, network protection, and a few significant issues for our industry, it pursues global directions and help out the world's driving stock trades. In collaboration with the Organization of Islamic Cooperation (OIC) Connections Forum, whose secretariate has been in succession in the meantime 2005, it oversees huge undertakings and different limit building and participation exercises and backing the OIC objectives. To get our position in the worldwide rivalry, it has re-established our framework with the BISTECH framework and it keeps on creating it interminably. It has worked with every one of the business sectors and clearing framework work in a solitary start to finish framework. Numerous monetary items are exchanged simultaneously with no issues. It is among the most fluid trades on the planet. Along these lines, it gives fast, expanded exchange volume, and huge information limit. On account of the BISTECH R&D Centre, it directs investigations for the commercialization of items including the BISTECH framework, and give far reaching answers for capital business sectors by dispatching imaginative and cutting-edge items in the space of money and programming innovations. Besides, it intends to grow the item range just as the mechanical limit with the interests in cloud and blockchain

advancements. In this vision for the future, the establishment will consistently be to advance Istanbul as a global monetary focus and to guarantee the improvement of the whole monetary environment in participation with the partners. By ideals of the Istanbul Finance Centre task, the states of being to meet the framework needs of monetary foundations will be finished soon, and the nation will acquire force as far as fortifying its situation in worldwide contest. As a vital segment of the undertaking and one of the means towards the objective of turning into a worldwide store community in the district, Borsa Istanbul Precious Metals and Precious Stones Warehouse hold incredible worth. The assignment occupant on to effort for and foster a monetary area that the heaviness of our capital market and the individuals who advantage from the chances offered by the capital business sectors increment, and monetary organic market meet. It offers a climate helpful for venture, which is an unquestionable requirement for being a monetary focus, all the more adequately with every day; we foster the monetary item range, offer the types of assistance and programming that the business needs with the R&D interests in the arena of monetary innovation. In the forthcoming time frame, as Borsa Istanbul, it will keep on being the main supplier of items and administrations that some significance with homegrown and unfamiliar financial backers, with the inventive and market-accommodating methodology, and it will keep on boosting the public and worldwide exercises. It truly accepts that it will gain huge headway for our Stock Exchange just as the country's economy by utilizing the development capability of the capital marketplace in a viable way. It will keep on supporting Turkey's advancement visualisation by developing the capital market with every one of our partners together, particularly the organizations and individuals. Along with every one of the associates, it will keep on satisfying the essential objectives of Borsa Istanbul besides foster the capital marketplace and Borsa Istanbul. In particular, the new Bist management aims at maximum efficiency in the operation of the stock market and public participation. In order to increase participation and profitability in the stock market, companies need to be managed efficiently and effectively. In this context, this financial comparison research was carried out.

4. DATA

According to their market values, the data of the 10 most valuable companies in the Izmir index in Borsa Istanbul between the years 2011 and 2015 were used to compare their performances financially. The financial data used in this study were taken from the Finnet program archives. The market values of the companies are shown in Table 1. Izmir index has 23 participants in 2015. The literature was reviewed and as a result, it was decided which ratios could be used for TOPSIS

Analysis. Dumanoğlu and Ergül (2010) financial ratios were used as input of this study. Financial ratios are shown in table 2.

1-Petkim	6,345,000,000
2-Koza Altın İşletmeleri A. Ş	2,688,575,000
3-T.Tuborg Bira Ve Malt San.	2,667,143,252
4-İzmir Demir Çelik San. A.Ş.	1,106,250,000
5-Ege Endüstri Ve Tic. A.Ş.	859,005,000
6-Çimentaş İzmir T.A.Ş.	858,928,887
7-Pınar Süt Mamulleri San. A.	761,021,298
8-Batı Anadolu Çim. San. A.Ş.	565,600,000
9-Pınar Et Ve Un San. A.Ş.	467,151,300
10-Tukaş Turgutlu Konserveçilik.	362,624,500

Leverage Ratio	Total Debt / Equity
Debt Ratio	Total Debt / Total Assets
Sales to Current Assets	Net Sales / Current Assets
Sales to Fixed Assets	Net Sales / Fixed Assets
Profit Margin	Net Profit / Sales
Return on Equity	Net Profit / Equity
Current Ratio	Current Assets / Current Liabilities
Acid Test Ratio	(Current Assets-Inventory) / Current Liabilities

