

Does Being More Sustainable Make Firms Less Manipulative? Understanding the Role of Corporate Sustainability and the COVID-19 Crisis in Financial Manipulation

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Abstract: The tendency of firms to distort financial statements has increased. Cases like the Enron Scandal and the 2008 financial crisis as well as their results have made understanding the propensity firms have to manipulate their financial statements important. Moreover, sustainable companies have been suggested as complying better with ethical rules. This study questions whether any difference exists between sustainable and less sustainable firms in terms of the likelihood of financial manipulation. The study also examines how the COVID-19 crisis was reflected in financial manipulation. This study measures the likelihood of financial manipulation being committed using Beneish's M-score. This research uses the Mann-Whitney U and One-Way ANOVA tests to examine whether or not any difference exists between the pre- and post-COVID-19 periods and between sustainable and less sustainable companies in terms of financial manipulation. The results illustrate sustainable firms to have less of a tendency to commit financial manipulation compared to less sustainable companies, with this likelihood increasing for both groups in times of crisis. The results suggest being sustainable to reduce the likelihood of financial manipulation by supporting the formation of an ethical environment in firms and financial manipulation to be considered as a crisis response for both types of firms during a crisis.

Keywords: sustainability, financial manipulation, Beneish M score, ISE100, COVID-19

Özet: Firmaların mali tablolarında çarpıtmalar yapma eğilimi giderek artmaktadır. Enron vakası ve 2008 krizi gibi olaylar ve bu olayların sonuçları, firmaların finansal manipülasyon eğilimlerini anlamayı önemli hale getirmiştir. Öte yandan sürdürülebilir firmaların etik kurallara daha çok riayet ettiği literatür tarafından ileri sürülmektedir. Bu çalışmada ise sürdürülebilir firmalar ile daha az sürdürülebilir olan firmalar arasında finansal manipülasyon yapma olasılığı açısından bir fark olup olmadığı sorgulanmaktadır. Ayrıca COVID-19 krizinin bu firmaların finansal manipülasyon olasılıkları üzerindeki yansımada da incelenmektedir. Nicel araştırma olarak tasarlanan bu çalışmada finansal manipülasyon olasılığı Beneish M Skor modeli kullanılarak hesaplanmıştır. Elde edilen değerler açısından hem COVID-19 öncesi ve sonrası dönemler arasında hem de sürdürülebilir ve daha az sürdürülebilir olan firmalar arasında dikkate değer bir fark olup olmadığı Mann Whitney U ve Tek Yönlü ANOVA testleri ile incelenmiştir. Sonuçlar sürdürülebilir firmaların finansal manipülasyon olasılığının daha az olduğunu ve kriz dönemlerinde bu olasılığın her iki grup firma için de arttığına işaret etmektedir. Elde edilen sonuçlar ışığında sürdürülebilirliğin firmalarda etik bir çevre oluşumunu destekleyerek finansal manipülasyon olasılığını azalttığı ve finansal manipülasyonun firmalar için kriz dönemlerinde bir kriz yanıtı olarak değerlendirildiği söylenebilir.

Anahtar Kelimeler: Sürdürülebilirlik, Finansal Manipülasyon, Beneish's M-score Modeli, BİST100, COVID-19

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Bilgiç, E., Aydın, E., Aydoğan, T. (2023). Does being more sustainable make firms less manipulative? Understanding the role of corporate sustainability and the COVID-19 crisis in financial manipulation. *İş Ahlakı Dergisi*, 16 (2), ss. 40-65

Research Paper

Introduction

Companies' goals have changed with the continuously changing environment of competition (Bilgiç, 2020), especially after Bowen (1953) first introduced the concept of corporate social responsibility (CSR). Companies have begun pursuing not only profit maximization goals but also realizing social objectives. This situation has led to emergence of important theories and models that describe the roles companies have in achieving social objectives. Carrol's (1991) pyramid of CSR, Freeman's (1984) stakeholder theory, and Elkington's (1997) triple bottom line model are among the most focused in the literature. Freeman (1984) emphasized the inclusion and role of stakeholders to promote socially responsible activities, stating that firms should carry out their operations in a way that serves the best interest of all stakeholders who have any interaction with the firm. While Freeman (1984) focused attention on stakeholders, Carrol (1991) drew attention to the fields of social responsibility. According to Carrol (1991), four social responsibility fields exist: economic, legal, ethical, and philanthropic. As for Elkington (1997), his triple bottom line model emphasizes the significance of firms' performance in three fields, namely people, profit, and planet, thereby underlining the significance of environmental performance differently from previous models. Although each of these has gained different perspectives in the literature, some intersection points are found among these models and theories, with companies being encouraged to behave sustainably able to be shown among these intersection points.

Many definitions on sustainability can be found in the literature due to it being a concept that is intertwined with many others, such as CSR, environmental responsibility, ethics, corporate governance, and corporate culture. Sustainability is also definable at different levels, such as the individual, firm, and country levels (Bilgiç, 2022). Dyllick and Hockerts (2002, p. 132) defined corporate sustainability as meeting the needs of stakeholders, whether they are direct or indirect, without making any concessions toward meeting the needs of future stakeholders. They mentioned three dimensions of corporate sustainability, listing them as: i) economic, ii) environmental, and iii) social sustainability. In other words, sustainable companies are those that guarantee sufficient cashflows, are eco-friendly, and add value to communities.

