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The Effect of Managers' Overconfidence who have Made Mergers and Acquisitions on the Firm Value[1]

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Birleşme ve Satın Alma Gerçekleştiren Firma Yöneticilerinin Aşırı Güven Davranışlarının Firma Değeri Üzerine Etkisi[2]

Abstract

This study aims to examine the effect of overconfidence behaviours of the managers of the companies whose stocks are traded in Borsa Istanbul on the firm value. In the study, a model was created for Tobin q (Model 1), stock market value (Model 2) and enterprise value (Model 3). As a result of the study, a negative relationship was determined between the change in firm value and the overconfidence variable. According to this result, if the managers performing mergers and acquisitions are overconfident, the incorrect decision may be made while determining the firm value. This leads to a decrease in the wealth of the shareholders. In this respect, managers' overconfidence should also be considered while performing mergers and acquisitions in firms.

Keywords : Behavioural Finance, Manager's Overconfidence, Merger and Acquisition, Firm Value.

JEL Classification Codes : G40, L2, G34, G32.

Öz

Bu çalışmanın amacı, Borsa İstanbul'da hisse senetleri işlem gören firmalarda birleşme ve satın alma gerçekleştiren firma yöneticilerinin aşırı güven davranışlarının firma değeri üzerine etkisini incelemektir. Çalışmada, Tobin q (Model 1), borsa değeri (Model 2) ve girişim değeri (Model 3) için model oluşturulmuştur. Çalışmanın sonucunda firma değerindeki değişim ile aşırı güven değişkeni arasında negatif yönlü ilişki tespit edilmiştir. Bu sonuca göre birleşme ve satın alma gerçekleştiren yöneticilerde aşırı güvenin varlığı söz konusu ise firma değeri belirlenirken hatalı karar verilebilir. Bu durum, hissedarların servetinde azalmaya yol açar. Bu açıdan şirketlerin birleşme ve satın alma kararları yöneticilerin aşırı güvenleri de dikkate alınarak değerlendirilmelidir.

Anahtar Sözcükler : Davranışsal Finans, Yönetici Aşırı Güveni, Birleşme ve Satın Alma, Firma Değeri.

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1. Introduction

One of the methods used by companies to achieve goals such as increasing the value of the company, growing, maintaining their lives and providing competitive advantage is company mergers or acquisitions (Ercan & Üreten, 2000: 32). On the other hand, managers may tend to make merger and acquisition decisions for reasons such as increasing their power, proving themselves or getting a bonus from their success in the company. Malmendier and Tate (2004: 3) examined the reasons that led managers to the merger and acquisition decision regarding behavioural finance and suggested that the managers' overconfidence was effective in making this decision.

Researchers on overconfidence defined overconfidence as a high level of confidence. Researchers have suggested that overconfidence behaviour causes individuals to see themselves as above average even when they are not above average (Liu et al., 2009: 6). In addition, researchers have determined that an individual's overconfidence can have positive consequences, as well as cause the individual to stick to wrong decisions (Beckhaus, 2013: 183).

The overconfidence of the managers, who have an important role in the firms, causes incorrect financial decisions. An incorrect merger or acquisition decision causes a decrease in the company's cash flows, sales and profits. This negatively affects the firm value, reduces the shareholders' wealth, and may even lead to the risk of bankruptcy. In order not to encounter negative financial results, it should be known whether the overconfidence behaviour of the manager is effective in the company merger and acquisition decisions. By examining the managers' overconfidence, it may be possible to explain the merger and acquisition decisions that were unsuccessful or did not create the desired synergy.

Traditional finance has assumed that people make rational decisions, are stable, and try to maximise utility. Behavioural finance, on the other hand, has revealed that anomalies that affect people's preferences and decisions may arise from human psychology (Özen & Ersoy, 2022: 34). Behavioural finance deals with the dimension of irrational human psychology and behaviour that traditional finance neglects and is not in the efficient market hypothesis. Behavioural finance researches the illusions in financial decisions and argues that these illusions can be caused by irrational human behaviour (Tekin, 2019: 294). It is accepted that the main factor in merger and acquisition decisions, which are among the financial decisions, is to increase the firm's value by creating synergy (Gürsoy, 2007: 757). While implementing merger and acquisition decisions, rational managers should determine the firm's actual value. However, recent developments in behavioural finance show that this may not be true due to the irrational behaviour of managers (Asaoka, 2019: 9). As Roll (1986) and Hayward & Hambrick (1997) revealed, in some cases, managers may perform mergers and acquisitions due to irrational factors such as arrogance and overconfidence in managers (Chijuka & Momoh, 2018: 54). In this study, it has been researched whether the overconfidence of the company managers who have made mergers and acquisitions in the companies listed on Borsa Istanbul affects the company value. This study consists of three

parts. In the first part of the study, the literature on the effect of managers' overconfidence on merger and acquisition decisions was investigated. The second part of the study gives information about the research and the data used. The third part of the study discussed the research findings on managers' overconfidence in firm value in mergers and acquisitions.

