Financial Performance Analysis of Brokerage Firms Quoted on the Istanbul Stock Exchange Using the TOPSIS Method of Analysis

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Abstract

The economic crises experienced by countries in recent years have naturally had an impact on the supply and demand for brokerage services in financial markets. While brokerage firms suffered in 2008, they began to undergo major transformation with the fundamental change occurring in the post-crisis economy, and evolved to effectively meet the demand for brokerage service. Although service quality and variety remained important, because of the growing perception of risk during this period of transformation, for brokerage firms, risk management became at least as crucial as profitability and growth. Financial services constantly expanded and grew in structural complexity, which made it more difficult to measure the activities of brokerage firms methodologically. In addition, the increasingly competitive environment had a significant impact on the performance of brokerage firms, which came to acquire a crucial importance in the financial service sector. These factors have made it essential that the performance of brokerage firms in recent years be examined and reassessed with respect to the development of financial markets.

Keywords: Brokerage firms, Financial Performance, Topsis

1. Introduction

Brokerage firms have a role to play in financial markets in the effective transfer of funds needed in these markets to those demanding these funds, particularly through securitizations. In addition, they provide investment consultancy to sectors interested in investing in financial products. Thus, they are located on both sides of the investment-financing process and continually contribute to the creation of financial information in finance markets. The increasingly competitive climate resulting from a proliferation of information technologies has also had a major impact on the performance of brokerage firms, which are exceedingly important in the financial service sector. Therefore, it has become necessary to examine the performance of brokerage firms in recent years and reassess them in light of the development of financial markets. This study has been prepared in view of this need. The first section of the study contains the conceptual framework related to brokerage firms. While describing them conceptually, it identifies its role and responsibilities within the financial service sector and emphasizes the importance they have for financial markets. The second section provides a literature review related to the TOPSIS, a method of assessing company performance in different sectors that is frequently utilized in academic studies. As part of this overview, it identifies areas and topics of research done both abroad and in Turkey, and provides data supporting the validity of the TOPSIS method. The third section of the study discusses the methodology behind TOPSIS, which was used to determine the financial performance of brokerage firms. It also includes the data set used for the study, the steps taken in the analysis, and the final research findings. The conclusion of the study contains a critique of the significance of the findings for the Turkish brokerage firm sector.

2. Conceptual Framework

Rising economic development in countries has spawned the need for investment and capital, and this has led to a commensurate growth in supply and demand of brokerage services in financial markets (Müslümov and Aras, 2002:3). Accordingly, financial brokerage service is serving to expand capital to more strata, to increase the rate of capital circulation, and, in time, cheaper financing opportunities replaced high cost resource transfers. Viewed from this perspective, brokerage firms are at least as important as stock exchanges (Gündüz, Yılmaz and Yılmaz, 2001:2). This crucial role is obvious when examined historically. Up until the 1980s, the distribution of funds between financial actors was provided by investment and deposit banks. Therefore, the enactment of Capital Markets Law no. 2499 in 1981 and the formation of an organized stock exchange (ISE) in 1986 were turning points for brokerage firms. This situation increased the availability of long-term funds in both the private and public sectors. Moreover, brokerage firms, along with investment and deposit banks, became essential to the financial system (Akyüz, 2002:5). We are living at a time when countries are experiencing various difficulties in achieving an effective distribution of funds, especially under open market economic conditions. There is a need to attract foreign capital and create a much sounder market. This demands an institutional infrastructure through which international norms and rules, in particular, are practiced (TSPKAB, 2004:39).