Sustainable companies are expected to exhibit particular behaviors. For instance, they should consume natural resources only at a rate below what can be naturally reproduced, provide a continuous above-average return for their shareholders, or raise the human capital of individual partners (Dyllick & Hockerts, 2002). In this sense, avoiding manipulation in financial statements and fraud are

one set of behaviors that are sought in sustainable companies. In line with this expectation, evidence exists that corporate sustainability or concepts intertwined with corporate sustainability (e.g., ethics, corporate culture, CSR) decrease tendencies to commit fraud or financial manipulation (Liao et al., 2019; Hu et al., 2020; Tran & O'Sullivan, 2020; Hu et al., 2019). However, some studies have reached contradictory results (Delma, 2017; Li et al., 2021). Therefore, this contradiction in the literature might be perceived as a clue that the connection between sustainability and financial manipulation is situational rather than always negative.

Today, companies operate under hypercompetitive and turbulent business conditions. This situation has led companies to encounter emergent rather than planned strategies, which means that companies must adapt their strategies to the ongoing changes (Mintzberg & Waters, 1985). Therefore, sustainable performance, whether economic, social, or environmental, can be achieved by engaging in interactive processes (Andersen & Hallin, 2017). Although companies are expected to adapt themselves to change ethically, companies are observed in some cases to attempt to adapt themselves using unethical behaviors. For example, companies tend to financially manipulate their financial statements during and/or after a crisis (Gacar, 2012; Dereköy, 2020; Özparlak, 2021). On the other hand, COVID-19 is accepted as having put the whole world in a crisis environment where companies may feel obliged to exhibit unethical responses, including manipulating their financial statements.

In line with the discussion above, this research aims to answer two main questions: i) Do sustainable companies on the Istanbul Stock Exchange (ISE) Sustainability Index less frequently conduct financial manipulation compared to less sustainable companies not on the ISE Sustainability Index, and ii) has the crisis environment brought about by COVID-19 increased the tendency of both sustainable and less sustainable companies to conduct financial manipulation? Answering these questions is important in terms of three aspects. As far as this study is aware, no article is yet found to have empirically examined the connection between corporate sustainability and financial manipulation in Türkiye. Considering this relationship in the context of a country that has never been studied before would enlarge the current understanding in the literature. Secondly, as far as this study is aware, no research is found to have taken this relationship into account with regard to the COVID-19 crisis. Considering COVID-19 as a crisis with unique characteristics that is expected to have changed companies' behaviors will contribute to both practical and theoretical knowledge. Lastly, understanding the role corporate sustainability has in preventing financial manipulation will increase awareness of the importance of sustainability,

which is expected to encourage society to prefer more sustainable companies and accordingly encourage companies to behave more sustainably.

This article has adopted the quantitative research method within its scope to answer the research questions. The research includes a literature review section aimed at explaining the concepts addressed in this research, a methods section, and a results and discussions section.

Literature Review

Understanding the Concept of Corporate Sustainability

Finding a precise definition of sustainability appears difficult because the framework of each definition is shaped by the question of what type of system is being sustained (Allen & Hoekstra, 1993). The Oxford Learner's Dictionary has two definitions¹ for sustainability. When considering these two definitions together, sustainability clearly is a concept related to the environment and the time period. However, due to the characteristics of the system to be sustained being critical in defining sustainability, determining the framework of "corporate" sustainability will be important.

Table 1 presents the different definitions for corporate sustainability. The definitions in the literature vary depending on how they are classified. Definitions for corporate sustainability can be classified under three overarching groups: i) definitions that mainly consider ecological concerns, ii) definitions that take social responsibility into account, and iii) broad definitions that integrate firms' economic activities with natural and social concerns (Linnenluecke & Griffiths, 2010). Although corporate sustainability is a concept intertwined with a variety of concepts such as culture, governance, and social responsibility, Dyllick and Hockerts's (2002) conceptualization is inclusive and pellucid. According to Dyllick and Hockerts (p. 132), corporate sustainability involves meeting the needs of stakeholders, whether they are direct or indirect, without making any concessions in meeting the needs of future stakeholders. They emphasized the importance of sustaining and growing the social, economic, and environmental capital base and of actively contributing to sustainability in the political domain for achieving the objective underlined in the definition. Herein, while sustainable companies must assure sufficient cash-flows to guarantee liquidity at any time and to produce above-average returns to

1 The first definition is *the use of natural products and energy in a way that does not harm the environment* and the second definition is *the ability to continue or be continued for a long time*.

their shareholders consistently, they also carry out their operations by consuming natural resources only at a rate below the natural reproduction rate, do not cause emissions that nature cannot handle, and do not engage in activities that degrade ecosystem services (p. 113). In addition, sustainable firms provide value for their communities by supporting the human capital of individual partners and by carrying the social capital of their communities onward (p. 114).