5. METHODOLOGY

TOPSIS, proposed by Hwang and Young, is a multi-criteria decision-making method. Moreover, it is also clarified that the main principle of TOPSIS is that the chosen choice could be closest to the ideal favourable solution and farthest from the ideal negative choice (Hwang and Young, 1981). The steps of the TOPSIS method are shown below:

First Step: Creating the Decision Matrix (A)

Each row in the decision matrix contains points of decision that must be graded. Each column within the decision matrix contains the decision factors that should be used to evaluate a decision. A matrix is the root matrix created by the decision maker.

$$A_{ij} = \begin{bmatrix} a_{11} & a_{12} & \dots & a_{1n} \\ a_{21} & a_{22} & \dots & a_{2n} \\ \cdot & & & \cdot \\ \cdot & & & \cdot \\ \cdot & & & \cdot \\ a_{m1} & a_{m2} & \dots & a_{mn} \end{bmatrix}$$

A_{ij} Within the matrix above, m clarified the number of points that decision, while n clarified the number of factors that evaluation.

Second Step: Creating the Standard Decision Matrix

The Matrix below is evaluated using a matrix factor and the formula that used.

$$r_{ij} = \frac{a_{ij}}{\sqrt{\sum_{k=1}^m a_{kj}^2}} \quad (1)$$

The formula of the R matrix is given below:

$$R_{ij} = \begin{bmatrix} r_{11} & r_{12} & \dots & r_{1n} \\ r_{21} & r_{22} & \dots & r_{2n} \\ \cdot & & & \cdot \\ \cdot & & & \cdot \\ \cdot & & & \cdot \\ r_{m1} & r_{m2} & \dots & r_{mn} \end{bmatrix}$$

Third Step: Creating the Weighted Standard Decision Matrix

First of all, factors of evaluations are (w_j) determined ($\sum_{i=1}^n w_i = 1$). Then each column's elements of the matrix R which are multiplied by their covered values that come directly from the matrix V. The V matrix is shown below:

$$V_{ij} = \begin{bmatrix} w_1 r_{11} & w_2 r_{12} & \dots & w_n r_{1n} \\ w_1 r_{21} & w_2 r_{22} & \dots & w_n r_{2n} \\ \cdot & & & \cdot \\ \cdot & & & \cdot \\ \cdot & & & \cdot \\ w_1 r_{m1} & w_2 r_{m2} & \dots & w_n r_{mn} \end{bmatrix}$$

Fourth Step: Establishing Ideal (A^*) and Negative Ideal (A^-) Solutions

The method, that known as TOPSIS assumptions for individually assessment reason have their own ascending and descending trends. In weighted valuation factors, the highest values of each column in the V matrix should be chosen to create an ideal solution set (if the valuation factor is inverse the decreasing-lowest factor should be chosen). Ideal solution sets are shown in the formula below.

$$A^* = \left\{ (\max_i v_{ij} | j \in J), (\min_i v_{ij} | j \in J') \right\} \quad (2)$$

(2) The set of formula which is calculated can be displayed as .

$$A^* = \{v_1^*, v_2^*, \dots, v_n^*\} .$$

The ideal solution set is formed by choosing the largest evaluation factors, in example, column values, in the matrix V (which is the smallest while the relevant factor of evaluation is minimization oriented). Finding the negative ideal solution set is shown in the formula below.

$$A^- = \left\{ (\min_i v_{ij} | j \in J), (\max_i v_{ij} | j \in J') \right\} \quad (3)$$

(3) The set of formula which is calculated can be displayed as .

$$A^- = \{v_1^-, v_2^-, \dots, v_n^-\} .$$

J Maximizing value and J' shows the minimization value.