Brokerage firms, one of the most important components of the financial infrastructure, have undergone a radical transformation in recent years with the advent of globalization and increasing information technologies. Brokerage firms no longer suffice with the previous customer-focused approach towards operating and carrying out client transactions; they are also engaged in banking activities for securitization, mergers and acquisitions. These days, in light of the emphasis on profitability and growth, even greater importance is placed on risk management. For brokerage firms, the fundamental goal of this transformation is identifying, ranking, monitoring, assessing and reducing risks in the financial market as part of an overall monitoring process (TSPAKB, 2009:6). This new process, which has key importance for brokerage firms, offers an opportunity-creating competitive advantage when used successfully. Therefore, the changing competitive atmosphere has an enormous impact on them, forcing them to scrutinize institutional strategies. This encourages brokerage firms that want to conduct their activities more effectively to specialize in certain areas. Brokerage firms are having to contend with conducting risk management as the perception of risk growth in markets. At the same time, financial service product portfolios are not only becoming more diverse but also more complex. This makes evaluating brokerage firm activities methodologically difficult. In such a rapidly changing sector, brokerage firms need to have a flexible structure that will enable them to adapt to this change. Ever increasing demand for financial translations generates further operational risk. The greater flexibility of brokerage firms will enable them to manage this operational risk as they work to reconcile the growing financial translations and the need for financial reporting. Therefore, considering the flow of foreign capital into developing markets, in markets like Turkey where alterative investment vehicles are a recent phenomenon, the importance of brokerage firms for the country's economy will become increasingly crucial.

Brokerage firms are incorporated companies that provide brokerage service and/or buy and sell in their own behalf or on the behalf of others within existing legal frameworks. This includes serving as the channel through which capital market instruments are offered to the public, providing intermediation in the purchase and sales of these securities in secondary markets, and offering brokerage service for the concluding of long-term contracts (Ünal, 1997:69). Brokerage firms, which acquired their standing through the Capital Market Law, are subject to Capital Markets Board (CMB) regulations and practices regarding the kinds and appropriateness of activities in which they engage and the basis and conditions under which they interact with other capital market institutions (Ünal, 1997:69) Brokerage firms must obtain a special certificate of participation from the CMB for each separate activity in which they are engaged. Brokerage activities encompass the issuance of capital market instruments, intermediation for public sale, acquisition in Turkey of previously issued capital market instruments, and the provision of derivative financial instruments, including options and option agreements based on economic and financial indicators, capital market instruments, goods, precious metals and foreign currency. Moreover, these activities can involve the purchase or sale of capital market instruments through repo and reverse repo agreements, investment counselling and portfolio management (Capital Markets Law, Article 30, par.2; Capital Markets Law, Article 31). Over time, the CMB redefined the concept of "brokerage" through a communiqué: "the intermediation of public offerings of capital market instruments that are to be registered with the Board."

In addition, the concept "public offering intermediation," is defined in Article 30 of the Capital Markets Law as "intermediation of the public offering or issuance of capital market instruments that are to be registered with the Board" (Aktaş, 2005:122). Another importance concept, "intermediary firms," refers to banks providing financial intermediation through brokerage firms. This paved the way for companies licensed by the CMB to operate as brokerage firms (İnceoğlu, 2004:20). In other words, the term "intermediary firm" incorporates both banks and brokerage firms (Tanör, 1999:251). But compared to brokerage firms, banks are rather limited in what they can do on the capital market. Therefore, it makes it difficult to determine whether in practice they really function as brokerage firms.

