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The Factors That Affects the Profitability in Real Estate Investment Trust Companies: Comparison of Turkey and Malaysia

Gayrimenkul Yatırım Ortaklıkları Firmalarının Kârlılıklarını Etkileyen Faktörler: Türkiye ve Malezya Firmalarının Karşılaştırılması

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ABSTRACT

It is defined as an investment that individuals use a source or value they own to provide income. Real estate investment trust companies are providing alternative tools to invest in bonds, stocks, etc. by converting real estate holdings from their portfolios into securities. Among the key benefits of real estate investment trust companies are that they have a certain economic cycle, as opposed to bonds, a protective against inflation, and reliable returns. Real estate investment trust companies operate in 41 countries as of 2021, with a market volume of $42 trillion. In Turkey, which is part of the real estate investment trust sector's category of developing countries, there are 37 real estate investment trust companies and the total market value is 6860 million euros. The other country included in the study is Malaysia, which also falls under the category of developing countries in the industry. In Malaysia, there are 18 real estate investment trust companies with a total market value of 8519 million euros. The aim of the study is to identify the importance of factors affecting the profitability of the companies of the two countries through the Random Forest Regression method. For this purpose, data from 2013.Q1 to 2022.Q1 were used from the companies of the two countries. As a result of the study, it has been determined that the variables with the most significant impact on the assets and equity profitability of the two countries are total debt total assets rate and logarithm of total assets ratios.

JEL Codes: M20, M21, M48

Keywords: Profitability, random forest regression, real estate investment trust

ÖZ

Bireylerin, sahip oldukları bir kaynağı veya değeri gelir sağlamak amacı ile kullanmaları yatırım olarak tanımlanmaktadır. Gayrimenkul Yatırım Ortaklık (GYO) firmaları, portföylerinde bulunan gayrimenkulleri menkul kıymetlere dönüştürerek tahvil, bono, hisse senedi vb. yatırım araçlarına alternatif araç olanağı sağlamaktadırlar. GYO'ların en önemli avantajları arasında hisse senetleri, tahvillere göre belirli bir ekonomik döngülerinin olması, enflasyona karşı koruyucu olması ve güvenilir getirilerinin olması ön plana çıkmaktadır. GYO'lar, 2021 yılı itibari ile 41 ülkede faaliyet göstermektedirler ve piyasa hacimleri 42 Trilyon Dolardır. GYO sektörünün gelişmekte olan ülkeler kategorisinde yer alan Türkiye'de, 37 GYO firması bulunmakta ve toplam piyasa değerleri 6.860 milyon eurodur. Çalışmada yer alan diğer ülke, yine sektörün gelişmekte olan ülkeleri kategorisinde yer alan Malezya'dır. Malezya'da, 18 GYO firması bulunmakta ve toplam piyasa değerleri 8.519 milyon eurodur. Çalışmanın amacı, iki ülke firmalarının kârlılıklarını etkileyen faktörlerin önem derecelerinin Rassal Orman Regresyon yöntemi ile tespit edilmesidir. Bu amaçla, iki ülke firmalarına ait 2013.Q1 – 2022.Q1 dönemleri arası veriler kullanılmıştır. Çalışmanın bağımlı değişkenleri, Aktif kârlılık (ROA) ve Özsermaye kârlılık (ROE) oranlarıdır. Bağımsız değişkenler; enflasyon oranı (INF), toplam borç toplam aktif oranı (TDTA), likidite oranı (QK), toplam aktiflerin logaritması (AS), faiz vergi ve amortisman öncesi kârlarda meydana gelen yıllık değişimler (EB) ve firma gelirlerinde meydana gelen yıllık değişimlerden (RG) oluşmaktadır. Çalışma sonucunda,

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iki ülke firmalarının aktif ve özsermaye kârlılıkları üzerinde en önemli etkiye sahip değişkenlerin TDTA ve AS oranları olduğu tespit edilmiştir.

JEL Kodları: M20, M21, M48

Anahtar Kelimeler: Kârlılık, rassal orman regresyon, gayrimenkul yatırım ortaklığı

Introduction

Real estate can be expressed as a whole in land and all kinds of structures that exist on it. In this context, real estate may include residences, commercial buildings, industrial facilities, agricultural land, and many other structures (Hepşen, 2009. p. 1). Real estate investment trust (REIT) firms offer partnership to investors through the development of real estate projects (Capellán et al., 2021. p. 2) and contribute three different ways to the country's economy, directly, indirectly, and otherwise. The direct contribution refers to the employment opportunities provided by REIT companies and the direct impact of the revenues generated by those employees in those firms to the economy. In this way, REIT firms contribute to increasing employment levels in the economy and increasing employee revenue. The indirect contribution is that REIT firms contribute to the growth of employment and revenue in supplier companies by purchasing goods and services from other companies. Other economic contributions include expenditures financed by dividend revenues from REIT shareholders and interest income from REIT bondholders (EY, 2021, p. 4).

In Turkey, housing sales increased by 21.7% in the first quarter of 2022 compared to the same period of the previous year. Such an increase occurs mainly because of low credit costs compared to inflation. Increased demand has caused an increase in housing prices. According to TCMB 2022 February, prices increased by 26.9% in real terms from the same month a year earlier. Interest in real estate is expected to continue due to construction costs, exchange rate hikes, low supply, and high inflation. Increased interest in real estate and real estate prices also increased interest in REITs (GYODER, 2022. p. 6). Real estate investment trusts were first established in the United States in 1960 and now operate in 40 countries (NAREIT, 2021, p. 16). The increasing value of the REITs every year is important to them, their investors, and the country's economy.