Fifth Step: Calculating Discrimination Measures

By using the Euclidian Distance Approach, it can be found how far the factor of each decision matrix is from the solution set. The resulting deviation standards are Ideal Discrimination (S_i^*) and Negative Ideal Discrimination (S_i^-) Measure. Calculation of these measurements is shown in formulas 4 and 5.

$$S_i^* = \sqrt{\sum_{j=1}^n (v_{ij} - v_j^*)^2} \tag{4}$$

$$S_i^- = \sqrt{\sum_{j=1}^n (v_{ij} - v_j^-)^2} \tag{5}$$

Sixth Step: Estimating the Relative Closeness to the Ideal Solution

Ideal and negative ideal separation measures are used to find the relative closeness (C_i^*) to the ideal solution. This criterion is found as the ratio of the negative ideal discrimination measure to the total discrimination measure. It is shown in the formula number 6 that will be used to find the relative closeness (C_i^*) to the ideal solution

$$C_i^* = \frac{S_i^-}{S_i^- + S_i^*} \tag{6}$$

The coefficient shown in the formula explains a value in the range and shows the total closeness of the applicable choice to the ideal solution and the relative closeness of the relevant decision point to the negative ideal solution. (Abali et al., 2012)

5. APPLICATION AND FINDINGS

The application procedure of the TOPSIS method consists of 6 steps. These 6 steps are given below for the year 2011 as an example.

First Step: Creating the Decision Matrix (A)

Each row in the decision matrix covers decision points that must be graded. Each column in the decision matrix contains the decision factors that should be used to evaluate a decision. In the first step, the decision matrix is created.

	S1	S2	S3	S4	S5	S6	S7	S8
1	56,880	36,260	3,190	2,910	2,630	6,200	1,590	0,880
2	24,430	19,630	2,560	1,616	49,900	71,850	4,090	3,300
3	168,830	62,800	1,710	1,736	-3,940	-8,140	0,880	0,680
4	106,440	51,250	3,040	2,317	3,700	10,670	1,250	0,720
5	126,430	55,840	1,900	4,946	16,580	52,620	2,050	1,000
6	41,720	25,790	1,690	0,655	3,790	2,940	1,950	1,410
7	42,510	29,830	2,980	1,710	11,200	17,700	1,810	1,300
8	54,370	32,660	1,670	0,803	7,140	6,610	2,240	1,540
9	36,500	26,740	3,180	1,346	7,750	10,050	1,750	1,310
10	353,610	77,950	0,680	2,019	-37,730	-62,170	1,100	0,530

Second Step: Creating the Standard Decision Matrix

The Standard Decision Matrix below is evaluated with matrix factor and by the formula.

$$r_{ij} = \frac{a_{ij}}{\sqrt{\sum_{k=1}^m a_{kj}^2}} \quad (1)$$

Table 4. Standard Decision Matrix for 2011

	S1	S2	S3	S4	S5	S6	S7	S8
1	0,130	0,251	0,420	0,397	0,039	0,055	0,245	0,189
2	0,056	0,136	0,337	0,220	0,746	0,643	0,630	0,709
3	0,385	0,435	0,225	0,237	-0,059	-0,073	0,136	0,146
4	0,243	0,355	0,401	0,316	0,055	0,096	0,193	0,155
5	0,288	0,387	0,250	0,674	0,248	0,471	0,316	0,215
6	0,095	0,179	0,223	0,089	0,057	0,026	0,300	0,303
7	0,097	0,207	0,393	0,233	0,167	0,158	0,279	0,279
8	0,124	0,226	0,220	0,110	0,107	0,059	0,345	0,331
9	0,083	0,185	0,419	0,184	0,116	0,090	0,270	0,281
10	0,806	0,540	0,090	0,275	-0,564	-0,556	0,169	0,114

Third Step: Creating the Weighted Standard Decision Matrix

The elements of individual column of the matrix R, which are multiplied by their corresponding, affect the values to form the V matrix. The data required for weighting were found from the standard decision matrix. The V matrix is shown below:

Table 5. Weighted Standard Decision Matrix for 2011

	S1	S2	S3	S4	S5	S6	S7	S8
1	0,016	0,040	0,068	0,059	0,002	0,003	0,038	0,028
2	0,007	0,021	0,055	0,033	0,037	0,034	0,099	0,105
3	0,048	0,069	0,036	0,035	-0,003	-0,004	0,021	0,022
4	0,030	0,056	0,065	0,047	0,003	0,005	0,030	0,023
5	0,036	0,061	0,041	0,100	0,012	0,025	0,049	0,032
6	0,012	0,028	0,036	0,013	0,003	0,001	0,047	0,045
7	0,012	0,033	0,064	0,035	0,008	0,008	0,044	0,041
8	0,016	0,036	0,036	0,016	0,005	0,003	0,054	0,049
9	0,010	0,029	0,068	0,027	0,006	0,005	0,042	0,042
10	0,101	0,085	0,014	0,041	-0,028	-0,029	0,027	0,017

Fourth Step: Establishing Ideal (A^*) and Negative Ideal (A^-) Solutions

The model solution sets found by applying formulas (2) and (3) are exposed in the table below.