3. Literature Review

TOPSIS (Technique for Order Preference by Similarity to Ideal Solution) is a method developed by Yoon and Hwang in 1980 that is based on the principle of ideal solution vicinity of decision points. In addition, TOPSIS is an effective method that can help companies make decisions. TOPSIS is frequently used measuring financial performance, in particular. It is easily applicable to different sectors and enables a comparison of alternatives based on the optimum of minimum and maximum values of variables in different sectors (Yurdakul and İç, 2003:11). In their research, Hwang and Yoon (1981) acted on the assumption that solution alternatives would be at the distance that was closest to the positive optimum solution point and furthest from the negative optimum solution point. In the literature, there are many studies, both foreign and Turkish, where the TOPSIS method has been used. Among foreign researchers, Feng and Wang (2000) analyzed the business performance of five airlines operating in Taiwan. They used 22 different sector indicators as variables in their study and stressed the importance of financial indicators in sector performance. Kalogeras et al. (2005) examined the financial performance of 20 agricultural foodstuff companies operating in Greece between 1993-1998 on the basis of 11 different ratios using PROMETHEE, one of the multi-criteria decision-making methods. In research on determining the best tender proposals by manufacturers of electronic products, Hao and Qing-sheng (2006) used 12 indicators and the TOPSIS method to determine which proposals of the 12 companies participating in the tender were better. Abbasi et al. (2008), in their analysis of a bank in Iran, determined that, according to the TOPSIS method, the best account from the point of view of profitability was the current account. Wang (2014) used the fuzzy TOPSIS method to study the financial performance of container transportation companies in Taiwan. Using the gray relations analysis while identifying priority criteria, they made a choice from among many financial ratios. Through the fuzzy TOPSIS method, they were able to identify, while ranking the container transportation companies according to financial performance, the competitively strong and weak ones.

The TOPSIS method has also been used in many studies done in Turkey in recent years. For example, Yurdakul and İç (2003) examined five large-scale Turkish automotive companies traded on the ISE using seven financial ratios for the period 1998-2001. They measured the performance of the companies and obtained annual performance scores based on the findings of the study, which they then compared with the year-end closing price of company stocks. They found that the results were commensurate with the ranking of the companies by the ISE in terms of value. Sekreter et al. (2004) studied company rankings in the food sector using 17 financial ratios they obtained from the financial tables for 1996-2001 of 21 food companies traded on the ISE. Employing the Analytic Hierarchy Procedure (AHP), they calculated a single credibility score for each company. They then used these scores to group the companies into different credibility categories. Işıklar and Büyüközkan (2006) used a sample survey and AHP and TOPSIS methods to determine mobile telephone preferences. Kılıç (2006) analyzed potential financial failures in the Turkish banking system with a previously used model – the ELECTRE TRI model – with ten ratios he obtained. He concluded that an early warning system could be used to prevent financial failures. Eleren and Karagül (2008) selected seven key economic indicators for the period 1986-2006 and produced a single performance score for each year using the TOPSIS method. They used these scores to examine the annual performance of the Turkish economy. Bülbül and Köse (2009) used TOPSIS and ELECTRE to study food companies traded on the ISE by utilizing eight financial ratios for the years 2005-2008. The results they obtained from both methods confirmed one another. Dumanoğlu and Ergül (2010) performed a financial analysis of 11 technology companies quoted on the ISE using the TOPSIS method and a data set for the 2006-2009 period. They found that the TOPSIS method was more successful in determining the performance of the companies on both a company and sector basis. Demireli (2010) used TOPSIS and data for 2001-2007 to study the performance of public capital banks in the Turkish banking sector, and found that public capital banks were affected by national and global crises. Moreover, the performance points obtained continually fluctuated on the basis of overseas data.

Finally, Çağıl and Türkmen (2012) evaluated the financial performance of IT companies quoted on the ISE using the TOPSIS method. After calculating financial ratios for the financial performances of each company, he converted them using the TOPSIS method into a single score representing the general company performance. Then he used the calculated scores to rank the performance of the companies within the framework of the study.

4. Data and Methodology

This section defines the data and variables used in the study and then provides information about the TOPSIS method.

