ANALYZING THE FINANCIAL PERFORMANCE OF THE TEXTILE SECTOR WITH DUPONT ANALYSIS METHOD

DUPONT ANALİZİ YÖNTEMİYLE TEKSTİL SEKTÖRÜNÜN FİNANSAL PERFORMANSININ İNCELENMESİ

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ABSTRACT
Evaluating the economic success of businesses is important in terms of establishing business strategies and making investment decisions for the future. Business profitability is an important indicator of success. Many methods are used to determine the factors affecting profitability. One of these methods is DuPont analysis.
In this study, it is aimed to evaluate the financial performance of enterprises registered in the manufacturing, textile, apparel and leather sectors operating in Borsa Istanbul by DuPont Analysis method. For this purpose, the financial data of 27 textile companies traded in Borsa Istanbul for the period 2021-2023 were used. In this study, which focuses on the return on equity and examines the return on equity by separating it into its components, it is seen that BOSSA is the most successful company except for the year 2022. In the study where all components of return on equity are calculated separately, it is seen that different companies stand out both in terms of years and components.
Keywords: DuPont Analysis, Financial Performance, Profitability, Equity

ÖZET
İşletmelerin ekonomik başarılarının değerlendirilmesi, işletme stratejilerinin oluşturulması ve gelecek için yatırım kararlarının alınması bakımından önemlidir. İşletme karlılığı önemli bir başarı göstergesidir. Karlılığı etkileyen faktörlerin belirlenmesinde birçok yöntem kullanılmaktadır. Bu yöntemlerden biri de DuPont analizidir.
Bu çalışmada, Borsa İstanbul'da faaliyet gösteren imalat, tekstil, giyim eşyası ve deri sektörüne kayıtlı işletmelerin finansal performansının DuPont Analizi yöntemi ile değerlendirilmesi amaçlanmıştır. Bunun için Borsa İstanbul'da işlem görmekte olan 27 Tekstil firmasının 2021-2023 dönemine ait finansal verileri kullanılmıştır. Öz Sermaye karlılığına yoğunlaşılan ve öz sermeye karlılığının bileşenlerine ayrılarak incelendiği bu çalışmada, 2022 yılı hariç en başarılı şirketin BOSSA olduğu görülmüştür.

Öz sermaye karlılığını oluşturan tüm bileşenlerin ayrı ayrı hesaplandığı çalışmada, hem yılar itibariyle hem de bileşenler itibariyle farklı firmaların öne çıktığı görülmüştür.

Anahtar Kelimeler: DuPont Analiz, Finansal Performans, Kârlılık, Öz Sermaye

INTRODUCTION

Businesses want to continue their existence by using their resources effectively and efficiently. While companies fulfill these wishes, they need to pay attention to the strategic management process in the rapidly changing business world. Financial analysis is also a part of this process. Profitability is one of the main criteria to be considered in order to evaluate the financial performance of businesses over time. The DuPont analysis method provides a multifaceted perspective on profitability by taking into account profit margins, asset cycles and equity multipliers.

DuPont analysis is a widely used method in the literature and has been applied to evaluate the financial performance of businesses in various sectors. In Turkey, DuPont analysis is also frequently used in the literature. This analysis provides a comprehensive perspective on financial performance by evaluating the profitability structure, asset turnover and financial leverage ratios of enterprises together. DuPont analysis was first developed by F. Donaldson Brown in the early 1900s to improve the financial position of General Motors ((Almazari & Saud, 2012).

In this study, it is aimed to examine the profit structures and financial levels of enterprises registered in the manufacturing, textile, apparel and leather sectors operating in Borsa Istanbul with the Dupont analysis technique. In the study, which tries to determine the net profit, return on assets and equity of the firms and the factors affecting them, the data of 27 firms operating in BIST for the years 2021-2023 were used. The study is designed in two sections. In the first part, the theoretical framework on DuPont analysis is established, followed by a review of national and international literature on the subject. In the second part, the analysis and interpretations of the data set are given.

DUPONT ANALYSIS

DuPont analysis is an analysis technique that decomposes a company's return on equity (ROE) and return on assets (ROA) and examines the factors affecting these profitability ratios. This analysis method aims to determine the return on equity by analyzing the profitability (efficiency) structure, asset management and financial leverage of businesses together. DuPont analysis consists of a systematic framework for investigating and finding the key factors that contribute to the performance and condition of businesses ((Fridson & Alvarez, 2002). One advantage of the Dupont System is that it comprehensively assesses the efficiency of capital, production and sales to determine how effectively a company uses its resources. Another advantage is that it can identify the factors that affect a company's ROA (Tijjang et al., 2020).