Ideal Solution Values	0,007	0,02	0,06	0,10	0,03	0,03	0,09	0,10
Negative Ideal Solution Values	0,101	0,08	0,01	0,01	-0,02	-0,02	0,02	0,01

Fifth Step: Calculating Discrimination Measures

The calculation of the ideal separation (S_i^*) measure was made according to the formula (4), and the calculation of the negative ideal separation (S_i^-) measure was made according to the formula (5) and it is seen in Table 6.

	(S_i^-)	(S_i^*)
Petkim	0,129	0,118
Koza Altın İşletmeleri A.Ş	0,192	0,069
T.Tuborg Bira Ve Malt San.	0,073	0,158
İzmir Demir Çelik San. A.Ş.	0,108	0,134
Ege Endüstri Ve Tic. A.Ş.	0,136	0,108
Çimentaş İzmir T.A.Ş.	0,122	0,131
Pınar Süt Mamulleri San. A.Ş	0,132	0,114
Batı Anadolu Çim. San. A.Ş.	0,120	0,124
Pınar Et Ve Un San. A.Ş.	0,133	0,120
Tukaş Turgutlu Konserveçil.	0,028	0,201

Step 6: Calculating the Relative Closeness to the Ideal Solution

The relative closeness to the ideal solution is calculated by dividing the negative discrimination measure to the total discrimination.

Table 7. Proximity to the Ideal Solution for 2011

	Ci Result
Petkim	0,522
Koza Altın İşletmeleri A.Ş	0,736
T.Tuborg Bira Ve Malt San.	0,315
İzmir Demir Çelik San. A..	0,447
Ege Endüstri Ve Tic. A.Ş.	0,559
Çimentaş İzmir T.A.Ş.	0,483
Pınar Süt Mamulleri San. A.	0,536
Batı Anadolu Çim. San. A.Ş.	0,492
Pınar Et Ve Un San. A.Ş.	0,526
Tukaş Turgutlu Konserveçil.	0,123

Table 8. Rankings by Proximity to Ideal Solution

	2011	2012	2013	2014	2015
Petkim	5	5	6	8	7
Koza Altın İşletmeleri A.Ş.	1	1	1	1	1
Türkiye Tuborg A.Ş.	9	8	5	6	4
İzmir Demir Çelik A.Ş.	8	9	9	9	10
Ege Endüstri Ve Tic. A.Ş.	2	2	2	2	2
Çimentaş A.Ş.	7	6	7	5	8
Pınar Süt A.Ş.	3	4	4	4	5
Batı Anadolu Çim. A.Ş.	6	7	8	7	9
Pınar Et ve Un A.Ş.	4	3	3	3	3
Tukaş Turgutlu Konserveçilik	10	10	10	10	6

Alternatives are ranked in descending order according to their relative closeness to the ideal solution, and a preference order is formed. The company with the result of relative proximity to the highest ideal solution is considered the most efficient company. The values obtained in the previous step were arranged in order of magnitude and the order of importance of the decision points (alternatives) was determined in Table (8). Table (8) shows the rankings of the companies traded in the BIST Izmir index for the 2011, 2012, 2013, 2014 and 2015 periods.

6. RESULT AND DISCUSSION

In this research, the financial performance of the firms was examined by using the financial statements of ten firms traded in the BIST Izmir index and included in

the stock market code as “PETKM, TBORG, KOZAL, IZMDC, CMENT, EGEEN, PNSUT, BTCIM, PETUN, TUKAS”. TOPSIS method was used to compare the financial performances of companies traded in the BIST Izmir index. For the analysis, first of all, financial ratios were determined with the help of the literature and ratio analyses were made separately for each firm. The ratios found were converted into a comparison score for each firm by using the TOPSIS method. The rankings of the companies were made according to these scores.

