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A Financial Performance Measurement Model by Using TOPSIS Approach: Turkish Textile Manufacturing Companies

Dr. Cengiz Yilmaz
Assistant Professor, Faculty of Business Administration, Afyon Kocatepe University, Turkey

Abstract:
Before the accounting scandals in the U.S. and the global crises, accounting firms and credit agencies mostly fail to warn public, investors and governments etc. For instance: while Enron's management was filling bankruptcy papers some of the accounting firms and rating agencies were still advising their investors to buy Enron shares. Similarly, one week before the collapse of Lehman Brothers several bodies including head of a governmental institution gave insurance about Lehman Brothers. But they were wrong; they fail to assess the performance of the companies or misinformed the public. These and several similar incidents indicate that either these professional accounting bodies fail to assess the financial performance of these companies or they were acting unethically (cooking books, disinformation etc.). Hence one might suggest that source and solution of global crises relies on two main topics: global erosion in business ethics and deficiencies in performance evaluation, rather than plain stimulus incentives: trying to ease liquidity.
Our study is mainly focuses on the second aspect: assessment of financial performance of firms by using TOPSIS approach: is a multiple criterion method that identifies better performed firms from the set of businesses whose financial results are close to ideal numbers and away from the risks.
In this study (TOPSIS) model is applied to textile firms' financial results that are quoted to İMKB (Istanbul stock exchange). Financial performance criterions are classified on five factors and their levels of significance are determined by factor analysis. Implementing of the model is provided us a set of performance scores to obtain ranking score that might be useful for all financial information users such as: academicians, investors and government etc.

Keywords: Performance measurement, Performance measurement model, Textile companies, TOPSIS

1. Introduction

Textile sector is playing a crucial role in Turkish economy in terms of employment, value adds exportation etc. But its importance and the contributions to the economy are gradually diminishing. At the outset, abolishment of all quotas applied by WTO (World Trade Organization) members on trade in textiles and clothing in 2005 is seriously affected the Turkish textile industry. Countries such as China benefited from the abolishment because of their comparative advantage on being able to offer lower wages to their textile workers than their competitors (Taplin and Winter ton, 2004). Besides, internal factors such as government's high valued currency policy critically affected the industry. Aaby and Slater (1989) and Leonidou, (1998) suggest that competitiveness of companies is related to home country's conditions, strategically capabilities and institutional performance.

In this study, we tried to evaluate Turkish textile firms' performances by using TOPSIS model with the help of financial ratios, similar to Wang's study (2007) who evaluated the financial performance of domestic airlines.

Kaplan and Norton (1992) indicated that setting up critical dimensions into performance models are necessarily. In the literature, there are several lists indicating the critical dimensions. But Flynn (1999) points out; there is no common list of critical dimensions.

Users of financial information usually requires timely information because in the financial world ability to act (decide) early is a big advantage. In some cases, taking decision ten minutes late is too late. Financial information users require correct information; look for lower leading times and higher frequency of delivery of information. Even though, setting up a TOPSIS model takes time, application of model gives quite fast results with computers. Moreover, availability of ranking of the results fastens the procedures and gives a chance to make comparisons to the information users while making decisions.

2. Textile Sector and Exportation

In the past, Turkish textile sector could be characterized as exceptionally competitive sector, but nowadays sector is facing with intense completion from EU countries and newly industrialized countries, especially from china, where the determining factors of the competition: wages and social charges comparatively much lower than Turkish textile sector. With the World Trade Organization's agreement on textile and clothing (WTA, 1994), removal of quotas policy has started. Textile sector was one of the most important sector in the Turkish economy, in terms of GDP, employment and exports. Cotton used to be produced in Turkey with competitive prices but today, Turkish cotton prices are not competitive and the manufacturers have to export it. Even though labor costs are still

(relatively) low, its social charges high and reducing the producers' competitiveness in the global markets. For these reasons, the share of the textile sector in the Turkish exportation gradually decreasing.