Table 1. *Corporate Sustainability Definitions*

Reference	Corporate Sustainability Definitions
World Commission on Environment and Development (WCED, 1987, p. 43)	“Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”
Gladwin et al. (1995, p. 878)	“Process of achieving human development in an inclusive, connected, equitable, prudent, and secure manner.”
Starik & Rands (1995, p. 909)	“Ability of one or more entities, either individually or collectively, to exist and flourish (either unchanged or in evolved forms) for lengthy timeframes, in such a manner that the existence and flourishing of other collectivities of entities is permitted at related levels and in related systems.”
Székely & Knirsch (2005, p. 628)	“Building a society in which a proper balance is created between economic, social and ecological aims.”
Neubaum & Zahra (2006, p. 111)	“Ability of a firm to nurture and support growth over time by effectively meeting the expectations of diverse stakeholders.”
Pfeffer (2010, p. 35)	“Encompassing a focus on human as well as physical resources.”
Lozano (2011, p. 33)	“Corporate activities that proactively seek to contribute to sustainability equilibria, including the economic, environmental, and social dimensions of today, as well as their interrelations within and throughout the time dimension (i.e., the short, long, and longer term), while addressing the company’s system—operations and production, management and strategy, organizational systems, procurement and marketing, and assessment and communication.”
Pelozo et al. (2012, p. 76)	“Not only encompassing aspects such as philanthropy and pollution but also a broad range of social, environmental, and governance metrics.”

As it can be understood from these definitions, corporate sustainability is a concept that has intersection points with a variety of other concepts (i.e., CSR, environmental responsibility, ethics, corporate governance, and corporate culture). Providing a better understanding of corporate sustainability requires differentiating these concepts from the concepts of corporate sustainability. Environmental responsibility refers to the respect for life and the wise use and management of natural resources (Blackburn, 2012). Environmental responsibility is usually considered as a dimension of sustainability in different studies (Madaleno et al., 2022). One can plausibly state corporate sustainability to include environmental responsibility but to also additionally draw the attention of activities that can be conducted in order to become environmentally responsible. As a next concept, one can plausibly define ethics as acting without substantially harming others, even if they have an opportunity do so only for their own interests (Robin, 2009), and as a set of processes for reaching desired outcomes (Boenig-Liptsin, 2022). Ethics can also be perceived as the principles that prevent harm or that lead to outcomes society deems desirable. The assumption about sustainability is that it is desirable; therefore, firms should pursue it (Shearman, 1990). The concept of sustainability puts forward that firms must take the steps required to integrate the interests of both present and future generations into their operations even if they have an opportunity to only consider their firm's current interests that may harm next generations. Although some regulations are found to push firms to behave sustainably, the concept of sustainability requires firms to intentionally and voluntarily take sustainable steps. As such, this situation makes sustainability an ethical behavior for firms.² One may also plausibly consider corporate governance as the basis for an environment that consists of trust, moral values, ethics, and confidence and that is provided by adopting four main principles (i.e., fairness, responsibility, accountability, and transparency; Aras & Crowther, 2008). Corporate governance includes procedures that frame the role of management in creating balance between the interests of the firm and society and in constituting control and auditing mechanisms for keeping this balance. The claim is usually made that sustainability is fostered as corporate governance improve (Aras & Crowther, 2008). Herein, the claim is reasonable that corporate governance provides an environment that supports firms' sustainable behaviors. Corporate culture can be defined as the shared patterns of understanding or meaning among the members of an organization (Smir-

2 For more detailed investigation: Kibert, C.J., Thiele, L., Peterson, A. and Monroe, M. (2012) *The Ethics of Sustainability*. Portal Rio.

cich, 1983) and describes a firm's internal characteristics. One can plausibly argue sustainability to be a philosophy that should be adopted and shared by the members of a firm. Therefore, the literature claims sustainability to be a concept that should be integrated into corporate culture; accordingly, cultural changes are necessary for a firm to become sustainable (Lozano, 2015; Islam et al., 2019). As for CSR, it asserts the need to integrate social, environmental, and economic concerns into organizational processes and operations (Linnenluecke & Griffiths, 2010). Although CSR is usually confused and used interchangeably with corporate sustainability, it differs from corporate sustainability in terms of its normative orientation and origin (Bansal & Song, 2017). By remaining aware that these concepts differ from one another despite being used interchangeably or alongside one another in the literature, this study will consider these concepts here as factors included under the roof of corporate sustainability.

The Concept of Financial Manipulation and Empirical Studies in Türkiye

Corporate fraud may have very detrimental consequences for companies and investors and may harm public trust and confidence. Fraud can be defined as intentional deceiving and thereby draining value from an organization (Klynveld Peat Marwick Goerdeler [KPMG], 2014). Fraud includes deceiving others and leads to significant losses for the deceived sides. Corporate fraud can be examined under four different categories: fraud of government, regulatory violations, fraud of stakeholders, and financial reporting fraud (Karpoff & Lott, 1993). While fraud of stakeholders on one hand is about cheating in contracts with a variety of stakeholders such as employees, customers, and suppliers, fraud of government relates to contracts with governmental agencies (Uzun et al., 2004). As for regulatory violations, this type involves fraud such as violating regulations that are applied by governmental agencies (Uzun et al., 2004). Lastly, financial reporting fraud is about the agents of a company misrepresenting its financial situation (Uzun et al., 2004). One widely applied technique for financial fraud is the manipulation of financial statements. Many techniques and ways are found for conducting financial manipulation, such as recording fictitious revenue, recording revenue prematurely, and shifting current expenses to an earlier or later period. Financial manipulation occurs when the true performance of a firm is not reflected and inconsistency is present in users' financial statements (Akra & Chaya, 2020). Financial manipulation is commonly studied in the literature within the scope of how technology can be used to detect financial manipulation (Choi & Lee, 2018; Shou et al., 2021; Xu et al., 2022) and what the role of corporate governance is (Yang et al., 2017; Du, 2021).

