ABSTRACT

Purpose - The aim of this study is to apply factor analysis to financial ratios of companies in Restaurant and Hotel industry by showing up the best ratio among each factor group and to detect the performance differences between restaurants and hotels.

Methodology - The sample data cover between the years 2009 and 2018 of 13 observed companies at Borsa Istanbul. This study works on the financial ratios of the companies as performance variables. Factor analysis and the discriminant analysis is applied.

Findings - The results reveal that cash, return on equity, accounts receivable and inventory turnover are the key ratios. Moreover, hotels are differentiated by their high liquidity, receivables, and turnover ratios, where restaurants are differentiated by their profitability and solvency ratios.

Conclusion - The restaurants are more capable to satisfy their long-term debts. They have equal or even better performance when compared with their profit-oriented counterparts.

Keywords: Ratio analysis, discriminant analysis, performance analysis, Borsa Istanbul, restaurant and hotel industry

JEL Codes: M40, M41, M49
In total, there are 130 firm-years. This study work on the financial ratios of the companies as performance variables. Factor analysis is conducted to summarize the performance variables and then discriminant analysis is applied to detect performance differences between groups. SPSS 22.0 has been used for the statistical part of the study.

The present study provides evidence that hotels are differentiated by their high liquidity (cash, quick, current), receivables, and turnover ratios. Restaurants are differentiated by their profitability and solvency ratios (ROE, Debt to Equity, ROS). The restaurants can have equal or even better performance when compared with their profit-oriented counterparts. These results are important for numerous stakeholders like internal and external decision makers, accountants and auditors.

The rest of the paper is organised along these lines. Part 2 provides the literature review on performance and factor analysis for hospitality and F&B industry. Part 3 explains the ratios used in the study. Part 4 displays the structure and methodology. Part 5 specifies data collection. Part 6 presents analysis and results. Finally, Part 7 presents the study’s conclusions.

2. LITERATURE REVIEW

Performance analysis has been a subject area which has been receiving sufficient interest of numerous researchers in recent years (Feng, & Wang, 2000; De et al., 2011; Delen et al., 2013). The authors are drawn to the study of performance analysis to understand how the recent financial ratios has influenced it (Kim, & Ayoun, 2005; Kim & Kim, 2005; Chen, 2010).

There are various studies conducted in this framework for hospitality and F&B industry, for instance, the recent ones conducted by Maradaheni, 2018; Lai, 2018; Vatalis, 2018; Pudjisyuryadi et al., 2018; Tan, 2018; Naumik-Gladkaya, & Devon, 2018; Tamallo, 2018. However, all of these studies are allied to different countries or regions. Therefore, this study deepens this research by using restaurant and hotel firms in Turkey, which have different features with respect to the level of external impact in business operations and economic changes.

The aim of this study is to fill the existing research gap in Turkey and to apply factor analysis to financial ratios by showing up the best ratio among each factor group and to detect the performance differences between Hotels and restaurants. Pinches et al. were the first to apply factor analysis to financial ratios in 1973, in a study of U.S. industrial firms (Pinches et al., 1973). After 1973, many studies applied this practice to minimize the number of ratios selected and redundancy among them. Most of the studies are in the manufacturing and retailing industries. The focal point of this study is directed to the Restaurant and Hotel industry to group factors whose financial features vary from manufacturing and retailing.

There are several works on applying factor analysis to financial ratios in Turkey. In the study of “Performance of direct foreign investments in Turkey” the author used a factor analysis to financial ratios of foreign-owned firms with domestically owned firms. Then the author applied discriminant analysis and logistic regression (Karataş, 2002).

In the study of “Prediction of corporate financial distress in an emerging market: The case of Turkey”, the authors used factor analysis to financial ratios and conducted discriminant analysis to predict the failures (Uğurlu, & Aksoy, 2006).

In the study of “Industry financial ratios-application of factor analysis in Turkish construction industry”, the authors applied factor analysis to financial ratios for Turkish construction companies (Ocal et al., 2007).