Year	Total exportation Thousand $	Change (%)	Textile sector's exportation	Change (%)	Share of textile sector
1998	28 054 932	-	2 631 227	-	9,4
1999	26 992 209	-3,8	2 565 465	-2,5	9,5
2000	27 201 538	0,8	2 590 818	1,0	9,5
2001	31 063 595	14, 2	2 867 083	10,7	9,2
2002	36 205 090	16,6	2 979 471	3,9	8,2
2003	47 880 227	32,2	3 661 104	22,9	7,6
2004	64 010 231	33,7	4 565 602	24,7	7,1
2005	73 444 821	14, 7	4 860 887	6,5	6,6
2006	85 761 134	16,8	5. 576 097	14,7	6,5

Table 1: Turkish export data and the Status of Textile Industry (1998-2006)
Source: ITKIB (Istanbul Union of Textile Exporters)

According to Istanbul Chamber of Exporters, Turkish exportation is reached to 85, 7 billion **$** in 2006 with a 16, 8% increase in comparison to year 2004. In the first quarter increase in exportation is reached to 26, 21%, in the second quarter 20, 34% and in the third quarter 17, 42%.

As seen in table 1, the amount of total exportation is increased from 28 billion $ in 1998 to 85, 7 billion $ in 2006. Total exportation is tripled during this time period. On the other hand, share of textile sector on total exportation is decreased gradually from 9, 4% to 6, 5% during this time period, even thought there was an increase in amount of textiles sectors exportation.

Another reason for the gradually decrease in textile sectors share on exportation, would be overvalued currency. Recently, Turkish government prefers to drive high valued currency policy which reduces the competitiveness of textile sector.

Our study mainly focuses on individual firms' performances in the textile sector. Assessing individual firms' performances could provide information shareholders, managers and policy makers. Therefore, they could be able to take their position correctly.

2.1. Deficiencies and Limitations of the Study
In this study TOPSIS model is used for assessing the past financial information with intention to use them for future decisions. Here the assumption is that previous economical trend will continue, but no one can make sure that this trend will continue in the globe, in the nation, in the sector and within the enterprises. That is why the results of the model are not the unquestionable results (for the futuristic expectations) and only might give indications to the users.

Additionally, study is limited with enterprises in Turkish textile sector. The results do not represent the characteristics of other sectors and nations firms' characteristics etc. For every sector or information user's need, there could be a need for establishment of different model. This is a disadvantage because it complicates the process, as well as an advantage because model can provide flexibility to the users.

Model provides a ranking which eases the users, but on the other hand model does not include the other factors which affect the enterprises' performances, such as luck, resource advantages etc. For example, having a rare resource like petroleum could be a reason for the company's high performance or finding an experienced, creative engineer when the company was looking for. It's difficult to measure such factors and the method does not include such factor in it.

3. Topsis Method
TOPSIS (Technique for Order Preference by Similarity to Ideal Solution) has been used by analysts and decision makers widely. As its name indicates, it is initially proposed for better solution for orders by Hwang and Yoon (1981). Later on, other propositions related to performance measurement developed by several academicians. For example, Yurdakul and Iç (2005) developed performance measurement model for manufacturing companies by using TOPSIS model. Wang and others developed a model for suppliers. Sevatjanov and Dymova (2009) proposed a stock screening model. It is a multiple criteria decision making method instead of one criterion and this model could be generated in according to need of sectors or imaginary of the academicians.

TOPSIS model provides a set of alternative solutions which are as close as possible to the ideal solution and which are as distant as from the risks, in according to given criterions. Data could directly be applied to the model without conversion.

Alternatives	Criterions			
	y_1	y_2	..	y_k
A_1	y_{11}	y_{12}	…..	y_{1k}
A_2	y_{21}	y_{22}	…..	y_{2k}
A_3	y_{31}	y_{33}	…..	y_{3k}
…..	…..	…..	….	…..
A_n	y_{n1}	y_{n2}	….	y_{nk}

Table 2: Decision Matrix

In the first step, a decision matrix should be composed as seen in table-1. In this matrix, alternatives would be listed from first alternative (A_1) to the last alternative (A_n) and the feature criterions in related to alternatives could be listed from the first one to the last one to the other side of the matrix. (Yurdakul & Iç, 2003).