Because financial manipulation is a problem for all stakeholders, some techniques for detecting financial manipulation have been developed, such as the Beneish model (Beneish, 1997, 1999) and the Jones model (Jones, 1991). Detecting financial manipulation through the use of different techniques is a popular research area in the literature, especially for the Beneish model. These kinds of analyses might lean toward detecting whether financial manipulation has occurred in a particular company (MacCarthy, 2017; Othman et al., 2019) or been conducted in companies operating in the same industry or occurring on the same index (Nyakarimi et al., 2020). Table 2 summarizes the studies that have aimed to detect financial manipulation in Türkiye.

Table 2. *Empirical Studies in Türkiye*

Source	Sample	Technique	Years
Memiş & Çetenak (2012)	118 manufacturing firms from the Istanbul Stock Exchange (ISE)	Adjusted Jones Model	2004-2009
Tekin (2017)	73 firms which are publicly traded and independently audited in Turkey	Beneish's M-score	2010-2014
Uzunoğlu & Karacaer (2019)	98 firms from the Borsa İstanbul (BIST) Industrial Index	Beneish's M-score	2016
Kıracı & Çelikay (2020)	178 firms from BIST Manufacturing Sector	Beneish's M-score	2017-2018
Fidan (2021)	19 firms from BIST Stone and Soil-Based Industry	Beneish's M-score	2017-2019
Benligiray & Onay (2021a)	300 firms from the ISE	Beneish's M-score	2011-2019
Özparlak (2021)	264 firms from the ISE	Altman Z Score & Beneish's M-score	2020

When examining the studies that have focused on financial manipulation in Türkiye, these studies can be classified into two categories based on their objectives. Research in the first category has aimed to improve current models for detecting financial manipulation. To do so, these studies have attempted to combine different models or adjust the coefficients of current models. Research in the second category has purposed to detect financial manipulation conducted by companies and to provide a picture of the market within the scope of financial manipulation. In other

words, these studies have tried to determine the risk of financial manipulation in the market. Research that has focused on financial manipulation in Türkiye also generally use Beneish's M-score over various timespans and sample sizes. When examining these studies, no research is seen to have considered sustainability in the scope of financial manipulation in Türkiye. Therefore, this research focuses on this point with the aim of providing a valuable contribution to the literature.

Corporate Sustainability and Financial Manipulation

Being a sustainable company is not only favorable for the community but also rewarding for the company itself. The literature indicates that sustainability in most cases leads to a positive corporate reputation and is seen as a tool enhancing stakeholders' acceptance and perceptions regarding a firm's activities (Gomez-Trujillo et al., 2020). In addition, most studies have concluded a positive correlation to exist between corporate sustainability and financial performance (Alshehhi et al., 2018). Research has also shown companies that follow a lean green strategy grow more, and this improves the level of competition, family ties, and managerial power. Moreover, employer attractiveness is positively affected by corporate sustainability; this means that as companies become more sustainable, potential employees find these companies more attractive to work for (Presley et al., 2018). Furthermore, corporate sustainability can be considered a factor that enhances consumer loyalty (Moisescu, 2018).

In addition to these benefits, the role of corporate sustainability in avoiding financial manipulation might be shown as another benefit of corporate sustainability. As far as this study is aware of, no empirical study has yet occurred examining the role of sustainability in financial manipulation. However, studies are found that might be indirectly considered to fall under the same scope as this study. The study conducted by al-Jebouri (2019) used an analytical descriptive approach to emphasize how officials are encouraged to commit financial disruptions of appropriations where government institutions lack sustainability. In addition, the results of the multiple regression and logistic regressions Kim et. al. (2012) conducted indicated sustainable business practices such as CSR to enhance the quality of the accounting results. Furthermore, as a result of the panel data analysis by Martínez-Ferrero et. al. (2013), companies were said to have adopted sustainable practices such as CSR to prevent fraudulent behaviors. Moreover, Harjoto's (2007) study using probit, match-pair, propensity matching, and Heckman regressions concluded companies with high ethical culture to have a low possibility of fraud and its severity when these behaviors to happen. In addition, most articles in the literature have shown

the likelihood of financial manipulation and fraud occurring to be less in companies that conduct CSR activities (Liao et al., 2019; Tran & O'Sullivan, 2020; Hu et al., 2019). However, studies with contradictory results are also found. Delma (2017) used the quantitative online survey method and conclude integrating sustainable practices into a business model to be able to increase fraud in Bhutan as a result of escalating costs. Li et. al. (2019) adopted the propensity score matching method and also illustrated CSR performance to be better in periods of fraud compared to periods in which fraud is not committed and explained their result, stating that companies pursue their CSR activities strategically. Therefore, examining the relationship corporate sustainability has with financial manipulation in different contexts and using different method is valuable for gaining a better understanding of corporate sustainability and for enlarging the current knowledge in the literature. In line with the discussion carried out herein, the first research hypothesis has been constructed as follows:

H1: A significant difference exists between sustainable companies and less sustainable companies in terms of the likelihood of financial manipulation in favor of sustainable firms in non-crisis times.