2. The Effect of Managers' Overconfidence on Merger and Acquisition Decision

Firms frequently make mergers and acquisitions for reasons such as increasing their market share, gaining tax advantages and providing synergy. Despite this, the desired target could not be achieved due to most companies' acquisitions and mergers. In the literature, the complexity and uncertainty of company mergers or acquisition decision-making mechanisms have been cited as the reason for this situation (Beckhaus, 2013: 183). Overconfidence is one of the behaviours that cause the manager to decide to acquire the firm to make wrong decisions by turning to irrational behaviour. Therefore, merger and acquisition decisions are an ideal environment to test the effects of managerial overconfidence. The reasons for this situation can be listed below (Malmendier & Tate, 2004: 2-3).

- Mergers and acquisitions are among the most important corporate decisions and require the direct supervision of the manager.
- Although there is not only the effect of overconfidence in the company merger and acquisition decision, psychologists also state that merger and acquisition decisions are related to overconfidence. Since the managers implement the acquisition decisions, it is claimed that there is overconfidence in the results that the managers believe to be under their control and stand firm.
- A manager who manages mergers and acquisitions takes over, ostensibly taking over the current management of the target firm. Therefore, the manager may underestimate the possibility of failure, which can create the illusion of control in the manager. In addition, a successful acquisition increases the manager's professional status and future employment prospects.
- A manager's earnings from a compensation contract depend on the market price of the firm's stock and hence the results of the manager's acquisition decisions.
- Overconfidence can affect the firm's market values and the wealth of other market participants due to a merger or acquisition.

In addition, the manager's decisions in a company acquisition or merger negotiations may cause significant losses for the bidder and the synergies expected to be obtained as a result of the acquisition (El-Khatip et al., 2012: 4).

Another motivating factor for acquisition is the hubris hypothesis put forward by Richard Roll (Gürsoy, 2007: 757). The relationship between the merger and acquisition event and hubris was first revealed in an article by Roll in 1986. Roll formed the hubris hypothesis based on the assumption that financial markets are in strong, efficient form and

that all information is reflected in financial markets. Roll (1986) also assumed that there is no problem in product markets and that managers are employed in the best positions. In his study, Roll suggested that the manager's hubris behaviour that leads to overconfidence will cause the wrong determination of the target firm's value in acquisitions. According to Roll, if the acquiring firm bids higher than it should be for the target firm, it cannot make a profit. Also, due to the high bid, the wealth of the target firm's shareholders will increase. Roll stated that despite this situation, overconfident managers made the purchase. Therefore, if overconfident managers make purchases, they may earn lower returns than expected. On the other hand, according to Roll, it is less costly to motivate overconfident managers who take risks than managers who are not overconfident (Barberies & Thaler, 2003: 1110; Berlo, 2014: 12; Croci et al., 2010: 368-373; Deo & Shah, 2012: 48; Gervais, 2009: 13).

Baker et al. (2012) stated that research on manager overconfidence based on managers' firm M&A decisions has shown that the market reacts negatively to the purchasing decision. Baker et al. (2012) researched the market reaction to the merger announcements of firms listed on the Toronto Stock Exchange during 1993-2003. As a result of the study, they determined that the company's good performance in the past drives the merger and acquisition motivation. They also showed that long-term operating performance declines significantly for acquirers with superior firm performance in the past. Finally, they showed that the presence of insider managers helps alleviate the negative perception of acquisitions by firms with better operating performance or empire-building CEOs.

De Bodt et al. (2014) examined 977 companies that made purchases in the USA and stated that 95% of them were successful. It has been revealed that acquiring firms bid more than the amount that maximises the shareholder value of the target firm.

Malmendier and Tate (2004) investigated the effects of manager overconfidence in their research for Forbes 500 companies. The study results provided evidence that the managers of firms with high internal financing resources are more likely to engage in mergers and acquisitions that are unlikely to create value.

Billett and Qian (2005) found that managers tend to be overconfident after a successful acquisition. As a result, they are more likely to make another acquisition that negatively affects the firm's stock price.