The basic ratios used in DuPont analysis are as follows (Ceylan & Korkmaz, 2017):

- Return on Equity (ROE): It shows how much profit the company earns on equity.
  Formula:Net Profit / Equity
- Return on Assets (ROA): Shows how efficiently the business uses its assets.
  Formula: Net Profit / Total Assets or Asset Turnover x Net Profit Margin
- Asset Turnover: Measures the efficiency with which a business converts its assets into sales.
  Formula: Net Sales / Total Assets
- Net Profit Margin: Shows how much profit the business makes from sales.
  Formula: Net Profit / Net Sales
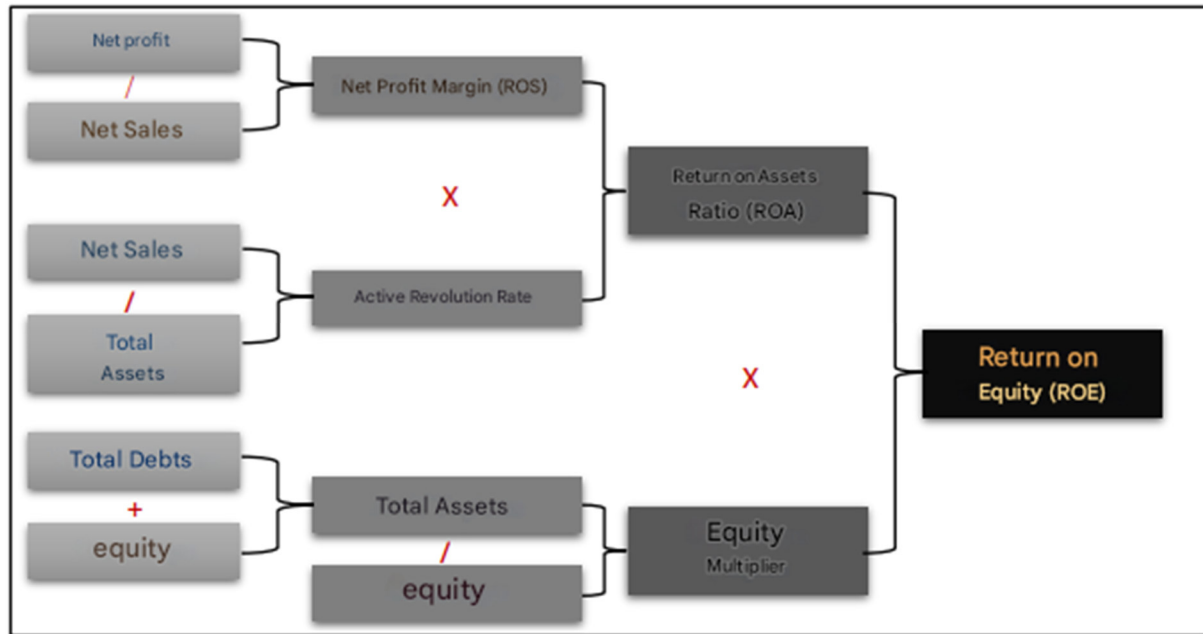
(Source: Davidson, 2020)
Figure: 1 DuPont Analysis Ratios

Figure 1 provides a visual representation of the calculation of the ratios used in the DuPont analysis and described above.

DuPont analysis provides important insights into which areas businesses should focus on to increase their profitability. For example, to increase return on assets, it is necessary to increase the net profit margin or asset turnover rate. In order to increase return on equity, it is necessary to ensure efficient use of assets, utilize financial leverage by borrowing at an appropriate level and increase net profit margin ((Karadeniz & Koşan, 2017). The higher the return on equity of an enterprise, the faster the recovery period of the invested capital. Return on equity is one of the main criteria for the selection of investments by investors (Çabuk & Lazol, 2016)

LİTERATURE SUMMARY

The literature summary includes national and international studies analyzing the financial performance of various firms using the Dupont method. The studies show that DuPont analysis is used in various sectors such as tourism, manufacturing, banking, retail, health (health institutions, pharmaceutical industry, etc.), agriculture, energy, automotive.