When the studies on the REIT sector are examined, the work on the market performance of companies is highlighted, and the work on profitability is very few. Although many studies on profitability in various sectors, especially the banking sector (Aka, 2019. p. 21; Alp et al., 2010. p. 1; Kırcı Çevik & Boran, 2020. p. 1735; Naceur, 2003. p. 1; Owoputi, 2014. p. 408; Sayılgan & Yıldırım. 2009, p. 207; Uzunlar & Gülhan, 2011. p. 341) in the REIT sector, it is seen that there are a limited number of studies related to profitability (Çelik & Arslanlı, 2020. p. 255; Jakpar et al., 2018. p. 72). While there are studies on profitability in various sectors, the fact that there are very few studies in the REIT sector constitutes a gap in the literature. This gap in the literature constitutes the need for the work to be carried out on the profitability of the REIT. Because it is thought that companies must first make profit in order to continue their activities. Another unique part of the study is the method used. There are studies in literature where econometric models are widely used in profitability (Almaqtari et al., 2019. p. 173; Asimakopoulos et al., 2009. p. 934; Benitez et al., 2018. p. 123; Lee, 2014. p. 4; Nunes et al., 2009. p. 697; Pratheepan, 2014. p. 4; Trabelsi & Trad, 2017. p. 454). This study uses the Random Forest Regression method, which estimates results from many models. The aim of the study is to identify the importance of factors affecting the profitability of REIT companies. The study used data from companies operating in Turkey and Malaysia from 2013.Q1 to 2022.Q1. Turkey and Malaysia are among the countries where the REIT sector is developing (EY, 2018, p. 4). Turkey and Malaysia have shown similar growth moves in the last decade, while recent years have shown rapid economic growth. In the last 4 years, the Turkish economy has averaged 4.2 and Malaysia's economy has grown by 2.26 (WORLDBANK, 2023). Real estate investment trust companies have emerged as organizations that aim to profit by investing in real estate projects in both countries (EPRA, 2018, p. 507). For this reason, comparisons of Turkish and Malaysian REIT firms are considered important to understand the similarities and differences of the sector in both countries. This study aims to analyze the profitability of REIT firms in both countries, offering important findings for the development of the sector and its management strategies. The study aims to select a long-term time interval (2013. Q1–2022.Q1) to more fully analyze the impact of factors on the performance and profitability of REIT firms and to avoid the problem of over-learning involved in data mining. Over-learning refers to the fact that a model is overly adapted to the training data set and that its ability to generalize is reduced (Hawkins, 2004. p. 1).

The study's dependent variables are return on assets (ROA) and return on equity (ROE) ratios. Independent variables consist of inflation rate, total debt total assets rate (TDTA), liquidity rate, the logarithm of total assets (AS), annual changes in interest tax and pre-amortization profits, and annual changes in company revenues (RG). The study found that the ratio of company size and debt ratio had a significant impact on the profitability of both companies in both countries.

In the study, the Random Forest Regression method was used. Random Forest is an important method in the field of data mining. It has advantages such as high performance, flexibility, and scalability (Cutler et al., 2007. p. 2783). The algorithm works by bringing together many decision trees, resulting in better predictions (Kingsford & Salzberg, 2008. p. 1012). It also provides valuable information by determining the importance of variables (Biau & Scornet, 2016. p. 219).

The REIT sector is a sector that promotes economic growth and provides jobs (EY, 2021, p. 4). For this reason, policies and regulations need to be properly constituted in order to enable sustainable growth of the sector. The study's results may guide legislators in developing appropriate policies to understand the needs of the sector and promote growth in the sector. By doing so, the sustainability and profitability of the sector can be boosted, investor confidence can be built, and economic growth can be stimulated.

According to the study's findings, the assets of firms in both countries have a significant impact on their profitability. The company's assets are also considered an indicator of the size of a company. B. Ambrose and Linneman (2001. p. 149), in their work, found that larger REIT firms have higher profit margins. These findings include important information for corporate executives and legislators. Firm managers are advised to consider the assets they have on the profitability of their companies as a significant influence and to create a wider portfolio of assets by focusing on increasing the size of the firm. Legislators are advised to develop policies to facilitate the acquisition and use of assets of firms. Researchers are encouraged to use data mining techniques to further analyze the profitability of REIT firms operating in different countries and to conduct comparative studies.

In the first part of the study, a review of the literature was conducted. The second part provides detailed information on REITs, emphasizing the operation and importance of the sector. A comprehensive account of the Random Forest Regression method was subsequently made. In the practice section, analysis was carried out with real-world data based on theoretical information. The results were evaluated statistically. The final chapter summarizes the results of the study and provides recommendations.

Literature Review

This chapter provides a comprehensive review of literature related to REIT firms. The research examined the impact of REIT firms on profitability, the general trends in research focusing on REIT firms, and the impact of legal regulations on REIT firms. In this context, the important findings in the current literature are summarized in this chapter. The key findings in this chapter are presented to expand the current knowledge of REIT companies and to establish the basic foundations of research.

The literature contains a limited number of studies on the profitability of REIT companies. Jakpar et al. (2018. p. 83), Malaysia, investigated factors that affected the profitability of REIT companies. In the study, they used a panel data analysis method and found a positive relationship between dividend returns and company profitability (Çelik & Arslanlı, 2020. p. 88). They have investigated the factors affecting the market values and assets profitability of REIT companies. In the study, they used the panel data analysis method and found a positive relationship between the ROA ratio and the ROE ratio.