Doukas and Petmezas (2007) examined whether overconfident managers acted in the interests of company shareholders in mergers and acquisitions. As a result of the research, they found evidence that overconfident managers do not get abnormal returns as much as the abnormal returns obtained by rational managers and that self-attribution triggers managerial overconfidence.

Malmendier and Tate (2008), in their study using data from 394 large companies in the USA for the period 1980-1994, concluded that overconfident managers overestimated

post-acquisition earnings, overpaid to target firms, and made value-destroying mergers and acquisitions.

Lin et al. (2008) examined hubris behaviour, which is considered an overconfidence behaviour, using the merger and acquisition data made in Japan between 1989 and 2003. In their studies, where companies use excessive returns as a variable, negative returns are obtained in the merger and acquisition event realised by the overconfident managers (managers with hubris). At the same time, there are positive returns in the merger and acquisition event recognised by the overconfident managers (managers with non-hubris). Researchers have determined that overconfident managers (hubris managers) can make mergers and acquisitions that lose value. They stated that this result is largely consistent with the overconfidence hypothesis.

Liu et al. (2009) investigated the effect of manager overconfidence on firm performance in large and small companies that make the acquisition. Their study found that overconfident managers were more likely to undertake mergers and acquisitions than non-overconfident managers. Manager overconfidence negatively impacted post-acquisition returns in the short and long term.

Shah et al. (2018) researched the effect of investor and manager overconfidence on the firm value of 432 companies traded on the Pakistan Stock Exchange between 2013 and 2017. Dynamic panel analysis was used in the study. The findings obtained as a result of the research are consistent with the literature that firms with overconfident investors and managers are characterised by high profitability and cash flows and prefer to use debt financing. However, it was concluded that the manager's overconfidence could not directly explain the firm's value.

Hwang et al. (2020) researched the source of CEO overconfidence that leads to failed M&As. They also examined whether CEO power could be a source of overconfidence and how power-led CEO overconfidence influences M&A decision-making. They used a sample of 13,754 U.S. firm-year observations for the 1996-2014 period. A result of research found that CEO power increases the probability of a CEO being overconfident. The study determined that power-led overconfident CEOs tend to complete more deals regardless of economic circumstances, make stock acquisitions, and make acquisitions relative to non-overconfident CEOs.

Tang et al. (2020) researched the effect of CEO overconfidence on firm value after mergers and acquisitions. The study used annual data of 193 firms in the China Stock Market and Accounting Research Database during the 2008-2015 period. The study showed that firm value is positively related to CEOs' overconfidence.

3. Data, Model and Methodology

This study investigates whether the overconfidence of M&A managers affects the firm's value. The study examined 62 companies whose stocks were traded in BIST between

2010 and 2017. These companies have at least two years passed between each merger and acquisition and have full knowledge of the managers performing mergers and acquisitions. Information on managers and companies was obtained from the information published on the KAP (Kamuyu Aydınlatma Platformu-Public Disclosure Platform), the company's financial statements, annual reports, and company websites. A multiple linear regression model was used in the research.

3.1. Data

The research's dependent, independent, and control variables are given below.

3.1.1. Dependent Variables

The firm value will be used as the dependent variable in the study. While calculating the firm's value, the merger and acquisition announcement date has been determined by considering the date of approval of the merger and acquisition decision, which was published on the KAP by the board of directors. After the merger and acquisition announcement date was determined, firm value calculations were made in three different ways. Each firm value calculation was used as a separate model study.

In Model 1, the Tobin q model is used as the firm value. The Tobin q model is a model that provides information about a firm's future investment opportunities. If a firm's Tobin q ratio is greater than 1, the firm has investment and growth opportunities. The Tobin q ratio was calculated as follows. This model was also used in Kasiani et al. (2015)'s study, which researched the relationship between manager overconfidence and firm value.

Tobin q = (Market Value - Book Value of Debts) / Book Value of Total Assets

Tobin q calculation was made separately before and after the merger and acquisition, considering the 12-month data. The market value is obtained by multiplying the monthly average closing prices of the stocks with the number of stocks. Then, the pre-and post-merger Tobin q values were obtained by taking the average of the 12-month Tobin q calculations made before and after the merger and acquisition. The pre-merger Tobin q value change to the post-merger Tobin q value is taken as the firm value variable.

The dependent variable to be used as the firm value for Model 2 is the market price of the firms' stocks. Likewise, the stock market values of the companies were obtained by multiplying the monthly average closing prices of the stocks with the number of stocks. The reason the stock market value is used as the company value is the rapid reflection of the merger and acquisition decisions on the company's stock market value. To determine the change of the pre-merger stock market value to the post-merger value as the company value, the monthly stock market value of the companies for 12 months was calculated as follows.