According to the analyses made, the company traded in the BIST Izmir index with the most successful financial performance is Koza Altın İşletmeleri A.Ş. for 2011, 2012, 2013, 2014 and 2015. When the financial ratios of KOZAL, which has the most successful financial performance score in 2011, are analysed, it is seen that it is in the first place with Net Profit Margin, Current ratio, Liquidity ratio and Return on Equity ratios, and fourth with the Current Assets Turnover ratio. According to the analyses made, Tukaş Konserveçilik is the company traded in the BIST İzmir index with the most unsuccessful financial performance for the years 2011, 2012, 2013 and 2014. Again, when we look at the decision matrix, the negative profitability ratios of Tukaş Konserveçilik and the borrowing ratios above the normal level are striking. In addition, İzmir Demir Çelik A.Ş. has the most unsuccessful financial performance for 2015. İzmir Demir Çelik A.Ş. It is the only company with negative profitability ratios. In the study of Akbulut and Rençber (2015), the financial structure of 32 companies in the manufacturing sector was compared with the TOPSIS method. It is seen that the firm closest to the ideal solution has not changed over the years. In this study, which was conducted on companies in İzmir, it was found that the company closest to the ideal solution did not change over the years.

This study was carried out on the 10 largest companies in terms of market value in İzmir. Data Envelopment Analysis, which takes into account the number of personnel, can be used to compare the financial activities of companies located in Izmir in the future.

REFERENCES

- Abalı, Y. A., Kutlu, B. S., Eren, T. (2012). Çok ölçütlü karar verme yöntemleri ile bursiyer seçimi: Bir öğretim kurumunda uygulama, *Atatürk Üniversitesi İktisadi ve İdari Bilimler Dergisi*, 26(3-4), 259-272.
- Akbulut, R., Rençber, Ö. F. (2015). BIST’te imalat sektöründeki işletmelerin finansal performansları üzerine bir araştırma, *Muhasebe ve Finansman Dergisi*, (65).
- Bağcı, H. (2013). *Ticari bankalar ile katılım bankalarının karlılık performanslarının topsis yöntemi ile karşılaştırılması*, (Doctoral dissertation), DEÜ Sosyal Bilimler Enstitüsü).
- Çakır, S. ve Perçin S., (2013). Çok kriterli karar verme Teknikleriyle lojistik firmalarında performans ölçümü, *Ege Akademik Bakış*, 4, 449-459.

- Demireli, E. (2010). TOPSIS çok kriterli karar verme sistemi: Türkiye'deki kamu bankaları üzerine bir uygulama." *Girişimcilik ve Kalkınma Dergisi* 5(1):104-112.
- Dumanoglu, S., Ergül, N. (2010). IMKB'de işlem gören teknoloji şirketlerinin mali performans ölçümü, *Muhasebe ve Finansman Dergisi*, (48).
- Ergun, K. (2021). *Message from the CEO*", Available from: <https://www.borsaistanbul.com/en/sayfa/2420/message-from-the-ceo> Accessed on: 10.08.2021
- Hwang, C. L., Yoon, K. (1981). Multiple attribute decision making. in: *Lecture notes in economics and mathematical systems*, Springer-Verlag, Berlin.
- Özçelik, H., Kandemir, B. (2015). BIST'de işlem gören turizm işletmelerinin TOPSIS yöntemi ile finansal performanslarının değerlendirilmesi, *Bahkesir University The Journal of Social Sciences Institute*, 18(33), 97-114.
- Sharif Karimi, M., Yusop, Z., & Hook, L. S. (2009). Location decision for foreign direct investment in ASEAN countries (A TOPSIS Approach), *International Research Journal of Finance and Economics*, 36, 196-207.
- Shih, N. Z. and Liou, D. K. (1997). "An evaluation study of future indexes hedging strategies in grey system, Applied on Volume Weighted Index and Future Index, 1997 Second National Conference on Grey Theory and Applications (Taiwan), 1997, pp. 16-33.
- Ustasüleyman, T. (2009). Bankacılık sektöründe hizmet kalitesinin değerlendirilmesi: AHS-TOPSIS yöntemi." *Bankacılar Dergisi* 69,33-43.
- Yayar, R., Baykara, H. V. (2012). An implementation upon efficiency and productivity of participation banks with TOPSIS method, *Business and Economics Research Journal*, 3(4), 21.