Apart from profitability, studies on corporate governance, capital structure, and performance of the REIT are drawing attention. These studies provide findings on the size of a company, the debt ratio, and the role of real estate in relation to inflation (Ambrose & Linneman, 2001. p. 156; Ambrse et al., 2005. p. 347, 2019, p. 15) that found that REITs had a relationship between their business size and their profitability. Another remarkable reading in the literature is the study (Doğan et al., 2019. p. 326; Feng et al., 2007. p. 82; Khairulanuwar & Chuweni, 2020. p. 427; Özcan & Gürol, 2020. p. 14) that emphasizes that low rates of debt are important for the REITs. Feng et al. (2007. p. 82) state that firms with high growth potential will usually prefer lower borrowing rates because they can be more affected by the effects of financial distress costs. Furthermore, some studies (Case et al., 2011. p. 20; Chatrath & Liang, 1998. p. 93; Erol & Tirtiroğlu, 2011. p. 202) emphasize the role of REITs in providing protection to their investors in the face of inflation. These studies have found that as small REIT firms grow, they benefit from economies of scale and that for larger REIT companies, the benefits of growth are more limited.

Real estate investment trust companies are subject to various legal regulations and restrictions in the countries in which they operate. Among these restrictions, the dividend payment rate plays an important role. The main characteristic that differentiates Turkish REIT businesses from those in other countries is that they do not exist (Erol et al., 2011). Jensen (1986. p. 323) argued that the existence of a high dividend distribution rate implies that managers restrict access to free cash flow and direct firms to seek external financing. Hardin and Hill (2008. p. 367) argued that when analyzing the dividend policies of firms, the focus should be on the dividends they distribute above the rate set out in the legislation.

The literature also includes works comparing the stock market performance of REIT companies (Günay & Timur, 2019. p. 28; Kim et al., 2002. p. 85), and studies comparing different industries and REITs. Deran et al. (2013. p. 195) compared the performance of REITs with the Securities Investment Partnerships and found that the Securities Investment Partnerships' ROE and ROA profitability was higher than that of the REITs. Aktas and Darwish (2020. p. 63) compared venture capital investment partnerships with REITs' performance and found that REITs had a higher level of ROE and ROA.

In general, studies of REIT companies appear to be mainly focused on corporate performance, corporate governance, and capital structure. Furthermore, the issue of profitability has been addressed for many sectors, but there has been a gap in this regard in the REIT sector.

Real Estate Investment Trust

The real estate sector is a continuously developing sector with a large economic impact on a global scale. Real estate investment trust firms in this sector have an important role and contribute to economic activity. This chapter provides information on the real estate concept, the economic importance of REIT firms, and the current status of REIT firms worldwide.

Real estate is a general definition of land and of any construction constructed on it. According to this definition, real estate can be divided into two categories, which are inhabitable and uninhabitable. Examples include residences in residential buildings and shopping malls and offices in non-residential buildings. Residential properties are types of real estate used for a variety of purposes, from accommodation to use as a means of investment (Hepşen, 2009. p. 1). The real estate industry can be classified in a variety of ways. These classifications can be performed according to their functions, locations, property rights, and public interventions. Assorted by function, real estate types can be separated by housing, commerce, industry, and agriculture. Depending on their location, they may be separated locally, regionally, nationally, and internationally. According to property rights, rents and relics may be separated as real estate. In addition, public intervention suggests that real estate may be separated publicly or privately. In summary, the term real estate has a broad implication of the land and its structures (Kazak et al., 2017. p. 14). The real estate industry is important for emerging economies. Construction activities contribute to increased investments and economic growth while helping to develop sectors such as cement, furniture, decorating materials, and home textiles. Growth of this sector has significant

impacts on employment and national income, as well as stimulation of side industries. Thus, the real estate sector promotes economic growth, contributing to employment and national income growth (Demirdöven, 2009, p. 3).

Real estate investment trust is a type of partnership that brings together many investors in order to finance real estate and real estate projects (Sırma, 2019. p. 27). Real estate investment trust companies are low-cost, effective, and liquid tools for real estate investment. There are several advantages to REIT investments, such as having a certain economic cycle over stocks and bonds, protecting against inflation, and having a reliable return. For investors who want to be protected against inflation, REITs are performing well in terms of yields. Real estate investment trust companies outperformed the S&P 500 during periods of high and medium inflation in the United States; they performed slightly lower during periods of low inflation (NAREIT, 2021, p. 14). This is considered to be one of the main reasons why investors should invest in REIT projects.

The economic effects of REITs can be classified into three categories: Direct, indirect, and other economic effects. The direct economic contribution is associated with the creation of jobs, labor revenues, and capital expenditures of REITs. The indirect economic contribution involves REITs buying goods and services, increasing employment and revenue in supplier businesses. Other economic contributions relate to the expenditure of REITs' shareholders, bondholders, and supplier businesses. The combination of these effects contributes to the strengthening of the economic cycle and the increased interaction between businesses (EY, 2021. p. 4).