$R_{it} = P_{it} - P_{it-1} / P_{t-1}$

R_{it}= Change in the firm's stock market value

P_{it}= Stock market value of the firm in period t

P_{it-1}= Stock market value of the firm for the t-1 period

Then, the average stock market values were 12 months before and after the merger and acquisition announcement date. The firm value variable was obtained by calculating the difference between these averages.

In Model 3, enterprise value is used for firm value. The enterprise value of each firm was calculated as follows, taking into account the calculation used in the Taner and Akkaya (2003) study.

Firm Value = Market Value + Net Cash

Net Cash = (Cash + Securities) - Total Financial Liabilities

To calculate the enterprise value of companies, Net cash is added to the market value found by multiplying the monthly average closing prices of the stocks by the number of stocks. This transaction was made separately for the 12 months before the merger and acquisition transaction and the 12 months after the merger and acquisition transaction.

3.1.2. Independent Variable

The overconfidence variable was used as the independent variable in the study. In the literature, the personal characteristics of the manager, the stocks held by the managers in their portfolios, the earnings of the managers and the premiums paid to the managers are generally used as the overconfidence variable. The idea that personal characteristics are institutionally important is based on the work of Hambrick and Mason in 1984 (Malmendier et al., 2020: 1). The literature in corporate finance indicates that the individual characteristics and overconfidence of managers have a central role in explaining financing decisions such as investment and merger (Malmendier & Zheng, 2012: 1). Based on this information, the overconfidence variable was determined by considering the characteristics of the manager.

Demographic features used as overconfidence variables in the literature include the manager's gender, marital status, age, education, managerial experience, purchasing transactions made by managers, and how the manager finances the purchase and takes place on the board of directors. In this study, the overconfidence variable was created based on these characteristics of the manager.

Manager's Gender: Studies have found that men and women managers have overconfidence behaviour. However, men are generally more overconfident than women (Barber & Odean, 2005; Nofsinger, 2001; Mishra & Metilda, 2015). In the study of Huang and Kisgen (2013), it was stated that male managers purchase and borrow more than female managers. In our research, it was requested that the gender of the administrators be taken into account in the overconfidence variable. However, the gender of the managers could not

be included in the overconfidence variable since it was determined that the gender of all managers whose data were fully accessed was male.

Manager's Marital Status: Barber and Odean (2001) found in their research that male investors are more overconfident than female investors. In addition, the study determined that the differences in sales turnover and return (yield) performance were more apparent between single men and single women. In this respect, we wanted to consider the manager's marital status in the overconfidence variable in our study. However, we found that all of the managers included in the study were married, except for one. Therefore, the marital status of the manager was not included in the overconfidence variable.

Manager's Age: Studies focusing on the impact of manager characteristics on firm acquisition indicate that young managers are more likely to engage in purchasing activities due to stronger premiums (compensation incentives). Supporting these findings, Ferris et al. (2013) emphasised in their study that overconfidence negatively correlates with the person's age, as prudence increases with age. For this reason, younger managers take more risks and achieve higher acquisition power than older managers who exhibit more conservative decision-making (Kilian & Schindler, 2014: 46; cited from Ferris et al., 2003).

According to the World Health Organization, when the ages of the managers included in our study are examined, it is seen that the managers are in the young group. Accordingly, the average age of the managers was taken to determine the youngest managers. Managers under the age of 41 who are below the average are evaluated as young managers, and 1 point is given. Managers aged 42 or more were given 0 points and included in the overconfidence variable.

Manager's Education Level: Bertrand and Schoar (2003) found that systematic differences in managers' behaviours are partly due to observable managerial characteristics in their study examining the systematic behaviour differences of managers in corporate decision-making processes. The study found that managers with MBA degrees followed more aggressive strategies, while older managers were, on average, more conservative. In the studies of Mohamed et al. (2012), it was concluded that managers who have been educated in financial matters have more optimism or overconfidence when making corporate decisions (Baccar et al., 2013: 293; cited from Mohamed et al., 2012).

In our study, three different scorings were made regarding the education levels of the managers. Each scoring is included as a separate variable in the overconfidence variable. In the first scoring, it was taken into account whether the manager had undergraduate and postgraduate education. This scoring is based on the illusion of knowledge approach in the literature and the finding that managers with postgraduate education follow more aggressive strategies. Accordingly, 1 point is given if the manager has a postgraduate education, and 0 points if not. In the second scoring, it is taken into account whether the manager has done his education on financial issues. If the manager has completed any of his undergraduate or postgraduate education in financial matters, he is given 1 point; if he has not, 0 points are

given. The third scoring is based on whether the manager's education is in the country or abroad. Although there is no such distinction in the literature, country and abroad, education is included in the variable because it is assumed that the overconfidence level of the person is effective.