Crises and Financial Manipulation

A crisis can be defined as a state of tension that presents a threat to the objectives and operations of an organization, puts its life in danger, necessitates immediate decisions, and renders the systems of adaptation and prevention ineffective (Tağraf & Arslan, 2003). In regard to pre- and post-crisis periods, the behaviors of both companies and individuals differ during a crisis due to the unexpected and unusual changes happening around them. At the individual level, behaviors such as attitudes toward socially responsible behavior (Potocan et al., 2019), the decision to retire (Coile & Levine, 2011), extrinsic job satisfaction, organizational commitment, and self-regulatory focus (Markovits et al., 2014) during a crisis period differ compared to the pre- and post-crisis periods. At the organizational level, companies' attitudes toward layoff decisions (Gittell et al., 2006; Fenton, 2011; Buchheim et al., 2022), investment decisions (Kovac et al., 2016), wage adjustments (Gregorič et al., 2014), and so on exhibit variations during a crisis period compared to the pre- and post-crisis periods.

Because firms change their behavior in response to a crisis, companies can be expected to behave in unusual and unacceptable ways. Due to this expectation, the question of whether crises cause more unethical behavior is asked frequently

in the literature. Christensen and Kohls (2003) claimed ethical decision making to show a tendency to diminish under the conditions of a crisis. Jaffe and Tsimerman (2011) illustrated their respondents, who had either a student or managerial role, to strongly agree that corruption both in governmental agencies and firms increases during an economic crisis and concession of one's ethics to be acceptable when these kinds of conditions occur. In addition, Karaibrahimoğlu (2010) found a notable decline to occur in the numbers and extent of CSR activities during a crisis.

Financial manipulation is also one unacceptable company behavior that should be considered in the scope of crises. While the literature on one hand has studies arguing financial manipulation to be the reason for economic crises (Zamperini & Menegatto, 2015; Guellil et al., 2015), studies are also found to argue financial manipulation to be the result of crises (Gacar, 2012; Dereköy, 2020, Özparlak, 2021). Dereköy (2020) stated Toshiba to have conducted the financial manipulation technique of carry-over practices to negate the negative consequences of the 2007 financial crisis and to achieve its profit objectives. Özparlak (2021) questioned whether firms on the Istanbul Stock Exchange (ISE) had committed financial manipulation during the COVID-19 crisis. Zamperini and Menegatto (2015) and Guellil et al. (2015) stated the reason for the 2007 financial crisis to have been the huge debts the major banks in Europe and the USA had amassed, as well as institutionalized fraud and manipulation. To determine whether financial manipulation is the cause or result of a crisis, one must consider the unique characteristics of each crisis. When taking into account the crisis environment COVID-19 had brought about, to argue that financial manipulation had generated the coronavirus and thereby the COVID-19 crisis is illogical. However, expecting to encounter changes in companies' behaviors is more logical. Thus, the second hypothesis of this research has been constructed as follows:

H2: The likelihood of a company performing financial manipulation was higher during the COVID-19 crisis compared to the pre-COVID-19 crisis period.

H2a: The likelihood of financial manipulation from a sustainable company was higher during the COVID-19 crisis compared to the pre-COVID-19 crisis period.

H2b: The likelihood of financial manipulation from a less sustainable company was higher during the COVID-19 crisis compared to the pre-COVID-19 crisis period.

Although the higher likelihood of companies exhibiting financial manipulation behaviors during a crisis may be expected, differences should still exist between

more and less sustainable companies. When considering that sustainable companies behave less fraudulently (Harjoto, 2007; Hu et al., 2019; Liao et al., 2019; Tran & O’Sullivan, 2020; Martínez-Ferrero et al., 2013), one can plausibly anticipate sustainable companies to resort to financial manipulation or fraud less often compared to less sustainable companies. However, as far as this study is aware, no research has yet to compare the likelihood of financial manipulation in terms of less and more sustainable companies during a crisis. Therefore, the third hypothesis of this research has been constructed as follows:

H3: A significant difference exists between sustainable companies and less sustainable companies in terms of the likelihood of financial manipulation during the COVID-19 crisis in favor of sustainable firms.

Method

This research has adopted the quantitative research design to test its research hypotheses. Beneish’s M-score was used to calculate the likelihood of financial manipulation and tested the research hypotheses using the Mann-Whitney U and one-way analysis of variance (ANOVA) tests. The following subheadings will detail Beneish’s M-score method and present details about the sample, data, data collection, and analysis techniques.