4.1.Data Set and Choice of Financial Indicators

Financial analysis is crucial for businesses to be able to assess their financial status and to make rational decisions that are compatible with future goals. Financial analysis and methods are vital, especially for prestigious companies quoted on the stock exchange, to determine the extent to which the financial strategies they have set are successful in enabling them to achieve their goals. These analyses and methods are beneficial not only to the businesses themselves, but also to interest groups such as investors, creditors, the state, the public and researchers. In addition to the most commonly used methods, including horizontal analysis, vertical analysis, trend analysis and ratio analysis, recently, the use of mathematically based multi-critera decision-making methods like TOPSIS has begun to become more widespread. The study's data set contains ten financial ratios, selected, through the advice of experts, from the financial tables of five brokerage companies operating in Turkey and quoted on the ISE. TOPSIS was used to analysis this data set, which covers the period 2011-2014. The annual performance and ranking of the companies were determined through the results of the analysis. Because the ratios used in the financial analyses were generally examined under the headings Liquidity, Operations, Financial Structure and Profitability Ratios, the following ratios, which are of importance for brokerage firms, were used in this study.

Table 1. Financial Ratios		
1	Current Ratio	} **Liquidity Ratios**
2	Liquidity Ratio (Acid Test)	
3	Cash Ratio	
4	Asset Turnover Rate	} **Operations Ratios**
5	Current Asset Turnover Rate	
6	Debt Ratio	} **Financial Structure Ratios**
7	Short-Term Debts/Total Debts	
8	Return on Assets	}Profitability **Ratios**
9	Return on Current Assets	
10	Return on Capital Ratio	

- Liquidity Ratios

Liquidity ratios are a measure of the ability to pay short-term obligations and an indication of whether or not a business has sufficient operating capital; they are grouped under three headings. The first is "current ratio", which is a general ratio used to evaluate short-term payment ability. The current ratio is comparison of a business's current assets and short-term liabilities expressed as a ratio. This ratio is a measure of the company's liquidity. This ratio can expected to be high in brokerage firms having current assets in excess of what is needed. Another liquidity ratio is the "acid test ratio", which is a measure of the ability of a business to meet short-term liabilities with current assets, even if it cannot liquidate its inventory. In other words, short-term liabilities are estimated by deducting stocks from current assets. The third liquidity ratio is the "cash ratio", a ratio that is found dividing the company's liquid assets, which are analogous to money, by its short-term liabilities. This ratio is the best test of liquidity; it is a good indicator of whether or not a company will be able to meet its short-term liabilities even if it cannot liquidate its inventory and collect from its account receivables.

- Operating Ratios

Operating ratios are a reflection of operational efficiency. They are an indication of the financial efficiency of a business. Two important components of operating ratios for brokerage firms are "asset turnover rate" and "current asset turnover rate." Active turnover rate is an indication of how many times the company's assets are renewed within a financial year. This ratio is obtained by dividing net sales for the year by total assets.

If it is high, the company has high asset efficiency. Current assets make up the lion's share of the balance sheets of brokerage firms, which generally try to depend on them for their operations. The current asset turnover rate reflects the efficiency of current assets. This ratio, which is found by dividing average net sales by current assets, shows how many times current assets are renewed in a financial year. A high ratio is indicative of high efficiency.

- Financial Structure Ratios

Financial structure ratios are used to get an idea of the financial status of businesses. They reveal the business's assets are financed through short-term resources, long-term resources, or equity capital. They are used to ascertain its financial risk. The most optimum composite of resources can be attained through a benefit-cost perspective of what is important for businesses. They are the most important tools used to determine the makeup of the financial structure in terms of these resources. "Debt ratio" is one of these ratios. It is a measure of whether or not all of the company's obligations could be met if all of the company's assets were sold. It is indicative of the extent to which the company's assets are financed through debt and whether this presents a financial risk to the company. That being said, greater financial risks are posed to companies by foreign and short-term resources than by equity capital and long-term resources. However, foreign sources can also have an uplifting effect. Similarly, especially in developing economies, the limited availability of long-term funds push companies towards short-term and foreign resources most of the time. Therefore, for developing economies such as Turkey, the "short-term debts/total debts" ratio is also an important financial structure ratio. In addition, when the liquidity structures of the brokerage companies in this study are considered, this ratio becomes especially important.