Managerial Experience: Malmendier and Tate (2008) and Yim (2013) found that as the time spent by a manager in a managerial position increases, the merger and acquisition activities of the firm also increase. In addition, the authors stated that the cumulative abnormal returns of the stocks of these firms decreased due to the merger and acquisition activities. Moreover, the research results showed that the overconfidence levels of the managers increase as the duration of the managerial increases.

Based on the studies of Malmendier and Tate (2008) and Yim (2013), in this study, the experiences of the managers were evaluated in two different ways and included in the overconfidence variable. It was assumed that if the manager had managerial experience in another firm before M&A, overconfidence would be effective. For this reason, in the research, 1 point was given if the manager had administrative experience in another company, and 0 point was given if he did not have managerial experience. In the second evaluation, the manager's years of management experience in the company where he made the merger and acquisition were taken into account. Accordingly, the average of the years of experience of the managers was taken, and managers who worked in the same company for 14 years or more were given 1 point, and other managers were given 0 points.

Merger and Acquisition Activities of Managers: Billet and Qian (2005) found that if the managers made more than one merger and acquisition, the cumulative abnormal returns (CAR) of the company's stocks were negative if the manager made a second merger and acquisition. The authors stated that the study's results were consistent with managerial overconfidence.

Based on the study of Billet and Qian (2005), it is assumed that overconfidence levels will increase if managers perform two or more mergers and acquisitions. In this study, managers who made mergers and acquisitions of two or more companies were given 1 point, and managers who made only one merger and acquisition were given 0 points.

How the Manager Financed the Acquisition: Firm acquisition performance may be affected by the payment method of the acquisition. In the studies conducted on this subject, it has been found that cash acquisitions are more than stock acquisitions, that cash acquisitions can accelerate mergers and acquisitions compared to stock acquisitions and reduce the likelihood of competing offers (Walter et al., 2007: 334). Managers prefer to pay cash for M&A because the market perceives acquisitions made through stocks as a negative signal. The market interprets the acquisition of a company through stocks as an overvaluation of the stocks of the acquiring company and reacts negatively. In addition, investors in the market assume that the equity of the acquiring firm is overvalued relative to the acquired firm's assets (Borghraef, 2014: 8).

Based on this information, 1 point is given if the manager finances the merger and acquisition in cash, and 0 point is given if he finances it on credit or in stock.

Involvement of the Manager in the Board of Directors: Important decisions are made only by the manager in some companies and by the members of the board of directors in others. If different managers have different opinions about the decisions to be made in the firm, the distribution of decision-making authority may affect the decision-making (Adams et al., 2005: 1404).

In the study of Baccar et al. (2013), it was stated that the probability of CEOs displaying optimism and overconfident behaviour might decrease in companies with strong corporate governance mechanisms. Li and Tang (2010) found that if a manager also chairs the firm's board of directors, the relationship between manager overconfidence and risk-taking behaviour will become stronger, and the manager will have more discretion. In the study of Brown and Sarma (2007), it was stated that having a higher rate of independent directors on the board of directors will reduce the effect of senior executive overconfidence and dominance and the probability of the firm making a wrong acquisition decision.

Accordingly, if the manager is on the board of directors, 1 point is given. If he is not on the board of directors, 0 points are given and included in the overconfidence variable.

Thus, an overconfidence variable was obtained based on managerial characteristics that cause overconfidence in managers. The overconfidence variable was created by considering nine categories based on six managerial characteristics, and the values that the overconfidence variable can take are between 0 and 9.

3.1.3. Control Variables

The purpose of adding a control variable to the research is to add variables that affect the overconfidence behaviour and the variables that affect the firm value, considering the overconfidence literature. While determining the control variables, the literature was assessed and calculated by considering the data of the year before the merger and acquisition, as in the study of Baker et al. (2012). The control variables included in the research are the manager's cash flow sensitivity, firm size, profitability, leverage, P/E ratio, and MV/BV ratio.

Manager's Cash Flow Sensitivity: According to the relationship established between institutional investment decisions and managerial characteristics in the study of Malmendier and Tate (2004), it is stated that overconfident managers can stop the investment decision if there are not too many internal funds in the firm. Based on this information, cash flows were added to the research as a control variable. In the study, cash flows were calculated as follows, taking into account the year data before the merger and acquisition, and based on the analysis of Ali and Anis (2012).