Almazari and Saud (2012) evaluated the financial performance of a bank in the banking sector between 2000 and 2009 with DuPont analysis. As a result of the study, the authors explained that the financial performance of the bank was stable.

Herciu and Ogrean (2017) analyzed the balance sheet structures of profitable non-financial companies in Fortune Global 500 and aimed to determine the optimal levels to increase their profitability. Fortune Global 500 companies were included in the study. The study utilized DuPont analysis and grouped the companies to determine the importance of the relationship between profit and balance sheet structure. As a result of the study, they concluded that company profitability can be increased by using an optimal liability structure.

Hao and Choi (2019) applied Dupont analysis to determine the financial performance of businesses operating in China. As a result of the study, it was determined that the highest asset turnover rate among online shopping companies was found in businesses selling very complex products.

Karadeniz et al. (2019) examined the profitability of hotel businesses in Europe with DuPont analysis. With the data obtained from this technique, the return on assets and equity of 76 hotel enterprises for the period 2007-2016 were analyzed by panel data method. According to the results obtained from the study, while the effect of net profit margin on the return on assets of publicly traded hotel enterprises in Europe is positive and significant, the effect of asset turnover rate is not significant.

Büyükarıkan and Eryılmaz (2020) determined the profitability levels of the investments of agricultural enterprises traded in Borsa Istanbul with the DuPont model. In the study, which was carried out by utilizing the 2012 and 2013 financial data of 4 agricultural enterprises operating in the agricultural sector, the following results were obtained. It was determined that the low net profit margin of the enterprises negatively affected the percentage of investment profitability. The reason for this was stated as low sales profitability and high costs.

Cil Koçyiğit et al. (2022) evaluated the financial performance of an enterprise operating in the health sector for the years 2017-2019 with dupont analysis. It is stated that there is an increase in the return on assets and equity of the enterprise, but there is a decrease in the rate of this increase and the equity multiplier of the enterprise is increasing, which increases the borrowing risk.

Erdoğan (2022) evaluated the financial performance of an enterprise operating in Borsa Istanbul with dupont analysis. The author emphasized that the capital structure of the firm is balanced.

Kefe (2023) investigated the financial performance of the health sector in the covid 19 period with dupont analysis. It was concluded that there was an increase in the sector's return on assets and return on equity and an increase in profit margin. However, it is accepted that the increase in profit margin is low due to the effect of the pandemic.

Erdoğan (2023) examined the financial performance of the automotive sector with dupont analysis. He evaluated the data of these companies before and after the pandemic. It was observed that the net profit margin ratio was higher before the pandemic, while the asset turnover rate was more important after the pandemic.

Özçelik (2024) evaluated the financial performance of renewable energy companies traded in BIST by using dupont analysis. According to the results obtained, it was concluded that although the net profit margins of the companies were high, their asset turnover rates were low and their financial performance declined compared to previous years.

Başkaya and Özdemir (2024) evaluated the financial performance of the companies in the BIST Sustainability Index with Dupont analysis. It is stated that the banking sector is at the forefront in financial performances compared to sector averages, while holding and investment companies are below sector averages.

METHOD
Purpose, Method and Limitations of the Study
The study is applied to the textile sector with DuPont analysis in order to examine financial performance. The data set of the study consists of 27 companies registered in the manufacturing, textile, apparel and leather sectors traded in Borsa Istanbul. Ratios were calculated by utilizing the financial data of the relevant companies for the last 3 years (2021, 2022, 2023). Within the scope of the dupont analysis in the study, 27 companies in the BIST Manufacturing, Textile, Apparel and Leather Sector for the 2021-2023 periods are presented in the table.

The most important limitations of the study are that the financial data of the last 3 years are analyzed and the study is limited to the textile sector.