As of the end of Q1 2022, there are 37 REIT companies in Turkey, with a total market value of 6860 million euros (EPRA, 2022, p. 508). There are 18 REIT companies in Malaysia, with a total market value of 8.519 million euros (EPRA, 2022. p. 342). There are some differences between the two countries in the regulatory arrangements for REIT companies. The first is the obligation to pay the dividend, which is a requirement to benefit from corporate tax exemption. In Turkey, there is no obligation for REIT companies; the lack of a specific amount of dividend payment is seen as the most significant difference separating it from the companies of other countries. In many countries, including Malaysia, the rate is 90% (EPRA, 2022. p. 346). Real estate is a hard asset to earn value from. This requires the investment in real estate to be funded by last year's profits or liabilities (Feng et al., 2007. p. 85). However, the lack of such an obligation for Turkish companies constitutes an internal source for new investments, limiting outsourcing (Erol et al., 2011. p. 179). For Malaysian companies, this causes low free cash flows. Furthermore, it is expected that REITs will not be able to take advantage of the tax benefits of foreign debt interest charges, which increases borrowing costs and results in lower debt ratios for REIT companies (Feng et al., 2007. p. 82). The second difference is the regulation regarding debt rates. Short-term credits in Turkish companies are limited to five times the amount of equity (EPRA, 2022. p. 513). For Malaysian companies, borrowing should not exceed 50% of its assets value (EPRA, 2022, p. 346). As a result of the impact of all this, the companies' debt ratios have been estimated at 22% in Turkey and 33% in Malaysia. A low debt ratio is important for REIT companies to demonstrate their ability to pay debt and own real estate (Khairaulanuwar & Chuweni, 2020. p. 427).

Table 1.
Countries' Maturity Stages in the Industry

Nascent	Emerging	Established	Mature
Bahrain	Finland	Australia	USA
Brazil	Ireland	Belgium	
Costa Rica	Italy	Canada	
Bulgaria	Malaysia	France	
Greece	Mexico	Germany	
Hungary	South Africa	Hong Kong	
India	South Korea	Japan	
Israel	Spain	Netherlands	
Kenya	Turkey	New Zealand	
Pakistan	United Arab Emirates	Singapore	
Philippines		England	
Saudi Arabia			
Taiwan			
Thailand			
Vietnam			

The EY Global (2018, p. 4) report outlines the maturity stages in countries' industry. According to this report, Turkey and Malaysia are listed in the category of developing countries of the industry. Data that belong to different countries which are listed in the same category have been used to identify common and different aspects of the profitability of developing countries and to identify the impact of differences in legal regulations on profitability. Table 1 shows countries based on their maturity stage in the industry.

According to Table 1, Turkey and Malaysia are in the category of developing countries of the industry. The aim of this study is to identify common and different aspects of the profitability of developing countries, such as Turkey and Malaysia. As Turkey and Malaysia's GDP growth trends in recent years have been moving in the same direction, similarities and differences in the sector have been studied in both countries. Furthermore, each country has different legal frameworks and can have direct or indirect effects on profitability; data have been used from different country firms in the same category to identify the effect of discrepancies in legal regulations on profitability.

Methods

In the study, the method of Random Forest Regression, which is a method of community learning, was used. Random Forest Regression is a method commonly used in data analysis, and this has been the preferred method in the study. A variety of performance criteria metrics have been used to evaluate the success of the method. Furthermore, the variation in mean absolute error) is considered to determine the severity of variables. This section contains information on Random Forest Regression and the detection of variable severity rates.

The method of study is Random Forest Regression. Random Forest is a method that combines the performance of many decision tree algorithms to classify or predict the value of a variable (Breiman, 2001. p. 5). Traditional data mining methods often exhibit poor classifier accuracy and tend to over-learn. In contrast, the Random Forest method was designed to combine a number of

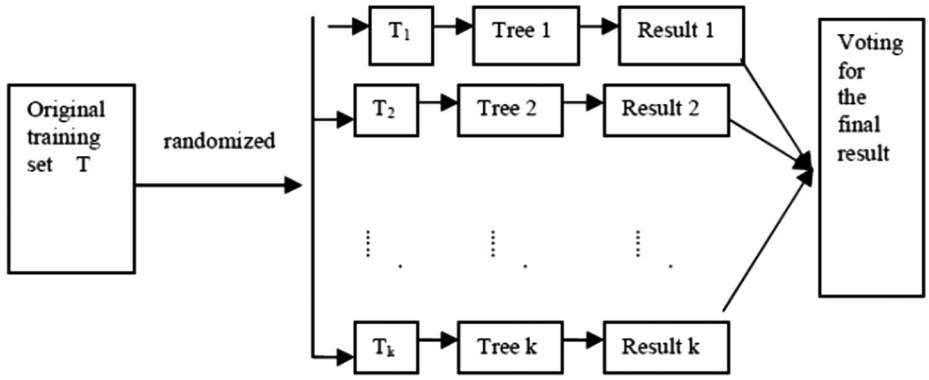

Figure 1.
Random Forest Method Work Shape. Source: (Liu et al., 2012. p. 247).

tree structure classifiers to improve accuracy and reduce over-learning (Kingsford & Salzberg, 2008. p. 1012). Thus, the Random Forest generally performs better than traditional algorithms in terms of accuracy and generalization (Liu et al., 2012. p. 246). The Random Forest works with the bagging method to prevent correlations of different trees (Rodriguez-Galiano et al., 2015. p. 3). In regression tree modeling, a stream-like series of questions is asked, which divides a sample into homogeneous groups, minimizing an in-group variance to determine a numeric answer variable (Vittinghoff et al., 2012. p. 287). As the number of trees grows, the variance of the forest decreases. Thus, it is thought that selecting a large number of trees will improve the predictive accuracy of the model (Breiman, 2001, p. 29). Figure 1 shows how the Random Forest method works.