-Profitability Ratios

Profit, which over the ages has been the ultimate goal of producing a good or a service, is nothing more than income being higher than expenditure. While this has changed in recent years, profitability is still a vital criterion for all companies to enable their sustainability. This is because underlying the enterprise function is being able to make a profit. Profitability can be looked at from a number of angles; it is an important financial parameter that provides a basic idea about a company. The profit-making ability of companies operating in the same sectors can be calculated and compared. The most important of these ratios is "return on assets", is calculated by dividing net operating profits by total assets. It represents the amount of profit per unit asset. These ratios indicate the degree to which companies are able to use their assets profitably. They are particularly important for brokerage companies, which operate on financial markets, from the point of view of investors. Another major profitability ratio is the "return on capitalratio", which is important for potential partners. This ratio, which is found by dividing net profit by equity capital, indicates the amount of profit per fund that enters the business as equity capital. These ratios are crucial to deciding between investment alternatives and are particularly significant for publically traded joint stock companies. "Return on current assets", too, is important for companies like brokerage firms that use their current assets in their operations. Return on current assets, which measures profitability according to after tax profit on sales, shows net profit per unit of equity capital. When these ratios are high, it means that businesses are using their current assets profitably.

4.2. Methodology

The measurement of the financial performance of brokerage firms, which was the purpose of the study, was done by assessing the financial ratios provided above using the TOPSIS method. TOPSIS (Technique for Order Preference by Similarity to Ideal Solution) is a multi-criteria decision-making method developed by Hwang and Yoon (1981). It is based on the principle of identifying the closest positive optimum solution and the farthest negative optimum solution alternatives. The positive optimum solution is a comprised of all the best criteria attainable while the negative optimum solution consists of all of the worse criteria values possible. This method assumes that each criterion has a single value that increases or decreases. The TOPSIS method is carried out through a number of steps. The steps taken in the study are as follows.

Step 1: Decision Matrix

Alternative criterion values are included in the decision matrix.

$$X = \begin{bmatrix} x_{11} & x_{12} & \cdots & x_{1j} & \cdots & x_{1n} \\ x_{21} & x_{22} & \cdots & x_{2j} & \cdots & x_{2n} \\ \vdots & \vdots & & \vdots & \vdots & \vdots \\ x_{i1} & x_{i2} & \cdots & x_{ij} & \cdots & x_{in} \\ \vdots & \vdots & & \vdots & \ddots & \vdots \\ x_{k1} & x_{k2} & \cdots & x_{kj} & \cdots & x_{kn} \end{bmatrix} \qquad (1)$$

The matrix contains "k" alternatives and "n" criteria.

Step 2: Construct the Normalized Decision Matrix

Normalized values are calculated from the matrix and the formula below.

$$r_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^{k} x_{ij}^2}} \qquad \begin{aligned} i &= 1,2,\dots,k \\ j &= 1,2,\dots,n \end{aligned} \qquad (2)$$

$$R = \begin{bmatrix} r_{11} & r_{12} & \cdots & r_{1j} & \cdots & r_{1n} \\ r_{21} & r_{22} & \cdots & r_{2j} & \cdots & r_{2n} \\ \vdots & \vdots & & \vdots & \vdots & \vdots \\ r_{i1} & r_{i2} & \cdots & r_{ij} & \cdots & r_{in} \\ \vdots & \vdots & & \vdots & \ddots & \vdots \\ r_{k1} & r_{k2} & \cdots & r_{kj} & \cdots & r_{kn} \end{bmatrix} (3)$$

Step 3: Create the Weight Normalized Decision Matrix

In this step, the weighted values of the components of the normalized decision matrix are calculated. First, weights (W_j) signifying the importance of each "j" criterion are determined.