Table:1 Firms Registered in BIST Manufacturing, Textile, Apparel and Leather Sector

BIST CODES	COMPANY NAME
ATEKS	Akın Textile A.Ş.
ARSAN	Arsan Textile Trade and Industry Inc.
ARTMS	Artemis Carpet Inc.
BLCYT	Bilici Investment Industry and Trade Inc.
BRKO	Birko United Koyunlular Mensucat Trade and Industry Inc.
BRMEN	Birlik Mensucat Trade and Industry Enterprise Inc.
BOSSA	Bossa Trade and Industry Enterprises Inc.
DAGİ	Dagi Clothing Industry and Trade Inc.
DERİM	Derimod Garment Shoes Leather Industry and Trade Inc.
DESA	Desa Leather Industry and Trade Inc.
DIRIT	Diriteks Resurrection Textile Trade and Industry Inc.
ENSRI	Ensari Leather Food Industry and Trade Inc.
HATEK	Hateks Hatay Textile Enterprises Inc.
ISSEN	İşbir Synthetic Weaving Industry Inc.
KRTEK	Karsu Textile Industry and Trade Inc.
KORDS	Kordsa Technical Textiles Inc.
LUKSK	Luxury Velvet Trade and Industry Inc.
MEGAP	Mega Polyethylene Foam Industry and Trade Inc.
MNDRS	Menderes Textile Industry and Trade Inc.
RODRG	Rodrigo Textile Industry and Trade Inc.
ROYAL	Royal Carpet Yarn Textile Furniture Industry and Trade Inc.
RUBNS	Rubenıs Textile Industry and Trade Inc.
SKTAS	Söktaş Textile Industry and Trade Inc.
SNPAM	Sönmez Cotton Industry Inc.
SUNTK	Sun Textile Industry and Trade Inc.
YATAS	Yataş Mattress and Quilt Industry Trade Inc.
YUNSA	Yünsa Woolen Industry and Trade Inc.

Table 1 shows the 27 firms registered in the BIST Manufacturing, Textile, Apparel and Leather Sector in Turkey.

Table: 2 Dupont Analysis Results of Firms for 2021

Firms	Net Profit Margin %	Active Revolution Rate %	Return on Assest Ratio (ROA)	Borrowing Rate	Total Assests/ Equity	Return on Equity (ROE)
ATEKS	0,313	0,351	0,110	0,266	1,505	0,166
ARSAN	0,586	0,460	0,270	0,162	1,194	0,322
ARTMS	0,079	0,480	0,037	0,624	2,661	0,098
BLCYT	0,568	0,361	0,205	0,123	1,140	0,233
BRKO	0,016	0,378	0,006	0,984	1,984	0,011
BRMEN	-1,002	0,515	-0,516	3,243	-0,445	0,229
BOSSA	0,242	0,732	0,177	0,632	2,718	0,481
DAGİ	-0,053	0,512	-0,027	0,467	1,879	-0,050
DERİM	0,007	1,044	0,007	0,795	4,890	0,034
DESA	0,107	0,680	0,072	0,672	3,055	0,219
DIRIT	0,120	0,302	0,036	0,126	3,743	0,134
ENSRI	0,284	0,332	0,094	0,673	3,067	0,288
HATEK	0,106	0,480	0,050	0,409	1,694	0,084
ISSEN	0,119	0,741	0,088	0,547	2,210	0,194
KRTEK	0,127	0,713	0,090	0,712	3,47	0,312
KORDS	0,108	0,563	0,060	0,537	2,160	0,129
LUKSK	0,271	0,344	0,093	0,544	2,192	0,203
MEGAP	0,028	0,903	0,025	0,605	2,532	0,063
MNDRS	-0,119	0,585	-0,069	0,731	3,723	0,256
RODRG	-0,084	0,557	-0,046	0,510	2,043	-0,093
ROYAL	-0,165	0,392	-0,064	0,897	9,799	-0,627
RUBNS	0,208	0,516	0,107	0,383	1,622	0,173
SKTAS	0,024	0,291	0,006	0,635	2,741	0,016
SNPAM	0,515	0,586	0,301	0,182	1,223	0,368
SUNTK	0,095	1,220	0,115	0,714	3,497	0,402
YATAS	0,089	1,301	0,115	0,541	2,181	0,250
YUNSA	0,077	0,871	0,067	0,743	3,903	0,261
Sector Average	14,15%	0,74%	9,46%	54,02%	-	20,08%

Table 2 shows the dupont analysis ratios of the companies in 2021. In 2021, ARSAN Tekstil had the highest net profit margin. However, its low asset turnover rate caused it to fall behind in terms of return on assets. YATAS showed the best performance in terms of asset turnover. SNPAM has the highest return on assets. In terms of return on equity, BOSSA has the highest return on equity. 14 companies exhibited low performance in terms of return on equity, with a figure below the sector average.