Steps that should be followed by are listed below: (Opricovic and Tzeng, 2004:448; Yurdakul and İç, 2003: 12-13);

> Step 1: After taking square of the values from the criterion matrix, square root of the sums taken. Result values are ranked between 0 and 1.

$$Z_{ij} = \frac{y_{ij}}{\sqrt{\sum_{i=1}^{n} y_{ij}^{2}}} \quad i=1,\ldots,n; \ j=1,\ldots,k$$

(1)

> Step 2: if the results are in different directions (negative and positive), all results transformed by ($1-y_{ij}$) formula to the same direction. Elements of the matrix are weighted in according to their vector weights.

$$X_{ij}=w_j \cdot z_{ij} \qquad i=1,\ldots,n; \ j=1,\ldots,k \ (w_j \ ; \text{weights of criters (j.) })$$

(2)

> Step 3: Identification of ideal points: In this step, maximum and minimum values are identified in every column in weighted matrix.

$$a^* = \{x_1^*, x_2^*, \ldots, x_k^*\} \ (\text{ maximum values })$$

(3)

$$a^- = \{x_1^-, x_2^-, \ldots, x_k^-\} \ (\text{ minimum values })$$

(4)

> Step 4: The distances to positive ideal solution measured with the following formula:

$$S_i^* = \sqrt{\sum_{j=1}^{k}(x_{ij} - x_j^*)^2} \qquad i=1,\ldots,n$$

(5)

> Step 5: The distances to negative ideal solution measured with the following formula:

$$S_i^- = \sqrt{\sum_{j=1}^{k}(x_{ij} - x_j^-)^2} \qquad i=1,\ldots,n$$

(6)

> Step 6: The relative ranking of each alternative and their scores measured with the following formula:

$$C_i^* = S_i^- / S_i^* \ \ 0 \leq C_i^* \leq 1, \ i=1,\ldots,n$$

(7)

After completing all steps, analysts or decision makers can get satisfactory results. These results give certain scores which demonstrate the differences between the alternatives and the ranking of the solutions (Deng and others, 2000, 967).

4. Establishment of Financial Performance Model
This study is trying to establish a TOPSIS model, appropriate to textile sector. Here it's sought to create a performance model which enables creditors, investors and other parties to make correct and consistent performance analyses.

Independent variables classified under two headings main factors and their sub-variables (ratios) which are describe the main factors. During the model development all the variables should be classified and weighted, statistically and financially, in terms of their level of importance for simplicity. The other thing to be taken into account is that negative results whose results are not desired to increase such as costs etc.

4.1. Preparation of Data
Pre-selected financial statements of textile companies are the basis for the data. For this reason 10 companies selected which are quoted to İMKB (Istanbul Stock Exchange). The financial statement papers related to these firms are acquired and their financial ratios calculated for the time period (11 years) in between 1997-2007. In total, there are 23 financial ratios.

4.2. Normalization of the Ratios
TOPSIS model requires a ranking of the element in between 0 and 1. But, ratios naturally could exceed this level. Ratios could be 2-3 even more that is why ratios are adjusted with the formula; seen in step 1 and functional values of the ratios calculated in between 0 and 1. In addition to this, natures of certain ratios are different than the others. For example higher profitability ratios are very much welcomed by the investors, on the other hand higher debt ratios are not desired by the investors; annoys them. So we cannot put them into same category without adjusting these adverse characterized ratios. Negative characterized ratios are transformed their normalized values (step 2).