Cash Flows = (Net Profit + Depreciation) - Dividends

Firm Size: Managers may take more risks in large firms than in small firms (Goel & Thakor, 2002). Because borrowing in large firms is less costly than in small firms and causes less bankruptcy probability, this may cause managers to accept riskier investments in their decisions. According to Ferris et al. (2013), firm size positively affects the manager's bid behaviour in mergers and acquisitions (Kilian & Schindler, 2014: 28; cited from Ferris et al., 2013).

Firm size was included in the study as a control variable. Firm size is calculated by taking the logarithm of the year-end data of total assets before the merger and acquisition.

Profitability: Internal resources created from profitability can lead managers to invest. For this reason, managers who make merger and acquisition decisions may be affected by firm profitability. Since the merger and acquisition decision is an asset acquisition, examining the return on assets is important.

Return on assets is used when evaluating business management, as it shows how effectively all assets acquired by companies (including tangible and financial investments) are used (Gökbulut, 2009: 60) and how efficiently the assets are used to generate excess cash (Kepez, 2006: 94). In our study, the return on assets ratio, which is mainly related to investment decisions, was used as the profitability ratio. The asset return was calculated using the data for the year before the merger and acquisition.

Return on Assets (ROA) = Net Profit / Total Assets

Leverage: Kilian and Schinder (2014) stated in their study that the leverage ratio could play an important role in preventing mergers and acquisitions that may cause a decrease in the value of the firm. The leverage ratio variable is obtained by dividing the total liabilities for the year before the merger and acquisition by the total assets.

Leverage Ratio = Total Liabilities/Total Assets

Price/Earnings Ratio (P/E Ratio): Firm performance is effective in the decisions to be taken by the managers and affects the firm value. Since M&A is an investment decision, managers consider the firm's performance while making this decision. Managers of well-performing companies may be more optimistic and/or confident in making investment decisions. For this reason, the Price/Earnings (P/E) ratio, one of the company performance indicators, was added to the research as a control variable. The P/E ratio was calculated as follows (Taner & Akkaya: 2003):

P/E = Market Value / Net Profit

Market Value / Book Value (MV/BV Ratio): Another ratio that provides information about firm performance is the market value book value (MV/BV) ratio. Like the P/E ratio, this ratio gives information about the firm's performance. Therefore, changes in this ratio may cause companies with good performance managers to behave optimistically

and/or overconfidently. The MV/BV ratio was calculated as follows (Taner & Akkaya: 2003):

MV/BV = Market Value / Equity

Information on the variables and calculations used in the research to determine the overconfidence of the managers performing mergers and acquisitions and their effect on the firm value is given in Table 1 below.

Table: 1
Variables Used in Multiple Linear Regression Analysis

Symbol of Variables	Variable Definitions	Formula
EV	Enterprise Value	(number of shares issued x stock price) + net cash net cash = cash + securities -total financial liabilities
TQ	Tobin q	$\frac{\text{(market value + book value of debts)}}{\text{book value of total assets}}$
MV	Stock Market Value	number of shares issued x stock price
OC	Overconfidence Variable	It was created taking into account the demographic characteristics of the managers.
FS	Firm Size	The logarithm of total assets
ROA	Return on Assets (ROA)	net profit / total assets
CF	Cash Flow	(net profit + depreciation) - dividends
LE	Leverage	total debt / total assets
MVBV	Market Value to Book Value Ratio	market value / book value of equity
PE	Price to Earnings Ratio	market value / net profit

4. Findings

Multiple linear regression analysis was used in the study. The mathematical model of this study can be written as follows;

Firm Value = $\alpha + \beta OC + \beta CF + \beta FS + \beta ROA + \beta LE + \beta$ MVBV + $\beta PE + \varepsilon_i$

Model: 1 Multiple Linear Regression Results Using Tobin q Value as Firm Value

Significant results for MV/BV and firm size variables in Model1. The result of the model is given in Table 2.

Tobin q = $\alpha + \beta MVBV + \beta FS + \varepsilon_i$

Table: 2
Multiple Linear Regression Results Using Tobin q Value as Firm Value

Constant (C)	FS	MVBV	R^2	F
,309	-,025	-,119	,297	13,528
(0,007)	(,064)	(,000)		(,000)

Values in parentheses indicate p-values.