The Random Forest Regression method has many advantages (Hutengs & Vohland, 2016. p. 129):

- Inclusion or exclusion of Proventors in non-complex ways,
- Possible inclusion of continuous and also categorical variables into the model,
- Have a few model parameters that must be specified by the user,
- Minimized the risk of overcompliance,
- Automatic calculation of variable importance scores, which evaluates the contribution of individual commentators to the final model.

In the Random Forest method, forecast variables can be numeric or categorical. No assumptions are made about the distribution of data. The data are usually divided into a training and test set, and the model's success measurement is based on the average square error (MSE) (Smith et al., 2013. p. 86). The MSE is calculated by averaging the values that are generated by squares of the differences between actual values and predicted values. A higher MSE value indicates that the forecast model makes more errors in actual values, while a lower MSE value shows better forecast performance (Baasith, 2021. p. 1). The formula for the MSE value is as follows (Chicco et al., 2021. p. 4):

$$\frac{1}{m}\sum_{i=1}^{m}\left(X_i - Y_i\right) \quad (1)$$

Variable importance measurements are a natural product of the Random Forest. The values of variables are allowed one by one and evaluate the decrease of the forecast accuracy of the new model. The greater the prediction accuracy decrease, the stronger the relationship between the allowed variable and the responsive variable (Han et al., 2019. p. 736).

Implementation

The aim of the study is to identify factors that affect the profitability of REIT companies in the two countries through the Random Forest Regression method. To this end, data were used from 28 companies operating in Turkey and 17 companies operating in Malaysia. The data cover the periods 2013.Q1–2022.Q1. The dependent and independent variables in the study are contained in Table 2.

The ROA and ROE are key ratios that measure a company's ability to generate profits based on equity and assets. Delen et al. (2013. p. 3982) found that the rates with the most significant influence on the ROA were the pre-tax earnings/equity rate, net profit margin, debt rate, and assets transfer rate. The ROE ratio is a significant ratio used to compare financial strategy, management performance, and profit payments to shareholders in the same sector (Phan et al., 2003. p. 344) in developed and emerging markets. Because of their importance in profitability, these rates are included in the study.

The study first identified the number of trees that made the mean error frame (MSE) the smallest. The purpose of this detection was to build the model that makes the most accurate predictions. Figure 2 shows the minimum MSE value for Turkish companies; Figure 3 shows the number of trees for Malaysian companies.

The number of trees that make the MSE value the smallest has been identified as 330 for Turkish companies and 209 for Malaysian

Table 2.
Dependent and Independent Variables

Variables	Abbreviation	Variable type
Return on assets ratio	ROA	Dependent
Return on equity ratio	ROE	Dependent
Inflation rate	INF	Independent
Total debt total assets rate	TDTA	Independent
Liquidity rate	QK	Independent
Logarithm of total assets	AS	Independent
Annual changes in interest tax and pre-exception proof profit	EB	Independent
Annual changes in company revenues	RG	Independent

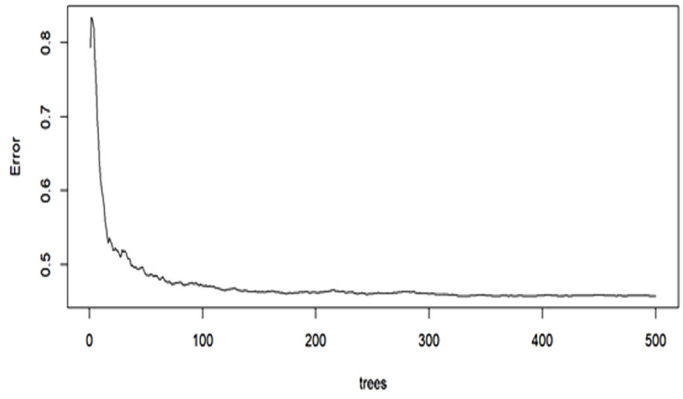

Figure 2.
Turkey ROA Model Number of Trees. ROA = Return on assets ratio.

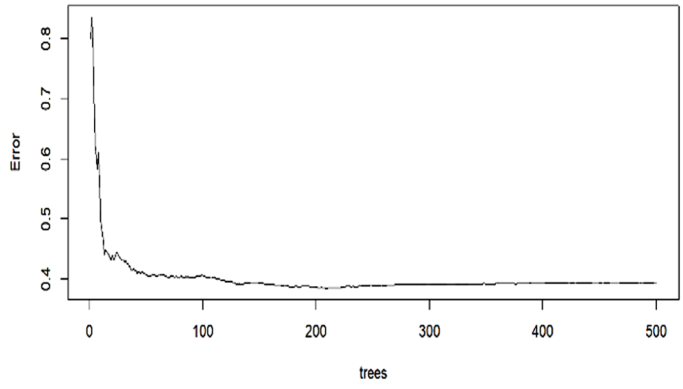

Figure 3.
Malaysian ROA Model Number of Trees. ROA = Return on assets ratio.

companies, and final models are built according to these values. The performance measurements for models were Root Mean Square Error (RMSE), R^2, and Mean Absolute Error (MAE).

Table 3 shows the performance criteria of the models formed by the ROA-dependent variable. The R^2 value was 0.60 for the model, which was created with the data of Turkish companies, and R^2 for the model was 0.63 for the data of Malaysian companies. These values indicate that the arguments contained in the models are sufficient to explain the ROA-dependent variable. The graph for the model is shown in Figures 4 and 5.