$$\left(\sum_{j=1}^{n} W_j = 1 \right)$$

$$W_j = \begin{bmatrix} w_1 & \cdots & w_n \end{bmatrix} (4)$$

Then the values of each line of the normalized matrix given in equation (3) are multiplied by the weighted values in equation (4). This produces the weighted normalized decision matrix (V) given in equation (5) below.

$$\mathbf{V} = \begin{bmatrix} v_{11} & v_{12} & \cdots & v_{1j} & \cdots & v_{1n} \\ v_{21} & v_{22} & \cdots & v_{2j} & \cdots & v_{2n} \\ \vdots & \vdots & & \vdots & \vdots & \vdots \\ v_{i1} & v_{i2} & \cdots & v_{ij} & \cdots & v_{in} \\ \vdots & \vdots & & \vdots & \ddots & \vdots \\ v_{k1} & v_{k2} & \cdots & v_{kj} & \cdots & v_{kn} \end{bmatrix} (5)$$

Step 4: Calculate Ideal Positive and Ideal Negative Solutions

Within the weighted normalized values obtained, the highest values produce optimum epositive solutions while the lowest ones produce optimum negative solutions.

$$A^+ = \{ (\max v_{ij} \,|\, j \in I), (\min v_{ij} \,|\, j \in J) \} \qquad (6)$$
$$A^- = \{ (\min v_{ij} \,|\, j \in I), (\max v_{ij} \,|\, j \in J) \} \qquad (7)$$

In the formulas, I=benefit (maximization), J= cost (minimization); optimum positive and optimum negative solutions are obtained as follows.

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

Step 5: Calculate Discrimination Measures

Using equations (8) and (9) below, the distance between alternatives is measured. Accordingly,

• The positive optimum solution distance of each alternative:

$$S_i^+ = \sqrt{\sum_{j=1}^{k}\left(v_{ij} - v_j^+\right)^2}, \qquad i=1, 2,...,k \qquad (8)$$

• The negative optimum solution distance of each alternative:

$$S_i^- = \sqrt{\sum_{j=1}^{k}\left(v_{ij} - v_j^-\right)^2}, \qquad i=1, 2,...,k \qquad (9)$$

Step 6: Calculate Relative Proximity of Ideal Solution

The optimum solution relative proximities are determined with the equation below.

$$C_i^* = \frac{S_i^-}{S_i^- + S_i^+} \quad , \quad i= 1,2,...,k \qquad (10)$$
$$0 \le C_i^* \le 1$$

Step 7: Ordering Alternatives and Finding their Points

With the results of the calculation, alternatives are ranked from highest to lowest and then a maximum C_i^* value is selected. The alternative having the highest value is defined as the alternative coming closest to the optimum.

4.3. Application of the Method

Five decision points (brokerage firms quoted on the ISE) and ten criteria (financial ratios) were included in the study. In order to illustrate the above steps, they were shown in detail for only 2014, with the values for the other years provided only in a results table.

A (5x10) Decision Matrix was created for 2014 in Step 1 (Table 2)

BROKERAGE FIRMS	CRITERIONS									
	Current Ratio	Liquidity Ratio	Cash Ratio	Debt Ratio	Short-Term Debts/Total Debts	Asset Turnover Rate	Current Asset Turnover Rate	Return on Assets	Return on Current Assets	Return on Capital Ratio
GEDIK	1,24	1,23	0,51	0,79	0,99	6,78	6,08	2,38	0,39	12,16
GLBMD	1,55	1,54	0,17	0,61	0,99	60,23	64,76	-0,5	-0,01	-1,3
INFO	2,83	2,83	1,77	0,35	0,99	6	6,09	3,89	0,64	5,97
ISMEN	1,21	1,19	0,68	0,82	0,98	12,36	12,25	1,17	0,10	11,29
OSMEN	1,57	1,57	0,02	0,62	0,99	30,55	29,31	7,44	0,25	19,39

Table 2. Decision Matrix(2014)

Using the formula indicated in Step 2, the normalized values (r_{ij}) of the decision matrix created in Step 1 were calculated (Table 3)