4.3. Determination of Performance Factors and Weights
During the determination performance factors and their weights factor analyses applied to the data with the help of SPSS program. Data set is appropriate to do factor analysis and the number of samples is enough to make factor analysis. (KMO= 0, 76 and Barlett's Test< 0, 00). In the first stage of factor analysis variables are grouped into 7 factors and explanation rate of variance found to be 82.041%. Since their lower values ($\leq$0, 50) from the anti-image test; 2 of the variables (ratios) excluded from the analyses, out of 23 variables (ratios). The study is prolonged with 21 variables. With further factor analyses, numbers of factors are reduced to 5. Nevertheless, in the last phase, explanation rate of variance have gone down to 78.313%.

5. Contribution Rates of Variables
Financial ratios belong to companies are assessed by factor analyses and divided into five factors. The explanation rate of variances belong to these groups are given below in table 3.

FACTORS	CONTRIBUTION RATE OF VARIABLES	EXPLANATION RATE OF VARIANCE	WEIGHTS OF FACTORS
Equity Capital – $F_{(1)}$		19,71	25,17
Debt / Equity Capital	0,955		
Net Profit / Equity Capital	0,920		
Profit Before Tax / Equity Capital	0,913		
Equity Turnover	-0,890		
Tangible Fixed Assets / Equity Cap	-0,821		
Total Assets – $F_{(2)}$		18,47	23,58
Total Debts / Total Assets	0,909		
Equity Capital / Total Assets	0,850		
Short-Term Debts/ Total Assets	0,745		
Net Profit / Total Assets	0,737		
Net Working Capital / Total Assets	0,710		
Long-Term Debts / Total Assets	0,606		
Size And Power – $F_{(3)}$		14,19	18,12
Turnover Rate (Tang Fixed Assets)	0,898		
Net sales / total assets	0,859		
Fixed Assets / Total Assets	-0,737		
Profit Before Tax / Total Assets	0,621		
Liquidity Structure – $F_{(4)}$		14,48	18,49
Acid- Test Ratio	0,920		
Liquid-Test Ratio	0,896		
Cash ratio	0,844		
Structure of Receivables – $F_{(5)}$		11,47	14,64
Average Collection Period	0,880		
Debtor Collection Period	0,859		
Receivables / Current Assets	0,794		
Total		78,31	100,00

Table 3: Factor Analysis Method and Determination of Performance Factors

Values on the table 4 are produced by Varimax rotation method.
Accordingly, the performance functions cropped up as follows:

$$Y = f(x_i) = w_1 * F_{(1)} + w_2 * F_{(2)} + w_3 * F_{(3)} + w_4 * F_{(4)} + w_5 * F_{(5)}$$

Here:

- W_1= weight of $F_{(1)}$ (Equity Cap)
- W_2= weight of $F_{(2)}$ (Total Assets)
- W_3= weight of $F_{(3)}$ (Liquidity Structure)
- W_4 = weight of $F_{(4)}$ (Size and Power)
- W_5 = weight of $F_{(5)}$ (Structure of Receivables)

$Y = F(X_i) = 0, 2517*$(Equity Cap) + 0, 2358*(Total Assets) + 0, 1849*(Liquidity Structure) + 0, 1812* (Size and Power) + 0, 1464* (Structure of Receivables)

5.1. Calculation of Business Performance Factor Scores

In this stage, the performance scores for each factor will be calculated by using TOPSIS model. While application, all the weights of (ratios) sub-variables (of factor variables) assumed to be 1.

Accordingly;

- All the sub-factors' maximum and minimum levels are determined.
- Minimum value deducted from each factor. Therefore, the distances between negative solution and related sub-factors are measured.
- Each factor deducted from the maximum value. Hence, the distances between positive solution and the related sub-factors are measured.
- Each of the distances multiplied by its own weights and the weighted values of factors revealed.
- Sum of the squares of the weighted averages calculated and then its square root is taken therefore the distances between score and the negative and positive factors measured.
- Finally, after calculating convergence values, every factor's performance scores are calculated.