As a result of the analysis, it was found as R^2= 0,297. The model is statistically significant at 1%. A 1% increase in the MV/BV ratio, the control variable, will result in a 0.119% decrease in firm value. According to the analysis results, the firm value decreases when there is an increase in the MV/BV ratio of the firm. This result is not similar to the

results of Birgili and Düzer (2010) and Ayrıçay and Türk (2014). They studied BIST100 (ISE 100) production companies and found a significant positive relationship between stock market value and MV/BV ratio. The reason for this may be that the price was used as data in the study of Ayrıçay and Türk (2014) (Küçükkaplan, 2013: 163). In addition, in our study, the firm value variable was used in the research as the change in firm value before and after the merger and acquisition. In our study, the companies that have realised mergers and acquisitions were taken into account, and the Tobin q value was used as the firm value.

An increase in the MV/BV ratio means that the value of the firm's stocks has increased. If this ratio is less than 1, the company cannot create value for its shareholders (Küçükkaplan, 2013: 165). When we consider it in terms of the manager's overconfidence, we can explain the negative relationship between the MV/BV ratio of the firm and the firm value as follows. Managers chose the target firm because of its high value. However, the expected increase in the firm's value did not occur because the firm found its actual value after the merger or acquisition.

A 1% increase in firm size, a control variable, will decrease the firm value by 0.025%. A negative relationship was found between firm size and firm value. The change in firm value in large firms is generally smaller than in smaller firms. The high credibility of large companies, their easy availability of funds and low cost of funds may lead the managers of large companies to take more risky decisions. This situation triggers managers to make investment decisions by acting overconfidence and causes them to make erroneous decisions that reduce the firm's value. This result is similar to the study of Ferris, Jayaram and Sabherwal (2013, cited by Kilian & Schindler, 2014).

As a result of the research, it was concluded that the overconfidence variable did not affect the firm value statistically significantly. However, the sign of the effect of the overconfidence variable on the firm value was negative. The negative sign supports studies that state that manager overconfidence reduces firm value (Malmendier & Tate, 2004; Liu et al., 2009; Lin et al., 2008; Baker et al., 2012; Liu & Xie, 2011).

Model 2: Multiple Linear Regression Results Using Stock Market Value as Firm Value

As a result of the variable selection, it was determined that only the leverage ratio had a significant effect on the firm value. The model with a significant result is as follows, and the results of the model are given in Table 3.

Stock Market Value = $\alpha + \beta LE + \varepsilon_i$

Table: 3
Multiple Linear Regression Results Using Stock Market Value as Firm Value

Constant (C)	LE	R^2	F
,049 (,000)	-,001 (,000)	,174	14,712 (,000)

Values in parentheses indicate p-values.

$R^2 = 0{,}174$ obtained as a result of the analysis. The result is statistically significant and negative. A 1% increase in leverage reduces the firm's value by 0.001%. Excessive use of debt in firms increases the firm's bankruptcy risk. This leads to a rise in both the cost of the firm's equity and the cost of debt. This results in a decrease in the value of the stocks. This result is similar to Birgili and Düzer's (2010) study.

In addition, the high leverage ratio in the firm plays a vital role in preventing the merger and acquisition decisions taken by the managers, which may cause a decrease in the firm's value (Kilian & Schinder, 2014: 29). As a result of the research, it was concluded that the overconfidence variable did not affect the firm value statistically significantly. However, the sign of the effect of the overconfidence variable on the firm value was negative. This result is similar to Kilian and Schinder's (2014) study and Yalçın's (2014) study, which found a negative relationship between firm debt level and the overconfidence variable.

Model 3: Multiple Linear Regression Results Using Enterprise Value as Firm Value

Enterprise value is the firm's value when it is acquired with all its debts and receivables at the time of its acquisition (Taner & Akkaya, 2003: 3). As a result of the analysis we made by considering the enterprise value, it was determined that the variable of overconfidence, the P/E ratio and the MV/BV ratio had a significant effect on the firm value. The model with significant results is as follows. The results of the model are given in Table 4.

Enterprise value = $\alpha + \beta OC + \beta PE + \beta MVBV + \varepsilon_i$

Table: 4
Multiple Linear Regression Results Using Enterprise Value as Firm Value

Constant (C)	OC	MVBV	PE	R^2	F
2,016	-,360	-,812	,074	,281	7,154
(,008)	(,023)	(,025)	(,002)		(,000)

Values in parentheses indicate p-values.

As a result of the analysis, it was found that R^2 = 0,281. The effect of the overconfidence variable on the firm value is at the 1% significance level, and there is a negative effect. A 1% increase in manager overconfidence reduces the firm value by 0.36%. This shows that managers underestimate the risk of acting overconfidence and the risk of investment decisions taken with overconfidence. Thus, managers are overconfidently optimistic and make the wrong investment decision. This result is similar to the study of Malmendier and Tate (2004), Liu et al. (2009), Lin et al. (2008), Baker et al. (2012) and Liu and Xie (2011).