The importance of the variables has been determined following the model installation. The importance of the variables is determined by the rate of change to the MSE value if they are excluded from the model. The large variation indicates the importance of the variable. Table 4 contains the detection of the severity of the arguments.

Table 3.
Model Performances by ROA-Dependent Variable

Performance Measures	Turkey	Malaysia
RMSE	0.6627875	0.6143956
R^2	0.5980120	0.6311312
MAE	0.4556523	0.4145418

Note: ROA = Return on assets ratio; RMSE = Root Mean Square Error; MAE = Mean Absolute Error.

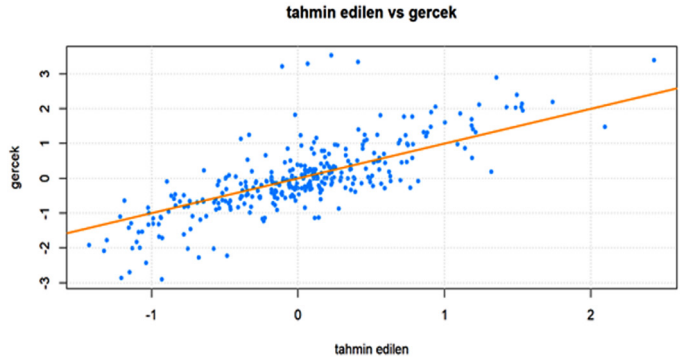

Figure 4.
Turkey ROA Model Chart. ROA = Return on assets ratio.

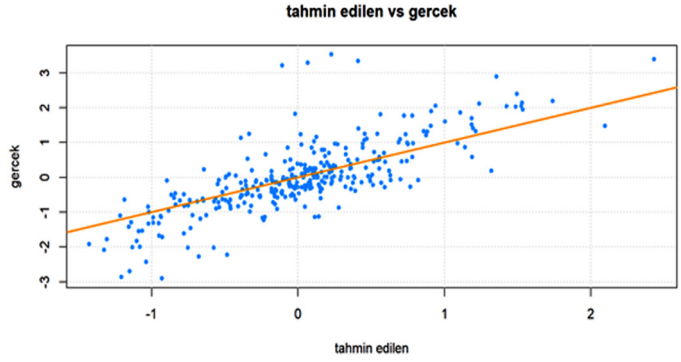

Figure 5.
Malaysia ROA Model Chart. ROA = Return on assets ratio.

The most significant effect on companies' ROA is the AS for Turkish companies and the TDTA for Malaysian companies. For both countries, TDTA and AS variables are among the top three. This indicates that the company size and total assets have a significant impact on its ROA.

The study continues with the identification of the importance of variables on their equity profitability after determining the importance of variables on their assets profitability. Figure 6 shows the number of trees for Turkish companies; Figure 7 shows the lowest MSE value for Malaysian companies.

The number of trees that make the MSE value the smallest has been identified as 493 for Turkish companies and 500 for Malaysian

Table 4.
Variable Importance Degrees (ROA)

Variables	Turkey *%IncMSE*	Malaysia *%IncMSE*
INF	22.47480	16.60392
TDTA	22.95745	32.61987
QK	18.57505	17.34664
AS	33.75637	20.47396
EB	27.55182	16.21514
RG	21.53521	21.19831

Note: AS = Logarithm of total assets; EB = Annual changes in interest tax and pre-exception proof profit; INF = Inflation rate; RG = Annual changes in company revenues; ROA = Return on assets rate; TDTA = Total debt total assets rate; QK = Liquidity rate.

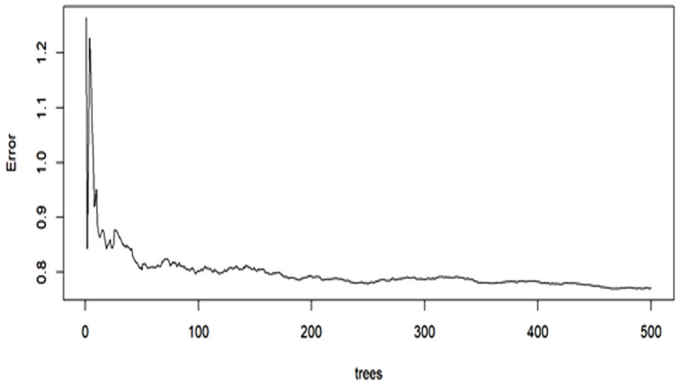

Figure 6.
Turkey ROE Model Number of Trees. ROE = Return on equity ratio.

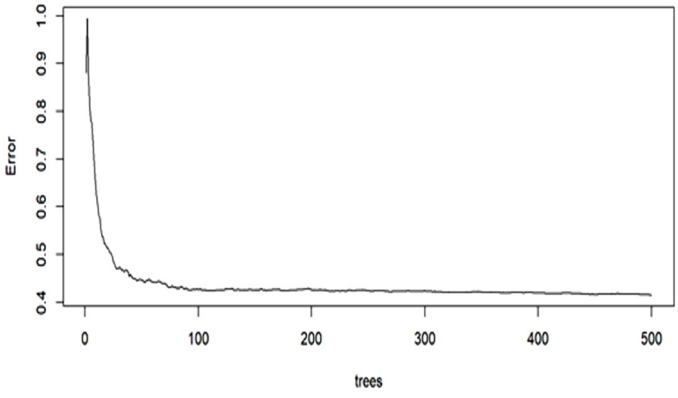

Figure 7.
Malaysian ROE Model Number of Trees. ROE = Return on equity ratio.

companies, and final models are built according to these values. The performance measurements for models were RMSE, R^2, and MAE.