In the study of “Applying Factor Analysis on the Financial Ratios of Turkey’s Top 500 Industrial Enterprises”, the author applied factor analysis to financial ratios for 500 industrial companies in Turkey (Erdoğan, 2014).

There are also studies that apply ratio analysis to restaurants and hospitality industry without computing factor analysis. The international studies can be counted as Damitio et al., 1995; Singh & Schmidgall, 2001; Singh & Schmidgall, 2002; Böcskei, 2014; Arif et al., 2016; Bala et al., 2016; Abdul Aziz & Rahman, 2017, Vaško, 2018 and Ziskos, 2019. The studies that are conducted in Turkey can be counted as Karadeniz & İskenderoğlu, 2014; Karadeniz et al., 2014; Ecer & Günyay 2014; Özçelik & Kandemir, 2015; Şen et al., 2015; Bilici & Aydın, 2018, and Aslan & Yılmaz, 2018.

Thus, extends the literature by focusing on an emerging economy and to the best of our knowledge, this is the first study that detect performance differences restaurants and hotels with the case of listed firms in the Turkish setting. Moreover, the Turkish data represents an example for similar practices of other emerging economies. The present study attempts to bridge the gap in the literature by providing the performance differences between restaurants and hotels in the context of the economy of Turkey that is a study area which was previously unexplored.

3. RATIO ANALYSIS

Ratio analysis plays a huge role in terms of analyzing financial statements, comparison of performance, making plans, detecting positive and negative sides, opportunities and threats. Being able to analyze investor ratios might signify the distinction between devoting the resources into a decent promising and potentially successful company or an awful one.

Therefore, having access and interpreting these numbers are important for an investor. It creates advantages in terms of investments’ comparison, and also mediate the right strategies from the aspect of trade and minimizes failing to meet
expectations on stocks. Comparing the figure of the balance sheet, income statement and cash flow create a scale to measure the likelihood of the financial safety of corporations.

In this study, this paper focuses on applying factor analysis to the financial ratios of the restaurants and hotels, which are quoted on Borsa İstanbul. This study uses current, quick, cash, return on assets, return on equity, return on sales, earnings per share, debt to equity, debt to assets, interest coverage, accounts receivable turnover, inventory turnover, and total assets turnover ratios.

Current, quick, and cash ratios are selected for this study since they are especially valuable for corporate officials. Return on assets, return on equity, return on sales, and earnings per share are selected since they are especially valuable for finance executives. Debt to equity, debt to assets, and interest coverage ratios are selected since they are especially valuable for brokers. Accounts receivable turnover, inventory turnover, and total assets turnover ratios are selected since they are especially valuable for managers (Kim, & Ayoun, 2005). Table 1 shows the summary table for ratios.

Table 1: Summary Table for Ratios

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Formula</th>
<th>Indicates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>Current Assets / Current Liabilities</td>
<td>whether a company’s current assets are adequate to pay back its current liabilities and estimates its short-term financial health</td>
</tr>
<tr>
<td>Quick</td>
<td>Current Assets - Inventories / Current Liabilities</td>
<td>the ability of a company to pay its current liabilities with its quick assets</td>
</tr>
<tr>
<td>Cash</td>
<td>Cash / Current Liabilities</td>
<td>company’s ability to pay back its current liabilities with its cash and cash equivalents</td>
</tr>
<tr>
<td>Return on Assets</td>
<td>Net Income / Total Assets</td>
<td>how effectively companies turn their assets to generate profit</td>
</tr>
<tr>
<td>Return on Equity</td>
<td>Net Income / Owner’s Equity</td>
<td>how much gain a corporation made on the money that investors paid</td>
</tr>
<tr>
<td>Return on Sales</td>
<td>Net Income / Total Sales Revenue</td>
<td>company’s operating performance, and its ability to generate profits on sales</td>
</tr>
<tr>
<td>Earnings per Share</td>
<td>Net Income / Common Shares Outstanding</td>
<td>how many dollars of net income earned by each share of common stock</td>
</tr>
<tr>
<td>Debt to Equity</td>
<td>Total Liabilities / Owner’s Equity</td>
<td>proportion of equity and debt a company is using to finance its assets</td>
</tr>
<tr>
<td>Debt to Assets</td>
<td>Total Debt / Total Assets</td>
<td>the financial leverage, shows the rate of total assets which financed with debt</td>
</tr>
<tr>
<td>Interest Coverage</td>
<td>Earnings Before Interest &amp; Taxes / Interest Expense</td>
<td>the ability of a company to meet its interest payments</td>
</tr>
<tr>
<td>Acc. Rec. Turnover</td>
<td>Net Credit Sales / Average Accounts Receivable</td>
<td>how many times a company collects its receivables</td>
</tr>
<tr>
<td>Inventory Turnover</td>
<td>Cost of Goods Sold / Inventory</td>
<td>the efficiency of managing and selling of inventories</td>
</tr>
<tr>
<td>T. Assets Turnover</td>
<td>Net Sales / Total Assets</td>
<td>how efficiently a company can use its assets to generate sales</td>
</tr>
</tbody>
</table>
4. STRUCTURE AND METHODOLOGY