Beneish’s M-Score

Beneish’s M-score has been widely preferred for measuring financial manipulation in the literature (Aris et al., 2015; Repousis, 2016; Petrik, 2016; MacCarthy, 2017) and can be described as a model constructed to estimate earnings manipulation by considering indexes that have been calculated based on particular values in a firm’s financial statements (Beneish, 1997, 1999). Beneish (1997) aimed to investigate the relationship between creative accounting practices and firms’ extraordinary performances using a probit analysis. Beneish (1999) then improved the model, basing the new one on the distinctive features of earnings manipulation. The variables in this new model were determined to be able to find the impacts of manipulation and to determine the preconditions that firms need to perform manipulation.

When considering how each country has different conditions, having each produced model be adapted to the context of the country is important. The Beneish model was first adapted to the context of Türkiye by Küçüksözen (2004). In this

model, Küçüksözen added two new variables³ that were not present in the original model. By moving forward based on the idea that the coefficients of the components in the model are as important as the components themselves in the success of the model and that the coefficients thus should also be adapted Benligiray and Onay (2021b) recalculated these using the probit regression method with current data from firms in Türkiye and identified a new breakpoint. This current research has preferred the recalculated form of Beneish's model as it should provide better results. The model is represented in Equation 1.⁴ The new breakpoint in the model was identified as -0.95. A Beneish M-score less than -0.95 indicates a firm that is considered to be a non-manipulator; otherwise, the firm is considered to be a manipulator. In other words, one can plausibly argue higher M-scores to indicate a greater likelihood of earnings manipulation.

$$M_i = -3.332 + 0.950XDSRI + 0.045XGMI + 0.201XAQI + 0.424XSNGI + 0.247XDEPI - 0.025XSGAI - 0.317XLVGI - 2.514XTATA \quad (1)^5$$

The Sample

The sample of this research consists of 69 firms that have been divided into two groups. As preferred in the literature (Repousis, 2016), banks have been excluded from the sample. In addition, firms that were acquired by other firms or restructured have also been excluded from the sample, as these activities tend to lead to significant changes in a firm's financial statements. Firms in the first group are those only indexed on the ISE-100 index. Firms in the second group are indexed on both the ISE-100 as well as the ISE Sustainability Index. While 27 of the companies only are found on the ISE-100, 42 are found on both indexes. The ISE Sustainability Index is comprised of firms with higher sustainability performances. The research methodology of the index evaluates firms in terms of a variety of factors, such as environment, board structure, anti-bribery, health and safety, and banking criteria (Borsa Istanbul [BIST], 2022). This research assumes firms that are indexed on the

3 These variables are: "ratio of stocks to gross sales" and "ratio of financial expenses to gross sales".

4 To reach the details of calculation of each index in the model see; Benligiray and Onay (2021b).

5 The meanings of abbreviations in the equation as follows: DSRI = Days' Sales in Receivables Index; GMI = Gross Margin Index; AQI = Asset Quality Index, SGI = Sales Growth Index; DEPI = Depreciation Index; SGAI = Sales, General and Administrative expenses Index; LVGI = Leverage Index; and TATA = Total Accruals to Total Assets

ISE Sustainability Index to be more sustainable than those not indexed. Therefore, one of the criteria to be included in the sample concerns whether or not the firm is indexed on the ISE Sustainable Index. Due to firms on the ISE Sustainability Index having been chosen from BIST, the firms in the other group were selected from firms indexed only on BIST to have a better inter-group comparison.

The second criteria to be included in the sample is to have been indexed on these indexes consistently. Firms that had been consistently indexed between 2017-2021 were included in the sample. This criterion was determined in order to make a more accurate comparison between different years.

Table 3. Sectoral Distribution of Firms

Sectors	Number of Firms on the ISE Sustainabi- lity Index	Number of Firms Not on the ISE Sus- tainability Index
Manufacturing	19	14
Financial Institutions	10	8
Wholesale and Retail Sales	3	1
Information and Communication	2	-
Electricity, Gas, and Water	3	1
Transportation and Storage	2	-
Construction and Public Works	1	-
Technology	2	1
Mining and Quarrying	-	2
Total:	42	27

Table 3 presents the sectoral distribution of firms in the sample. The names of the sectors have been taken from the *Kamuyu Aydınlatma Platformu* (KAP) [public disclosure platform] in Türkiye. According to Table 3, more than half of the firms that are indexed in both the ISE Sustainability Index and the ISE-100 operate in the sectors of manufacturing or financial institutions. Therefore, the sectors of manufacturing and financial institutions can be said to be the dominant sectors in these indexes.

Data and Data Collection

The variables constituting the indexes in the Beneish model were collected from the firms' financial statements. The study has preferred the financial statements published on KAP due to them having been prepared by independent auditors.

Data were collected on the basis of agreement between researchers regarding the variables for the Beneish model and the variables on the financial statements are the same. The M-score data covers the years 2018-2021. Data were recorded on the same excel file. Because the KAP website does not allow the variables for all forms to be downloaded onto an excel form at once, the data were collected one firm at a time from each firm's financial statements.