5.2. Calculation of Total Performance Scores

Here the model which is designed earlier is used for calculation of total performance scores for every company.

$$Y = f(x_i) = w_1 * F_{(1)} + w_2 * F_{(2)} + w_3 * F_{(3)} + w_4 * F_{(4)} + w_5 * F_{(5)}$$

$Y = f(x_i) = 0, 2517*$(Equity Cap) + 0, 2358*(Total Assets) + 0, 1849*(Liquidity Structure) + 0, 1812* (Size and Power) + 0, 1464*(Structure of Receivables)

5.3. Ranking of Companies in According to Total Performance Scores

Ranking of companies in according to total performance scores gives chance to analysts and information users to make comparisons between the companies.

Table-4 exhibits the performance distribution and ranking of Turkish textile companies. According to these results;

- Average performance scores of companies are 72.29%.
- There are 10 companies who are able to keep theirs tracks over the averages in 1997 and 1998.
- In terms of total scores, in 1997 and 1998 companies' general performance were relatively higher. Companies' general performance was comparatively low in the year 2000 and 2005.
- The company named "*Sönmez*" gets the highest score with 85.07%. Whereas the company named "*Berdan*" able to get the least low score with 66.30%.

FINANCIAL PERFORMANCE MEASUREMENT IN TEXTILE SECTOR

FIRMS	EQUITY CAPITAL $W_1=0,2517$	TOTAL ASSETS $W_2=0,2358$	SIZE AND POWER $W_3=0,1812$	LIQUIDITY STRUCTURE $W_4=0,1849$	STRUCTURE OF RECEIVABLES $W_5=0,1464$	$\sum$ CC	POINT%	RANKING	MEAN
Akal_1997	0,581	0,761	0,329	0,076	0,448	0,465	74,99%	39	
Akal_1998	0,574	0,762	0,314	0,089	0,425	0,460	74,18%	44	
Akal_1999	0,569	0,733	0,297	0,092	0,426	0,449	72,45%	58	
Akal_2000	0,570	0,734	0,280	0,085	0,424	0,445	71,77%	62	
Akal_2001	0,579	0,772	0,399	0,092	0,436	0,481	77,57%	28	
Akal_2002	0,573	0,750	0,303	0,078	0,402	0,449	72,47%	57	74,36%
Akal_2003	0,567	0,737	0,203	0,082	0,406	0,428	68,99%	79	
Akal_2004	0,591	0,716	0,218	0,274	0,474	0,477	76,94%	30	
Akal_2005	0,590	0,685	0,205	0,162	0,513	0,452	72,94%	54	
Akal_2006	0,609	0,688	0,226	0,179	0,493	0,462	74,48%	41	
Akal_2007	0,578	0,734	0,555	0,114	0,434	0,504	81,23%	16	
Aksu_1997	0,577	0,816	0,388	0,118	0,448	0,495	79,89%	20	
Aksu_1998	0,571	0,809	0,302	0,179	0,400	0,481	77,57%	27	
Aksu_1999	0,567	0,777	0,279	0,165	0,405	0,466	75,20%	37	
Aksu_2000	0,569	0,765	0,278	0,121	0,439	0,461	74,33%	43	
Aksu_2001	0,570	0,767	0,425	0,107	0,438	0,485	78,28%	26	
Aksu_2002	0,570	0,743	0,324	0,105	0,443	0,462	74,46%	42	73,05%
Aksu_2003	0,566	0,728	0,271	0,086	0,460	0,446	72,00%	61	
Aksu_2004	0,566	0,743	0,248	0,146	0,473	0,459	74,03%	48	
Aksu_2005	0,556	0,699	0,163	0,083	0,407	0,409	65,98%	93	
Aksu_2006	0,554	0,654	0,285	0,053	0,394	0,413	66,58%	91	
Aksu_2007	0,559	0,632	0,257	0,035	0,417	0,404	65,17%	100	
Altınyıldız_1997	0,580	0,719	0,456	0,057	0,430	0,472	76,06%	31	
Altınyıldız_1998	0,581	0,719	0,436	0,063	0,413	0,467	75,27%	36	
Altınyıldız_1999	0,572	0,663	0,389	0,054	0,389	0,438	70,60%	69	