Table: 3 Dupont Analysis Results of Firms for 2022

Firms	Net Profit Margin %	Active Revolution Rate %	Return on Assest Ratio (ROA)	Borrowing Rate	Total Assests/ Equity	Return on Equity (ROE)
ATEKS	0,196	0,437	0,086	0,427	1,747	0,150
ARSAN	0,500	0,600	0,300	0,206	1,266	0,380
ARTMS	0,008	0,507	0,004	0,537	2,163	0,008
BLCYT	0,257	0,467	0,120	0,055	1,058	0,126
BRKO	2,139	0,152	0,325	0,167	1,201	0,390
BRMEN	0,765	0,230	0,175	1,200	-4,978	-0,871
BOSSA	0,207	0,704	0,145	0,495	1,983	0,287
DAGİ	0,082	0,562	0,046	0,503	2,015	0,092
DERİM	-0,021	2,209	-0,046	0,752	4,045	-0,186
DESA	0,077	1,089	0,083	0,527	2,116	0,175
DIRIT	0,088	1,849	0,162	0,305	1,440	0,439
ENSRI	-0,051	0,405	-0,020	0,418	1,720	-0,034
HATEK	-0,052	0,652	-0,033	0,383	1,621	-0,053
ISSEN	0,213	0,171	0,036	0,438	1,780	0,064
KRTEK	0,080	0,967	0,077	0,528	2,119	0,163
KORDS	0,081	0,782	0,063	0,574	2,350	0,148
LUKSK	0,102	0,379	0,038	0,435	1,770	0,067
MEGAP	0,027	1,046	0,028	0,709	3,437	0,096
MNDRS	0,241	0,642	0,154	0,472	1,896	0,291
RODRG	-0,890	0,480	-0,427	0,669	3,027	-1,292
ROYAL	0,006	0,405	0,002	0,836	6,115	0,012
RUBNS	0,003	0,504	0,001	0,335	1,505	0,001
SKTAS	-0,783	0,435	-0,340	0,584	2,406	-0,818
SNPAM	-0,143	0,553	-0,079	0,161	1,192	-0,094
SUNTK	0,081	1,587	0,128	0,401	1,671	0,213
YATAS	0,027	1,405	0,037	0,533	2,143	0,079
YUNSA	0,225	1,309	0,294	0,511	2,049	0,602
Sector Average	19,05%	1,00%	17,10%	51,16%	-	32,67%

Table 3 shows the dupont analysis ratios of the companies for 2022. In 2022, BRKO has the highest net profit margin. In terms of asset turnover rate, DIRIT showed the best performance. BRKO has the highest return on assets. In terms of return on equity, YUNSA has the highest return on equity. Although BRKO ranked first in terms of net profit margin and return on assets, the reason why it did not rank first in terms of return on equity can be interpreted as the low equity multiplier, that is, the low share of total assets owned by the enterprise. 23 firms exhibited low performance in terms of return on equity, with a figure below the sector average.

Table: 4 Dupont Analysis of Companies in 2023

Firms	Net Profit Margin %	Active Revolution Rate %	Return on Assest Ratio (ROA)	Borrowing Rate	Total Assests/ Equity	Return on Equity (ROE)
ATEKS	-0,009	0,459	-0,004	0,585	1,585	-0,006
ARSAN	1,403	0,072	0,101	0,128	1,147	0,120
ARTMS	0,005	0,730	0,003	0,508	2,033	0,006
BLCYT	0,584	0,162	0,094	0,067	1,072	0,100
BRKO	-30,85	0,035	-1,079	0,055	1,058	-1,141
BRMEN	-0,120	0,549	-0,065	0,618	2,621	-0,170
BOSSA	0,232	0,656	0,152	0,342	1,522	0,998
DAGİ	0,075	0,666	0,049	0,495	1,981	0,097
DERİM	0,004	2,899	0,011	0,743	3,899	0,042
DESA	0,202	0,945	0,190	0,372	1,594	0,302
DIRIT	2,543	0,074	0,188	0,094	1,104	0,207
ENSRI	0,583	0,309	0,180	0,346	1,530	0,275
HATEK	-0,208	0,378	-0,078	0,406	1,686	-0,131
ISSEN	0,028	0,211	0,005	0,440	1,786	0,008
KRTEK	0,085	0,849	0,072	0,405	1,681	0,121
KORDS	0,016	0,671	0,010	0,540	2,177	0,021
LUKSK	0,353	0,336	0,118	0,286	1,401	0,165
MEGAP	0,060	1,093	0,065	0,665	2,992	0,194
MNDRS	0,175	0,521	0,091	0,346	1,529	0,139
RODRG	0,123	0,457	0,056	0,534	2,150	0,120
ROYAL	0,281	0,305	0,085	0,725	3,641	0,309
RUBNS	0,022	0,940	0,020	0,205	1,259	0,025
SKTAS	-0,016	0,468	-0,007	0,512	2,050	-0,014
SNPAM	-0,002	0,419	-0,001	0,102	1,113	-0,001
SUNTK	0,031	1,366	0,042	0,417	1,716	0,072
YATAS	0,051	1,239	0,063	0,571	2,336	0,147
YUNSA	0,248	0,618	0,153	0,282	1,393	0,213
Sector Average	11,95%	0,81%	7,72%	41,14%	-	13,48%