The following indicates the brief of all the objectives this research will provide to:

- reveal the ratios in terms of liquidity, profitability, solvency and activity performances of the restaurants and hotels quoted on Borsa Istanbul.
- analyze and compare the performance of the restaurants and the hotels in the industry.
- summarize the performance variables.
- detect performance differences between groups.

The structure of this study is based on factor and discriminant analysis. Factor analysis is a multiple variable statistic that aimed to discover a few conceptually significant variables with bringing together many variables which are connected with each other. By applying factor analysis to financial ratios of the restaurants and hotels quoted on Borsa Istanbul, this study examined covariance structure of some group variables and explained relations between each other in point of unobservable hidden variables which are much less than others. Discriminant analysis is a statistical technique that helps to comprehend the differences between the two groups. By applying discriminant analysis to restaurants and hotels, this study aims to detect performance differences between those groups.

Ratios which belong to certain groups measure the same parameter and give the same results with using same denominators. In order to understand the best ratio to measure one parameter, we need to use factor analysis. So, it is possible to find the best ratios to measure parameters by reducing a large number of the same ratios to a minimum. Also, it helps to arrange background for further detailed statistical studies. In other words, the structure of this study will be created by using analytic technic that aimed to reach a few explanatory factors which explain maximum variance and have calculation logic which to base relation between expected variables.

The main purpose of this study to reveal the ratios in terms of liquidity, profitability, solvency and activity performances of the restaurants and hotels quoted on Borsa Istanbul. Moreover, to analyze and compare the performance of the restaurants and the hotels in the industry. This study work on the financial ratios of the companies as performance variables. Factor analysis is conducted to summarize the performance variables and then discriminant analysis is applied to detect performance differences between groups.

5. DATA COLLECTION

In this research, the publicly traded restaurant and hotel companies quoted on Borsa Istanbul are examined for 10 years of reporting period between 2009 and 2018. The reason for using this period is that the last five years of investigation is the most essential average year number for investors to make decisions. There are only 13 firms in total quoted in Borsa Istanbul for the Hospitality and F&B industry. The required data of the hotels and restaurants quoted on Borsa Istanbul between the years 2009 and 2018 have obtained from “Public Disclosure Platform”.

SPSS® 22.0 program is used for the analysis of the data. The sample data is covered between 2009 and 2018 with 13 observations. In total, there are 130 firm-years. The unit of measurement is the Turkish Lira (TL).

6. ANALYSIS AND RESULTS

The raw data collected from 13 companies are transferred to the SPSS program. The outputs of descriptive statistics and explanatory factor analysis are generated. In total, there are 130 firm-years with a sample size of 1690. The analysis has done for all of the 13 ratios, however the total assets turnover, return on assets, interest coverage and earnings per share were excluded respectively due to invalid results. The analysis has rerun after each change.