Altınyıldız_2000	0,568	0,658	0,299	0,055	0,340	0,412	66,49%	92	
Altınyıldız_2001	0,488	0,548	0,366	0,049	0,401	0,386	62,24%	109	
Altınyıldız_2002	0,567	0,655	0,365	0,046	0,414	0,433	69,77%	75	69,75%
Altınyıldız_2003	0,567	0,660	0,322	0,050	0,374	0,420	67,82%	85	
Altınyıldız_2004	0,577	0,688	0,302	0,047	0,368	0,425	68,53%	82	
Altınyıldız_2005	0,570	0,703	0,316	0,050	0,411	0,436	70,30%	71	
Altınyıldız_2006	0,560	0,680	0,339	0,060	0,416	0,435	70,11%	73	
Altınyıldız_2007	0,558	0,674	0,345	0,062	0,417	0,434	70,06%	74	
Arsan_1997	0,581	0,761	0,339	0,059	0,476	0,468	75,44%	35	
Arsan_1998	0,570	0,777	0,264	0,096	0,428	0,455	73,38%	50	
Arsan_1999	0,568	0,741	0,281	0,075	0,400	0,441	71,14%	63	
Arsan_2000	0,568	0,723	0,243	0,066	0,406	0,429	69,21%	77	
Arsan_2001	0,573	0,746	0,377	0,077	0,431	0,466	75,09%	38	
Arsan_2002	0,572	0,778	0,274	0,110	0,423	0,459	74,06%	46	70,31%
Arsan_2003	0,564	0,738	0,191	0,212	0,451	0,456	73,51%	49	
Arsan_2004	0,563	0,706	0,207	0,081	0,098	0,375	60,47%	113	
Arsan_2005	0,561	0,685	0,188	0,059	0,407	0,407	65,70%	96	
Arsan_2006	0,566	0,702	0,237	0,058	0,434	0,425	68,55%	81	
Arsan_2007	0,564	0,685	0,195	0,056	0,447	0,415	66,87%	90	
Berdan_1997	0,575	0,827	0,286	0,228	0,544	0,513	82,80%	10	
Berdan_1998	0,575	0,827	0,286	0,228	0,544	0,513	82,80%	11	
Berdan_1999	0,563	0,622	0,274	0,026	0,442	0,408	65,75%	95	
Berdan_2000	0,547	0,601	0,172	0,046	0,506	0,393	63,43%	105	
Berdan_2001	0,643	0,264	0,317	0,031	0,515	0,363	58,50%	115	
Berdan_2002	0,585	0,387	0,296	0,026	0,496	0,370	59,66%	114	66,30%
Berdan_2003	0,511	0,533	0,291	0,027	0,505	0,386	62,23%	110	
Berdan_2004	0,503	0,616	0,288	0,038	0,510	0,406	65,46%	98	
Berdan_2005	0,534	0,544	0,267	0,036	0,511	0,392	63,30%	108	
Berdan_2006	0,595	0,366	0,338	0,029	0,557	0,384	61,96%	111	
Berdan_2007	0,565	0,441	0,320	0,025	0,574	0,393	63,37%	106	
Bisaş_1997	0,604	0,646	0,233	0,173	0,634	0,471	76,01%	32	
Bisaş_1998	0,575	0,827	0,286	0,228	0,544	0,513	82,80%	12	
Bisaş_1999	0,650	0,162	0,198	0,002	0,983	0,382	61,61%	112	
Bisaş_2000	0,602	0,357	0,216	0,005	0,488	0,347	55,98%	118	
Bisaş_2001	0,604	0,735	0,462	0,061	0,507	0,494	79,75%	22	
Bisaş_2002	0,587	0,754	0,438	0,052	0,669	0,512	82,66%	14	68,00%
Bisaş_2003	0,576	0,708	0,337	0,050	0,526	0,459	74,08%	45	
Bisaş_2004	0,576	0,701	0,325	0,045	0,500	0,451	72,70%	56	
Bisaş_2005	0,519	0,493	0,164	0,027	0,484	0,352	56,80%	116	
Bisaş_206	0,395	0,461	0,194	0,027	0,536	0,327	52,70%	121	
Bisaş_2007	0,391	0,454	0,206	0,028	0,549	0,328	52,93%	120	
Gediz_1997	0,571	0,811	0,243	0,226	0,493	0,493	79,48%	23	
Gediz_1998	0,573	0,836	0,224	0,214	0,527	0,499	80,43%	19	
Gediz_1999	0,567	0,820	0,129	0,461	0,554	0,526	84,80%	8	
Gediz_2000	0,560	0,645	0,169	0,046	0,506	0,406	65,51%	97	
Gediz_2001	0,567	0,716	0,225	0,063	0,564	0,447	72,07%	60	
Gediz_2002	0,562	0,694	0,195	0,069	0,453	0,419	67,66%	87	73,33%
Gediz_2003	0,528	0,493	0,192	0,087	0,648	0,395	63,71%	104	