Table 5 contains the performance criteria of models formed by the ROE-dependent variable. The R^2 value of the model is 0.54, which is generated by data from Turkish companies, and the R^2 value is 0.58, which is generated by data from Malaysian companies. These values indicate that the arguments contained in the models are sufficient to describe the ROE argument. The graph for the model is shown in Figures 8 and 9.

The importance of the variables has been determined following the model installation. The importance of the variables is determined by the rate of change to the MSE value if they are excluded from the model. Table 6 contains the detection of the severity of the arguments.

The most significant effect of companies on their equity profitability is that of TDTA, both of the countries' companies. For both

Table 5.
Model Performances by ROE-Dependent Variable

Performance Measures	Turkey	Malaysia
RMSE	0.4660927	0.6421244
R^2	0.5401197	0.5792385
MAE	0.2383799	0.4655510

Note: ROE = Return on equity ratio; RMSE = Root Mean Square Error; MAE = Mean Absolute Error.

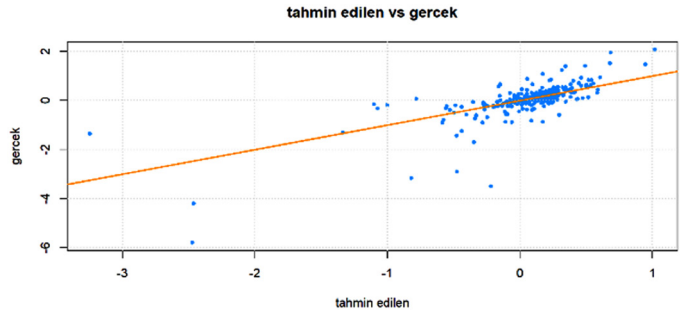

Figure 8.
Turkey ROE Model Chart. ROE = Return on equity ratio.

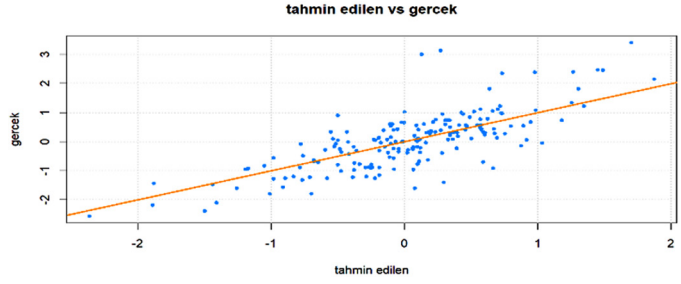

Figure 9.
Malaysia ROE Model Chart. ROE = Return on equity ratio.

countries, TDTA and AS variables are among the top three. In addition, the second- and third-rank variables are the same, with the order RG and AS. This indicates that the change in company size, total assets, and revenues has a significant impact on equity profitability.

Analyses with data from Turkish and Malaysian companies have been carried out in the industry's developing countries category. Analyses have shown that the models built up perform closely together. This detection will likely help provide a healthier assessment of detection and comparison. The findings of models built on ROA and ROE variables indicate that the assets size and debt ratio have a significant impact on business profitability.

Conclusion and Recommendations

Investors invest a variety of funds in revenue, preserving the savings they have in the face of inflation, etc. Real estate investment trust companies provide alternative investments for investors

Table 6.
Variable Severity Rating (ROE)

	Turkey	Malaysia
Variables	***%IncMSE***	***%IncMSE***
INF	7.880565	24.87884
TDTA	22.987490	42.83435
QK	5.313051	26.31940
AS	9.223342	34.04040
EB	6.936583	25.72499
RG	16.496036	31.54435

Note: AS = Logarithm of total assets; EB = Annual changes in interest tax and pre-exception proof profit; INF = Inflation rate; RG = Annual changes in company revenues; ROE = Return on equity rate; TDTA = Total debt total assets rate; QK = Liquidity rate.

through the process of securing their real estate. The fact that REITs have a protective role in the face of high inflation numbers is one of its major advantages. In many countries, there are a number of conditions for REITs to be tax-free. However, no such requirement exists in Turkey, and the exemption begins with the achievement of REIT status. Malaysia is required to pay a dividend of 90%.

The aim of the study is to identify the importance of factors affecting the profitability of REIT companies. To this end, data have been used from REIT companies operating in Turkey and Malaysia. The aim of selecting these two countries is to ensure that the sector falls under the category of developing countries and is subject to different legal obligations. It is therefore expected that the findings will be more healthily identified and interpreted. In the study, the Random Forest Regression method was used. The advantage of the method is that it makes its predictions based on the results it receives from many models. Analyses have found that both Turkey and Malaysia have similar characteristics. Such similarities are that the assets and equity profitability of the two countries are more important than that of the TDTA and the logarithm (AS) ratio of the assets. The total loan/total assets ratio includes information about the accounts payable rate; the logarithm of the assets contains information about the company size. There are studies in the literature that show a relationship between profitability and company size Ambrose & Linneman (2001, p. 156) found that REIT companies correlate with their size and profitability, while larger companies have higher profit margins. In addition, Ambrose et al. (2019b, p. 15) found that a 1% increase in total assets resulted in an 11.1 basis point increase in equity profitability. This detection shows the importance of the ratio. Our findings confirm this discovery and show that corporate size is one of the most important rates on profitability.