Table 4 shows the Dupont analysis ratios of the companies for 2023. In 2023, DIRIT has the highest net profit margin. Although DIRIT has the highest net profit margin, it could not rank first in terms of return on assets due to its low asset turnover rate. DERIM showed the best performance in terms of asset turnover rate. DESA has the highest return on assets. When analyzed in terms of return on equity, BOSSA has the highest return on equity. 17 companies exhibited low performance in terms of return on equity with a figure below the sector average.

CONCLUSIONS AND RECOMMENDATIONS

Within the scope of DuPont Analysis, net profit margin, asset turnover, return on assets, return on debt and return on equity ratios of the companies in the data set for the years 2021-2023 were calculated. This analysis technique allows businesses to analyze their financial performance in more detail and comment on their financial performance. DuPont analysis is an important tool used to evaluate the financial performance of enterprises.

Profit margin is an indicator that can give an idea about the degree of success of an enterprise's activities, investments and operational policies. When the net profit margins of 27 enterprises in this sector are taken into consideration, it is observed that there is no steady increase over the period. The most positive progress was observed in ROYAL.

Asset turnover rate reveals the success of the assets acquired and the sales volume created in the sector in which the enterprise is located. In general, it is observed that the asset turnover rates of the majority of the firms have increased, while some firms have not been able to achieve an increase. This situation indicates a failure in asset management and sales policies of the firms.

Return on assets, on the other hand, shows how effective the assets acquired in the sector in which the enterprise is located are in creating profit. When the return on assets of 27 enterprises in the sector in question are taken into consideration, it is observed that there is no steady increase over the period. It is observed that the most positive progress belongs to a few companies such as ROYAL, MEGAP, etc. The fact that the period profits of the enterprises have decreased and fallen to negative values is an important factor affecting the return on assets.

Equity multiplier shows the weight of the equity owned by an enterprise in the sector in which it operates in the financing of assets. The share of the total assets owned by the enterprise in the high equity multiplier is large. An increase in the multiplier value is considered positive for the enterprise. When the equity multiplier of 27 enterprises in the sector in question is taken into consideration, it is observed that there is no steady increase periodically. It was observed that the most positive progress belonged to ARSAN.

The borrowing ratio shows how much of an enterprise's assets in the sector is financed by external debts or foreign sources. A high level of this ratio indicates that the firm is in a risky situation for credit providers. When the borrowing ratios of 27 enterprises in the sector are taken into account, it is observed that there are regular decreases in many companies. The most favorable progress was observed in BRMEN when the rate of decline was taken into account, even though it was above the sector average.

Return on Equity shows how much profit an enterprise can generate against the capital put forward in the sector in which it is located. Considering the return on equity of 27 enterprises in the sector in question, it is observed that there is no steady increase periodically. It was observed that the most positive progress belonged to ROYAL. In order to make a more detailed evaluation on this issue, it is necessary to reveal the changes in the equity and foreign resource ratios of the enterprises.

When the findings are evaluated in general, it is seen that the prominent sectors change every year. Except for 2022, it can be said that the performance evaluation of BOSSA company in terms of return on equity is the most successful company in the sector by being above the sector averages.

The fact that the enterprises have negative values in terms of return on equity indicates that these enterprises carry future risk. It is thought that by increasing the asset turnover rates of enterprises with effective sales and marketing policies, profit margins will increase and subsequently return on assets may increase in this context. In future studies, DuPont analysis of the financial performances of different sectors may allow a general interpretation to be made in terms of different sectors.

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