Gediz_2004	0,553	0,612	0,215	0,467	0,553	0,490	78,98%	24	
Gediz_2005	0,556	0,648	0,199	0,126	0,465	0,420	67,76%	86	
Gediz_2006	0,566	0,701	0,249	0,119	0,534	0,453	73,09%	53	
Gediz_2007	0,567	0,698	0,241	0,174	0,482	0,482	73,15%	52	
Metemtekstil_1997	0,605	0,689	0,410	0,075	0,456	0,470	75,76%	33	
Metemtekstil_1998	0,590	0,716	0,378	0,092	0,454	0,469	75,72%	34	
Metemtekstil_1999	0,564	0,620	0,244	0,068	0,436	0,409	65,93%	94	
Metemtekstil_2000	0,577	0,650	0,304	0,048	0,414	0,423	68,22%	84	
Metemtekstil_2001	0,514	0,495	0,430	0,038	0,441	0,396	63,82%	103	
Metemtekstil_2002	0,572	0,681	0,270	0,043	0,483	0,432	69,69%	76	68,82%
Metemtekstil_2003	0,564	0,696	0,164	0,080	0,449	0,416	67,15%	89	
Metemtekstil_2004	0,562	0,636	0,215	0,040	0,461	0,405	65,37%	99	
Metemtekstil_2005	0,562	0,651	0,237	0,056	0,480	0,419	67,51%	88	
Metemtekstil_2006	0,569	0,652	0,290	0,057	0,453	0,426	68,74%	80	
Metemtekstil_2007	0,570	0,650	0,307	0,058	0,446	0,428	69,08%	78	
Söktaş_1997	0,575	0,687	0,344	0,073	0,445	0,448	72,23%	59	
Söktaş_1998	0,566	0,647	0,270	0,085	0,434	0,423	68,27%	83	
Söktaş_1999	0,546	0,588	0,232	0,064	0,430	0,393	63,36%	107	
Söktaş_2000	0,556	0,607	0,206	0,053	0,455	0,397	64,01%	102	
Söktaş_2001	0,570	0,626	0,371	0,046	0,486	0,438	70,66%	68	
Söktaş_2002	0,574	0,739	0,281	0,105	0,441	0,454	73,18%	51	72,29%
Söktaş_2003	0,575	0,827	0,286	0,228	0,544	0,513	82,80%	13	
Söktaş_2004	0,565	0,674	0,270	0,093	0,465	0,435	70,21%	72	
Söktaş_2005	0,565	0,678	0,270	0,094	0,470	0,437	70,53%	70	
Söktaş_2006	0,639	0,702	0,325	0,150	0,520	0,489	78,85%	25	
Söktaş_2007	0,682	0,709	0,349	0,156	0,489	0,503	81,06%	17	
Sönmez_1997	0,593	0,793	0,459	0,073	0,456	0,500	80,57%	18	
Sönmez_1998	0,566	0,686	0,295	0,072	0,546	0,451	72,75%	55	
Sönmez_1999	0,545	0,578	0,243	0,036	0,517	0,400	64,49%	101	
Sönmez_2000	0,572	0,771	0,354	0,100	0,589	0,494	79,75%	21	
Sönmez_2001	0,573	0,834	0,490	0,344	0,657	0,590	95,08%	4	
Sönmez_2002	0,579	0,829	0,370	0,128	0,615	0,522	84,22%	9	85,07%
Sönmez_2003	0,563	0,738	0,199	0,227	0,587	0,480	77,36%	29	
Sönmez_2004	0,562	0,778	0,591	0,498	0,523	0,601	96,91%	2	
Sönmez_2005	0,563	0,810	0,188	1,000	0,466	0,620	100,00%	1	
Sönmez_2006	0,561	0,787	0,222	0,714	0,422	0,561	90,44%	7	
Sönmez_2007	0,566	0,847	0,218	0,771	0,407	0,584	94,20%	5	
Uki_1997	0,593	0,918	0,677	0,215	0,474	0,598	96,38%	3	
Uki_1998	0,585	0,889	0,518	0,198	0,504	0,561	90,52%	6	
Uki_1999	0,582	0,832	0,385	0,149	0,476	0,510	82,18%	15	
Uki_2000	0,562	0,698	0,240	0,104	0,488	0,440	71,01%	66	
Uki_2001	0,563	0,683	0,417	0,090	0,439	0,459	74,06%	47	
Uki_2002	0,570	0,695	0,317	0,068	0,432	0,441	71,06%	65	73,88%
Uki_2003	0,571	0,711	0,322	0,059	0,411	0,441	71,09%	64	
Uki_2004	0,572	0,696	0,296	0,055	0,461	0,439	70,86%	67	
Uki_2005	0,571	0,697	0,404	0,050	0,496	0,463	74,72%	40	
Uki_2006	0,381	0,537	0,307	0,102	0,344	0,347	56,00%	117	
Uki_2007	0,627	0,468	0,169	0,064	0,340	0,340	54,82%	119	