Analysis Techniques and Results

In order to use parametric analysis techniques, the data must meet specific criteria (i.e., be normally distributed, have the same variance of the target groups, and have no multicollinearity issues). In this sense, the Shapiro-Wilks test score and skewness and kurtosis values need to be calculated for determining normal distribution, the Levene test score for the same variance of target groups, and the variance inflation factor (VIF) for the multicollinearity issue. In order to state the data as being normally distributed, the significance value from the Shapiro-Wilks test should be greater than 0.05. If this is not possible, the skewness (-2, +2) and kurtosis values (-7, +7) are checked (Byrne, 2011; George, 2011; Bilgiç, 2021). To satisfy the assumption that target groups have the same variance, the results from the Levene test should be greater than 0.05 (Bilgiç, 2021). Lastly, to detect the presence of a multicollinearity issue, the VIF value must be less than 3 (Bilgiç, 2021). Tables 4 and 5 present the results from each test that has been required for determining which analysis technique will be used. According to Tables 4 and 5, parametric analysis techniques for testing Hypotheses 1 and 2 cannot be used because the data only satisfy the criteria of skewness and VIF. Therefore, the Mann-Whitney U test has been chosen to investigate Hypotheses 1 and 2. Although the kurtosis criterion was not met, the parametric one-way ANOVA test has been preferred for testing Hypotheses 2a and 2b, the reason being that using parametric tests is sometimes appropriate in small samples even when the data are not normally distributed (de Winter, 2013), and here the data satisfied all assumptions except the kurtosis value. Therefore, one-way ANOVA being the more advanced analysis technique has been preferred for testing Hypotheses 2a and 2b.

Table 4. *Normal Distribution and Levene Test Results*

	Min. Value	Max. Value	Shapiro Wilks Test	Skew- ness Value	Kur- tosis Value	Levene Test
M-scores in 2019	-4.61	3.59	0.000	2.808	19.278	0.01
M-scores for Sustain- able Firms between 2018-2021	-2.62	0.96	0.000	1.842	9.017	0.203
M-scores for Less Sustainable Firms between 2018-2021	-4.61	3.59	0.000	2.091	11.884	0.277
M-scores in 2020	-2.77	2.53	0.000	3.283	17.164	0.02

Table 5. *Variance Inflation Factor Results*

	M-scores in 2019	M-scores for Sustainable Firms between 2018-2021	M-scores for Less Sustainable Firms between 2018-2021	M-scores in 2020
M-scores in 2019	-	1.032	1.011	1.030
M-scores for Sustainable Firms between 2018- 2021	1.006	-	1.010	1.005
M-scores for Less Sustainable Firms between 2018- 2021	1.001	1.025	-	1.026
M-scores in 2020	1.007	1.007	1.012	-

To test Hypothesis 1, 2019 was adopted as the base date due to COVID-19 beginning in Türkiye in 2020 and 2019 being the precious year when no COVID-related cases or crisis such as lockdowns had occurred. To test Hypotheses 2a and 2b, the period from 2018-2021 was preferred for gaining a better understanding of the changes in the likelihood of firms conducting financial manipulations. To test Hypothesis 3, 2020 was adopted as the base date as this was the worst year of COVID-19 in Türkiye in terms of many aspects such as the duration of lockdowns and number of COVID-19 cases.

Table 6. *Results*

Hypothesis	Analyzing Technique	Sig.	Mean / Mean Ranks	Approved/Not Approved
H1	Mann-Whitney U Test	0.777	Sustainable: 34.45 (-1.63) Less Sustainable: 35.85 (-1.50)	Partially Approved
H2a	One-way ANOVA	0.019	2018: -1.72 2019: -1.63 2020: -1.59 2021: -1.43	Approved
H2b	One-way ANOVA	0.101	2018: -1.93 2019: -1.50 2020: -1.43 2021: -1.34	Partially Approved
H3	Mann-Whitney U Test	0.640	Sustainable: 34.10 (-1.59) Less Sustainable: 36.41 (-1.43)	Partially Approved

The results from the Mann-Whitney U and one-way ANOVA tests are shared in Table 6. According to Table 6, sustainable firms have less of a tendency to conduct financial manipulations compared to less sustainable firms in 2019; however, this difference is not statistically significant. Therefore, Hypothesis 1 is partially approved. When looking over Table 6, the likelihood of financial manipulation for sustainable firms can be said to exhibit an increasing trend between 2018-2021, with the difference between years being statistically significant. Therefore, Hypothesis 2a has been approved. Furthermore, Table 6 illustrates the likelihood of financial manipulation for less sustainable firms to have exhibited an increasing trend between 2018-2021 as well, but the difference between years is not statistically significant. Hence, Hypothesis 2b has only been partially approved. Lastly, Table 6 shows the tendency to conduct financial manipulation to be higher for less sustainable firms compared to sustainable firms in 2020. However, the difference is not significant statistically, and thus Hypothesis 3 has also only been partially approved.

Discussion And Conclusion

The topic of the role of sustainability in financial manipulation has been the point of this study's interest. The focus of this research has thus involved the difference (if any) between sustainable and less sustainable firms in terms of the likelihood of financial manipulation. In addition, the study attempted to understand the role the COVID-19 crisis had in the change in the likelihood of financial manipulation for sustainable and less sustainable firms. The Beneish M-score was used to measure the likelihood of financial manipulation, and the ISE Sustainability Index was used to differentiate firms as sustainable or less sustainable firms.