Table 3. Normalized Values of the Decision Matrix(R) (2014)

BROKERAGE FIRMS	CRITERIONS									
	Current Ratio	Liquidity Ratio	Cash Ratio	Debt Ratio	Short-Term Debts/Total Debts	Asset Turnover Rate	Current Asset Turnover Rate	Return on Assets	Return on Current Assets	Return on Capital Ratio
GEDIK	0,3112	0,3097	0,2588	0,5380	0,4492	0,0979	0,0837	0,2699	0,4913	0,4634
GLBMD	0,3890	0,3877	0,0863	0,4146	0,4483	0,8697	0,8915	-0,0567	-0,0097	-0,0495
INFO	0,7102	0,7125	0,8980	0,2367	0,4476	0,0866	0,0838	0,4411	0,8017	0,2275
ISMEN	0,3037	0,2996	0,3450	0,5557	0,4421	0,1785	0,1686	0,1327	0,1199	0,4302
OSMEN	0,3940	0,3953	0,0101	0,4170	0,4488	0,4411	0,4035	0,8437	0,3186	0,7389

Taking into consideration the opinion of experts, the weights (W_i) expressed in Step 3 were identified for each criteria (Table 4)

Table 4. Weights of criterions(W_i)

Current Ratio	Liquidity Ratio	Cash Ratio	Debt Ratio	Short-Term Debts/Total Debts	Asset Turnover Rate	Current Asset Turnover Rate	Return on Assets	Return on Current Assets	Return on Capital Ratio
0,09	0,1	0,11	0,07	0,08	0,09	0,1	0,12	0,14	0,1

These weights were used to obtain a weighted normalized decision matrix (V) (Table 5).

Table 5. Weighted Normalized Decision Matrix(V) (2014)

BROKER AGE FIRMS	CRITERIONS									
	Current Ratio	Liquidity Ratio	Cash Ratio	Debt Ratio	Short-Term Debts/Total Debts	Asset Turnover Rate	Current Asset Turnover Rate	Return on Assets	Return on Current Assets	Return on Capital Ratio
GEDIK	0,02801	0,03097	0,02846	0,03766	0,03594	0,00881	0,00837	0,03239	0,06878	0,04634
GLBMD	0,03501	0,03877	0,00949	0,02902	0,03587	0,07828	0,08915	-0,00680	-0,00136	-0,00495
INFO	0,06392	0,07125	0,09878	0,01657	0,03581	0,00780	0,00838	0,05293	0,11223	0,02275
ISMEN	0,02733	0,02996	0,03795	0,03890	0,03537	0,01606	0,01686	0,01592	0,01678	0,04302
OSMEN	0,03546	0,03953	0,00112	0,02919	0,03590	0,03970	0,04035	0,10124	0,04460	0,07389

Following the explanations in Step 4, optimum positive and optimum negative solutions were obtained (Table 6.)

Table 6. Optimum Positive and Optimum Negative Solutions (2014)

A^+ :	0,0639	0,0713	0,0988	0,0166	0,0354	0,0783	0,0891	0,1012	0,1122	0,0739
A^- :	0,0273	0,0300	0,0011	0,0389	0,0359	0,0078	0,0084	-0,0068	-0,0014	-0,0050

The discriminationmeasurements (S_i^+, S_i^-) indicated in Step 5 were calculated on the basis of equivalence (8) and (9) as below and with the results obtained, optimum solution proximity (C_i^*) was determined in Step 6. As in Step 7, these results were ranked from highest to lowest (Table 7).

Table 7. Discriminationmeasurements Andoptimum Solution Proximity (2014)

BROKERAGE FIRMS	S_i^+	S_i^-	C_i^*
INFO	0,1282	0,1741	0,5759
OSMEN	0,1413	0,1493	0,5138
GEDIK	0,1644	0,0992	0,3762
GLBMD	0,2020	0,1086	0,3496
ISMEN	0,1835	0,0682	0,2708

The steps of the method were applied to other years. The scores and ranking of brokerage firms are provided in Table 8.