Table 4: Financial Performance Measurement and Rankings of the Firms

6. Summary & Conclusion

In the literature, there are many models and theorems which try to measure the performances of enterprises, because there is no a perfect model that can satisfy all the information users' needs. In this study, TOPSIS model is developed and designed for appraising the past performances of enterprises'. Since, the nature of TOPSIS enables academicians to develop their own models according to their needs; it provides a kind of flexibility for the users of information. Our model can also be re-designed in according to the users' needs.

The model provides information and indications about past financial performances of enterprises for analyzing the future perspectives. In this study, a model is designed and applied for Turkish textile companies that are quoted to ISO index. During the application of model, different methods are used: firstly ratio analyses are applied to the data. Secondly, ratios divided into different more meaningful groups with factor analyses and weights of these groups are determined.

In the first stage, the data (rates) is adjusted to make them more useful for analysis. In the second stage, factor analysis of these ratios and weight divided into groups and these groups are weighted. In the next stage was, on the basis of factors and their weights, setting up the model.

In the implementation phase of the performance scores (index of success of a performance in another direction), performance scores are calculated by using multi-criteria TOPSIS method. Finally, factors and weights of the factors are composed and the performance scores determined and listed as performance index.

The model is more complex than the traditional assessment methods, but it gives chance to make ranking which might ease the decision makers' and other information users' burden by providing certain indications about the companies. It's hoped that this study might lead other searchers for further developments.

Results of the model could be used by several bodies, such as: creditors, small and institutional investors, government etc., to measure the firms' success. Financial institutions can use the scores to measure the creditworthiness of the firms and/or for assessing their potential investments. Government can use the model to evaluate the sector. Enterprises can use it to draw their strategies because the model gives information in both strengths and weaknesses.

7. References

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