The results have illustrated that, although not statistically significant, a difference does exist between sustainable and less sustainable firms in terms of the likelihood of financial manipulation in favor of sustainable firms during non-crisis periods. The results have also illustrated both sustainable and less sustainable firms' tendency to conduct financial manipulation to have increased between 2018-2021 (pre- and post-COVID-19 crisis), with the difference being statistically significant for sustainable firms. Lastly, the results have exhibited the likelihood of financial manipulation from sustainable firms in crisis times to be lower than that for less sustainable firms.

Moving forward from the results, one might fathom that sustainable firms are less likely to conduct financial manipulation both in crisis and non-crisis times. Accordingly, one might also assert that a firm's sustainable behaviors reduce the situations that push firms to conduct financial manipulation. In other words, one can plausibly argue that sustainability enhances a firm's ethical environment. In this regard, when considering the concepts that are intertwined with sustainability, the claim can be made that good control and auditing mechanisms, which might be considered a requirement of having good corporate governance, as well as the high ethical values that are embedded in corporate culture due to having adopted the philosophy of sustainability, inhibit sustainable firms from committing financial manipulation. When also considering cases similar to Enron⁶ (MacCarthy, 2017),

6 Enron, which was the seventh largest company in the USA until the early 2000s, was an innovative company that made investments in many different fields, especially in the energy sector, and was shown as an example to other businesses (Koban & Karakaya, 2022). When Enron's bankruptcy due to creative accounting practices and fraud became official in October 2001, it was the largest bankruptcy case in the United States to date, with a total asset value of \$63.4 billion (Koban & Karakaya, 2022). In addition, Arthur Andersen, the company's independent auditor, was among the five largest auditing firms in the world, and his licenses were canceled due to this case, and it was liquidated (Koban & Karakaya, 2022).

the likelihood of bankruptcy for firms conducting financial manipulation is generally claimed to be high. The Enron case is usually used in the literature within the scope of detecting corporate fraud and fraud detection techniques (Ofori, 2016; MacCarthy, 2017). Those studies evaluated the case in terms of had these fraud detection techniques been used, would Enron's corporate fraud have been detected or not. Furthermore, the philosophy of sustainability not only involves environmental and social concerns but also includes economic concerns, which means behaving in line with activities that prevent bankruptcy. Therefore, the likelihood of sustainable firms encountering bankruptcy can plausibly be stated to be lower compared to less sustainable firms. Hence, investing in sustainable firms might be recommended as a less risky choice because sustainability generates an environment of trust for both the market and investors. In addition, both policymakers and society should support firms with sustainable activities for a sustainable economy and strong stock exchange. In this sense, policymakers may provide incentives such as tax discounts or advantageous credits to firms so that they operate in line with the principles of sustainability. Activities may also be organized for increasing firms' awareness of the benefits of being sustainable and how to become a sustainable firm. Moreover, society can support sustainability by preferring products from sustainable companies, investing in these companies, and demanding more sustainable companies.

The results also indicate crises to increase the likelihood of financial manipulation from firms. In other words, the claim can be made that financial manipulation might be how firms respond to a crisis. Therefore, the likelihood of financial manipulation appears to be a high risk for each stakeholder during a crisis. In this regard, audit activities should be increased and be more detailed during a crisis. Also in this sense, auditing systems should be developed to satisfy the needs of each crisis. Although a few efforts are found to have been made at comprehending auditing during times of crisis times from different points of view (Cruz, 2020; Çağlayan & Kırıl, 2020), these efforts appear insufficient. Additionally, investors and officials should be more careful about financial manipulation during times of crisis. In this regard, they should follow the principles of professional skepticism more often. When considering the relationship between professional skepticism and auditing quality, greater skepticism is required during times of crisis (Karahan & Çukacı, 2018).

This study has provided scholars with some direction for future research. Firstly, additional variables can be considered in future research. In this sense, the relationship certain dimensions of sustainability (e.g., economic, social, environ-

mental) have with financial manipulation can be examined. Understanding these relationships will provide a more accurate understanding about the relationship between sustainability and financial manipulation. Secondly, because each country has a different culture, cross-cultural analyses could be conducted in future research. Whether differences exist in firms operating in different cultures in terms of financial manipulation and sustainability can be investigated. Lastly, cross-sectoral analyses can be carried out to provide a more detailed understanding. These analyses could enlarge the current understanding, as each sector has its own characteristics that may enhance or prevent financial manipulation.

As with other studies, this research has contained certain limitations. The first limitation is about data characteristics. If the data had satisfied certain criteria, using more advanced analysis techniques would have been possible. The next limitation involves sample size and the covered duration of time. If the sample size had been larger, making sectoral comparisons would have been more likely. Also, if the covered duration of time had been longer, the study could have shown the trend regarding the likelihood of financial manipulation in Türkiye. However, despite the limitations included in this research, this research has provided a valuable perspective to the literature.

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