Table 2 shows the descriptive statistics for the ratios from the final analysis. According to Table 1, the mean for the current ratio is 2.9. It means a company’s current asset of 2.9 dollars for every 1 dollar of current liability. The common acceptable value is 2 for the current ratio and having a higher ratio is good for the Restaurant and Hotel industry. This industry relies heavily on short-term liabilities in the form of salaries and wages and equipment leasing. However, restaurants have lower current ratio than hotels. This high ratio indicates that companies can easily pay their short-term liabilities.
Table 2: Descriptive Statistics

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Analysis N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>2,90960</td>
<td>3,510500</td>
<td>130</td>
</tr>
<tr>
<td>Quick</td>
<td>2,52083</td>
<td>3,346807</td>
<td>130</td>
</tr>
<tr>
<td>Cash</td>
<td>1,44758</td>
<td>3,278934</td>
<td>130</td>
</tr>
<tr>
<td>ROE</td>
<td>298293</td>
<td>6536663</td>
<td>130</td>
</tr>
<tr>
<td>ROS</td>
<td>859145</td>
<td>1,6704056</td>
<td>130</td>
</tr>
<tr>
<td>Debt to Equity</td>
<td>1,10285</td>
<td>3,263789</td>
<td>130</td>
</tr>
<tr>
<td>AccRecTurn</td>
<td>30,652354</td>
<td>110,5459597</td>
<td>130</td>
</tr>
<tr>
<td>Inv Turn</td>
<td>-20,269688</td>
<td>69,5202020</td>
<td>130</td>
</tr>
</tbody>
</table>

The mean for the quick ratio is 2.5. The commonly acceptable ratio is 1, but this may differ from industry to industry. A value that is greater than 2 is considered as good. A high quick ratio or a value with an increasing trend indicates the revenue growth. Moreover, it means a company is collecting its receivables, turning over its inventories and converting them into cash. Meaning the hotels are selling their rooms and the restaurant are selling their dishes. However, restaurants have lower quick ratio values than hotels.

The mean for the cash ratio is 1.4. The commonly acceptable proportion is 0.50 to 1. The high level of cash ratio indicates low short-term leverage and indebtedness. The mean for return on equity (ROE) is 0.29. or 29%. 15% and higher values are considered as good. This high ROE value indicates a high value for the stock prices.

The mean for return on sales (ROS) is 0.85 or 85%. The ROS shows the profit from a company’s sales. This is a high return which indicates that the Restaurant and Hotel industry is selling their products well and their profits are high.

The mean for the debt to equity ratio is 1.10. A commonly acceptable ratio is 1.5 and less. This value indicates that the Restaurant and Hotel industry have no problem to meet its long-term liabilities and have lower risk since the debt holders have fewer rights on the company’s assets.

The mean for the accounts receivable turnover is 30. This means the accounts receivable turned over 30 times. The Restaurant and Hotel industry rely heavily on short-term debt and the short-term debt should be paid back less than 60 days. The value of this ratio indicates that companies operate on a cash basis and their accounts receivable collection is efficient.

The mean for the inventory turnover ratio is -20. This means strong sales and no excess of inventory. This negative number indicates that hotels are selling their rooms before the accommodation.

The convenience of ratio variables for factor analysis was tested via Barlett Test of Sphericity and the Kaiser-Meyer-Olkin Measure of Sampling Adequacy Test (KMO). The end result value of KMO is 0.783, and Bartlett is 0.000 that is smaller than 0.05, which means the observed variables are suitable for factor analysis.
Figure 1: Summarized Factor Analysis

Figure 1 displays a whole picture of the analysis results. Each of the ratios has a correlation with a value higher than 0.5 at the anti-image correlation matrix. According to the figure three components are extracted. The names are given to the components according to the ratio types. Three components are liquidity, profitability + solvency, and activity. total variances explained for the liquidity is 27.320%, profitability + solvency is 25.376% and activity is 23.252%.