Dogan et al. (2019, p. 12) state that REITs use lower leverage ratios than REITs in countries with less strict leverage restrictions. This indicates that REITs in countries where regulations determine maximum leverage ratios take a more flexible approach. This shows that REITs in these countries tend to keep their borrowing levels lower. In this study, similarly, the borrowing rate is a significant ratio that has a significant impact on corporate profitability. Furthermore, although there are differences in regulatory regulations between the two countries regarding REIT firms, significant similarities have been found in the rates affecting their profitability.

According to the study's findings, it is possible to list a number of recommendations for business executives, legislators, and researchers. Detection shows that company size has a significant impact on profitability. Firm size is expected to have a reductive effect on information collection and interpretation costs due to the benefits of scale economy (Boyd & Runkle, 1993. p. 52). In this context, business executives should focus on increasing size and creating effective growth policies when developing growth strategies. Large-scale companies can usually achieve higher levels of profitability by providing access to larger markets and capitalizing on the economy of scale. Thus, when properly managed and backed by appropriate strategies, the company size is an important factor that can increase profitability (Ambrose & Linneman, 2001, p. 156). Another detection shows that the borrowing rate has an effect on business profitability. It is stated that the borrowing rate is a factor in the performance of REIT companies and that the optimal borrowing rate should be low (Dogan et al., 2019, p. 12). Companies with high growth potential often need more external resources. These companies may have high leverage ratios (Feng et al., 2007, p. 82) to assess investment opportunities and finance their expenditures for growth. However, in countries where dividend payment is mandatory (for example, 90% in Malaysia), firms must distribute most of their profits in dividends. This may limit the ability of these companies to regain profits and accumulate less funds for growth. On the other hand, in countries where there is no obligation to pay dividends (for example, Turkey) firms can move with more freedom and redirect their profits toward investment. This suggests that companies with high growth potential may tend to have lower leverage rates. Managers are therefore expected to focus on financial analysis and planning processes to determine optimal borrowing rates and manage their debts carefully. In addition, companies operating in countries where dividend payment is not required can redirect their profits to investment, supporting growth. Firm managers must define dividend policies in accordance with growth objectives and create strategies for accumulating capital. Legislators can take a significant step forward by creating more flexible and harmonious regulations in the REIT sector. They must take into account the fact that strict constraints on leverage ratios can limit the growth and investment potential of REITs. Creating a regulatory framework with a more balanced approach can increase REIT funding options and growth opportunities. In this way, regulation of the capital structure of REITs can help the sector develop more dynamically and sustainably. Researchers are expected to further examine the profitability of REIT firms operating in different countries and to conduct a comparative analysis. Furthermore, it is recommended that researchers use data mining methods to identify factors that affect profitability and create predictive models.

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Genişletilmiş Özet

Çalışmanın amacı, Türkiye ve Malezya'da faaliyet gösteren Gayrimenkul Yatırım Ortaklığı firmalarının kârlılıklarını etkileyen faktörleri tespit etmek ve bu faktörlerin önem sıralarını tespit etmektir.

Çalışmanın yöntemi, veri madenciliği yöntemlerinden Rassal Orman Regresyon'dur. Yöntem, yüksek tahmin gücüne sahip olma, aşırı öğrenme durumlarına karşı dirençli olma ve bağımsız değişkenleri önem derecesine göre sıralama özelliklerinden dolayı tercih edilmiştir.

Çalışma sonucunda, tüm modellerde yer alan bağımsız değişkenlerin bağımlı değişkenleri açıklamada yeterli düzeyde oldukları tespit edilmiştir. Türkiye firmalarının aktif kârlılıklarını etkileyen faktörler önem sıralarına göre; toplam varlıklar, faiz vergi ve amortisman öncesi kârlarda meydana gelen yıllık değişimler, toplam borç toplam aktif oranı, enflasyon oranı, firma gelirlerinde meydana gelen yıllık değişimler ve likidite oranıdır. Türkiye firmalarının özsermaye kârlılıklarını etkileyen faktörler önem sıralarına göre; toplam borç toplam aktif oranı, firma gelirlerinde meydana gelen yıllık değişimler, toplam varlıklar, enflasyon oranı, faiz vergi ve amortisman öncesi kârlarda meydana gelen yıllık değişimler ve likidite oranıdır. Malezya firmalarının aktif kârlılıklarını etkileyen faktörler önem sıralarına göre; toplam borç toplam aktif oranı, firma gelirlerinde meydana gelen yıllık değişimler, toplam varlıklar, likidite oranı, enflasyon oranı ve faiz vergi ve amortisman öncesi kârlarda meydana gelen yıllık değişimlerdir. Malezya firmalarının özsermaye kârlılıklarını etkileyen faktörler önem sıralarına göre; toplam borç toplam aktif oranı, toplam varlıklar, firma gelirlerinde meydana gelen yıllık değişimler, likidite oranı, faiz vergi ve amortisman öncesi kârlarda meydana gelen yıllık değişimler ve enflasyon oranıdır. Çalışma sonucunda yapılan tespit, iki ülke firmalarının aktif ve özsermaye kârlılıkları üzerinde en önemli etkiye sahip değişkenlerin toplam borç toplam aktif oranı ve toplam varlıklar olduğu tespit edilmiştir.