The effect of the price-earnings ratio on firm value is statistically significant and positive. A 1% increase in the price-earnings ratio increases firm value by 0.074%. A firm with a high P/E ratio can merge with a firm with a low P/E ratio, thereby increasing the market value of its stocks and thus achieving the purpose of the merger. In addition, investors

pay high prices for the firm's stocks, assuming that the firm will grow in the coming years by not distributing dividends and directing its profits to investors. This result is similar to Birgili and Düzer's (2010) study.

According to the significance values of the variables, the increase in the MV/BV ratio, which is the control variable, causes a decrease in the firm value. A 1% increase in the firm's market value to book value ratio reduces the firm value by 0.812%. It is seen that the MV/BV ratio affects the firm value negatively. This result differs from the literature. This is due to the data used in the research and the mergers and acquisitions of the companies included in the study, as stated in Model 1.

5. Conclusion

The ability of companies to adapt to the globalising world and to survive in a competitive market depends on making the right financial decisions. The role of the manager is vital in the financial decisions taken in the company. Financial decisions affect the value of the firm. The firm's high value is also a factor that leads investors to invest in the stocks of this firm. Considering that maximising the value of the stock is important for all stakeholders associated with the firm, the financial decisions taken by the firm and the managers who directly or indirectly influence these decisions are obvious.

Although studies examining managers' irrational behaviours are increasing daily, there is no consensus. One of the irrational behaviours of managers accepted in the literature is overconfidence. Research on managerial overconfidence suggests that managers are optimistic about the firm's financial decisions, underestimate the investment's risk, and miscalculate the investment's net present value. Overconfident managers may cause a decrease in the value of the firm by making an investment that should not be made.

This study aims to research whether the overconfidence behaviours of managers who have made mergers and acquisitions affect the firm value. The contribution of this study to the literature is that the overconfidence behaviours of managers who have performed mergers and acquisitions on firm value are researched. Although the effect of manager overconfidence on firm value has been investigated in the sources, no study has been found that examines the impact of manager overconfidence on firm value in mergers and acquisitions.

In this research, the effect of executive overconfidence on firm value in companies that perform mergers and acquisitions was investigated with the help of three models. Although no statistically significant result was obtained regarding the effect of manager overconfidence on firm value in Model 1 and Model 2, it was determined that the direction of the effect was negative in both models. In Model 3, it has been concluded that overconfidence in managers who carry out mergers and acquisitions negatively affects the firm's value. This result is similar to the studies of Malmendier and Tate (2004), Liu et al. (2009), Lin et al. (2008), Baker et al. (2012) and Liu and Xie (2011) show.

Wang (2017) researched the effect of manager overconfidence on M&A decisions for firms listed on the Shanghai and Shenzhen Stock Exchanges from 2013-2015. As a result of the research, Wang found that overconfident managers were more likely to implement mergers and acquisitions. What is desired is the increase in the firm's value due to merger and acquisition decisions. In our study, a decrease in the firm value was observed after the M&A was implemented by the managers who performed M&A and had overconfidence. The reduction in the firm's value indicates that the manager made a miscalculation and made an erroneous decision due to overconfidence while making the merger and acquisition decision. This leads to a decrease in the wealth of the shareholders. For this reason, it is expected that the detection of manager overconfidence in the merger and acquisition decision will contribute to the effective merger and acquisition of the firms and the evaluation of the managers' decisions by considering the overconfidence.

Malmendier and Tate (2008) and Baker et al. (2012) stated that managers of firms with past superior operating performance might have overconfidence behaviour. On the other hand, Malmendier and Tate (2004) drew attention to the fact that managers of firms with high internal financing may be more overconfident. In this respect, firms with past superior operating and high internal financing should also consider the effect of manager overconfidence when making mergers and acquisitions. On the other hand, Wang (2017) stated that independent directors make independent decisions about the decisions taken by the firm management. According to the results of our study, there is a negative relationship between the overconfidence levels of managers who performed mergers and acquisitions and the change in firm value. For this reason, it may be better for independent valuation institutions to manage their merger and acquisition decisions. Since these institutions are outside the company, there is no conflict of benefit with the company. These companies make decisions to maximise firm value. In addition, the company may decide on mergers and acquisitions through the board of directors' meetings with broader participation. Thus, it may be possible for rational and irrational managers and employees to make better financial decisions together.

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