The liquidity component has three ratios, which are cash, quick and current ratios. The factor loadings for cash ratio is 0.962, quick is 0.948 and current is 0.924. The profitability + solvency component has three ratios, which are ROE, debt to equity and ROS. The factor loadings for ROE is 0.909, debt to equity is 0.883 and ROS is 0.809. The activity component has two ratios, which are accounts receivable turnover and inventory turnover. The factor loadings for accounts receivable turnover is 0.730 and inventory turnover is 0.730. The results indicate four important ratios according to their factor loadings for investors, which are cash, ROE, accounts receivable turnover and inventory turnover. Instead of examining all liquidity, profitability, solvency and activity ratios, investors can base their decision on these four ratios.

The case processing summary, which is necessary for reliability analysis, shows that all the variables are valid. Reliability analysis is necessary to find the numerical reliability of every dimension after factor analysis. When analyzing reliability, the Alpha model should be used. Cronbach’s Alpha is a value of concordance depends on a correlation between variables. This value is accepted if it is higher than 0.70. Cronbach’s Alpha value is 0.939 for the liquidity component, 0.779 for the profitability + solvency component and 0.711 for the activity component, which means our model is reliable. Each of the ratio values is lower than Cronbach’s Alpha value if the item is deleted.

After extracting the components, the discriminant analysis is performed. According to the analysis, the Box’s M test is significant with a value of 0.055, 0.053 and 0.052 for liquidity, profitability + solvency, and activity dimensions respectively. According to the pooled within-group matrices, each of the variable’s correlation for each of the dimensions are under 0.70.
The canonical correlation is 0.884, 0.847, 0.820 and % of variance are 78%, 75%, 73% for the liquidity dimension, profitability + solvency and activity dimensions respectively. According to the Wilk’s lambda 22%, 25% and 27% cannot be explained by the differences between the groups for the liquidity dimension, profitability + solvency, and activity dimensions respectively.

Figure 2: Industry’s Differentiated Ratios

Figure 2 shows the industry’s differentiated ratios. The differentiated ratios are given on the left sides of the figures and they are sorted from the highest to lowest order in terms of differentiation. The findings suggest that hotels are differentiated by their high liquidity ratios (cash, quick, current), high receivables and turnover ratios. Restaurants are differentiated by their profitability and solvency ratios (ROE, Debt to Equity, ROS).

7. CONCLUSION

This study acts as a bridge for expanding the understanding of performance analysis and provides real-world implications for firms with regard to satisfying stockholders and attracting potential investors. This study can be used as a guide for the investors in other developing countries who are planning to invest in the industry.

The Restaurant and Hotel industry in Turkey relies heavily on short-term liabilities in the form of salaries and wages and equipment leasing, but the companies in the industry can easily pay their short-term liabilities. Likewise, they operate on a cash basis, collect their receivables efficiently, turn over their inventories and convert them into cash quickly. Moreover, they have low short-term leverage. They have strong sales. Their profits and the value for the stock prices are high. They have no problem to meet its long-term liabilities and have lower risk since the debt holders have fewer rights on the company’s assets.

It is very important to outline a set of financial ratios of the Restaurant and Hotel industry to be used in the comparative analysis and to make deductions depend on performances of the companies. The findings identified four important ratios for the investors in the hospitality industry. These ratios are cash, ROE, accounts receivable turnover and inventory turnover. Instead of examining all liquidity, profitability, solvency and activity ratios, investors can base their decisions on these four ratios. By evaluating these four resources, investors can comment on the return and risk of their investments with greater accuracy.

The results of this study show that the hotels have higher liquidity and activity ratios compared to the restaurants. Furthermore, the restaurants have higher profitability and solvency ratios, which means they are more capable to satisfy their long-term debts. It can be concluded that restaurants can have equal or even better performance when compared with their profit-oriented counterparts.

This study detects likely future studies by underlining the performance analysis on restaurants and hotels. There is a lack of studies enabling generalization of the results of one economy to another. Therefore, taking inputs from this research along with other research works done relevant to the emerging economies, the researchers can try to establish a trend between these economies concerning the performance analysis on Restaurant and Hotel industry. Such a trend can also be determined for the advanced economies which will allow generalization of results to all other economies that lack study within this research area. Therefore, researchers can use this research gap to further develop studies that test the same variables in other countries based on categorical classification of the economies.
REFERENCES