Table 8. Scores and Ranking of Brokerage Firms (2011-2014)

BROKERAGE FIRMS	2014		2013		2012		2011	
	SCORE	RANKING	SCORE	RANKING	SCORE	RANKING	SCORE	RANKING
INFO	0,5759	1	0,5619	1	0,5562	1	0,7525	1
OSMEN	0,5138	2	0,3550	5	0,3662	4	0,2229	5
GEDIK	0,3762	3	0,5136	2	0,4625	3	0,6799	3
GLBMD	0,3496	4	0,4335	3	0,5113	2	0,7266	2
ISMEN	0,2708	5	0,3690	4	0,3423	5	0,5999	4

From the results, it can be seen that the brokerage firm with the best performance in 2011-2014 is INFO. While the least well performing of the five brokerage firms are ISMEN and OSMEN, OSMEN increased its performance score in 2014 and rose to 2nd place. While GEDIK and GLBMD generally hovered in the middle, because GLBMD's performance fell in 2014, it dropped to 4th place.

5. Conclusion

Whether or not a company has successfully utilized important functions and instruments such as profit, cost, production and labor is understood by measuring and analyzing performance. Moreover, measuring performance is crucial for companies to enable them to increase the quality of their product and service and to hold their own against the competition. Therefore, it is essential to assess performance at regular intervals. However, in complex organizations that contain many interrelated variables and these relations vary depending on such factors as the sectors in which they are located, it is not sound to assess business performance only on the basis of the experience and specialization of the decision-maker.

Therefore, there is need for measures that will make it possible to choose the most appropriate alternative from several alternatives that have different objectives and may even be in conflict with one another. In this study, the financial performance of five brokerage companies quoted on the ISE were evaluated using TOPSIS. Ten financial ratios chosen as financial performance indicators were calculated annually for the period 2011-2014 and the performance of the brokerage companies was ranked for each year.

Looking at the ranking of the brokerage firms obtained by using the TOPSIS method, it can be seen that INFO had the best performance for the period, ranking first for each year included in the study. All of the data for the company in the data set of the analysis were generally higher than all other companies in all the years. These high ratio values led to it outranking the other companies. While OSMEN ranked 2nd in 2014, it generally ranked last in previous years. Its performance increase in the final year was due to major proportional increases in the variables Return on Assets and Return on Equity compared to 2013. This increase in performance score of the company in profitability led to it climbing in the lineup. GEDIK generally ranked in the middle during the period in question. GLBMD ranked 2nd in 2011 and 2012, while in 2013 it dropped to 3rd and in 2014 to 4th place. Changes in criterion values led to these declines, in particular, a fall in profitability ratios, which produced losses compared to earlier years. This is why there was a decrease in performance in the final two years, leading to it to come in at the bottom of the ranking. Finally, data for ISMEN show that this brokerage company generally came in last place during this period. This study used financial ratios to examine the performance of brokerage firms quoted on the ISE and determined that the fluctuation of profitability ratios, in particular, had an impact on their financial performance. This means that raising profitability ratios is relatively more important than raising other financial ratios, so if companies want to improve performance, it is essential that they develop strategies to improve profitability ratios. However, other financial ratios should not be neglected since they also have an impact on financial performance. Therefore, depending on company aims, improvement in financial performance may be sought by increasing its impact on other financial ratios. This study assesses the financial performance of brokerage firms using TOPSIS and serves as a guide to decision-makers in making preferences. Nevertheless, companies may also develop performance by implementing strategies to improve financial and/or non-financial performance through non-financial ratios or variables, regardless of how indirectly. In this case, it would be beneficial to study performance using only non-financial criteria and/or a composite of financial and non-financial criteria.

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