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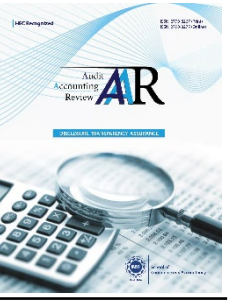

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Title:	**A Sectoral Perspective for Unveiling Earnings Manipulation: Evidence from Pakistani Non-Financial Firms**
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A Sectoral Perspective for Unveiling Earnings Manipulation: Evidence from Pakistani Non-Financial Firms

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Abstract

The major issue with the financial statement is earnings management (EM). The problem has a long history of documentation in accounting theory and practice. Researchers have employed a variety of models to identify earnings manipulation (EMN) in different economies. However, the Pakistani setting has been the focus of very few studies on this issue. The current study is an attempt to determine whether EMN exists in any of Pakistan's listed non-financial sectors. The study employed data collected from seven primary industries listed on the Pakistan Stock Exchange (PSX) between 2012 and 2019. These industries included cement, chemical, food, oil and gas, manufacturing, sugar, and textile. The study utilized Beneish's (1999) M-Score Model (MSM) to identify the existence of EM. According to the findings, 46% of the Pakistani non-financial companies listed on PSX were engaged in EM. Moreover, the sample chosen also appeared suitable for use with Beneish's MSM. The conclusion indicated that MSM can be successfully used by businesses to determine EMN. The results can be used by bankers and investors to identify the instances of EMN in financial statements. Moreover, the results can also be used to improve the caliber of financial reporting. Academics and professionals interested in predicting future profits should also take note of the outcomes.

***Keywords*:** earnings management (EM), earnings manipulation (EMN), financial statement, investors, M Score model, non-financial firms

Introduction

According to Gatla (2022), accounting theory plays a primitive role in improving the understanding pertaining to financial reporting quality. One of the supreme imperative concerns linked to the financial statement is earnings management (EM). Moreover, this has been well-recognized in

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accounting theories and practices for an extensive period of time (Anh & Linh, 2016). A dominant issue in accounting research is the degree to which managers change stated earnings for their personal advantage (Beneish, 2001). EM is considered as one of the interesting and debatable topics in the field of finance (Kliestik et al., 2021). This is because it discusses about the manipulation of accounting numbers by firm financial managers to make their financial statements less transparent. There are very few definitions of EM in the literature (Beneish, 2001). However, the most extensively putative definition by Healy and Wahlen (1999) is that "EM happens when managers alter the financial reports with the intention to either mislead the readers of those statements or to influence the contractual outcomes that rely on accounting numbers reported in the financial statements". Similarly, Ronen and Yaari (2006) precise many definitions of EM by categorizing them as snowy, grey, and black. EM is measured as useful, or snowy, if it improves the transparency of the financial reports (Beneish, 2001); grey, if the manipulation of reports is inside the limits of compliance with bright-line values and these standards, could either be opportunistic or efficiency-enhancing (Fields et al., 2001); and, finally, black if it comprises complete distortion and scam (Levitt, 1998; Schipper, 1989). Academic researchers have concluded that EM techniques are employed by financial managers to achieve particular aims, such as evading loss, meeting market prospects, avoiding debt pledge defilements, and increasing a manager's wealth (Kliestik et al., 2020). In this regard, whatever the motivation, is the use of EM impairs earnings' quality and mislead users of financial reporting (Jaggi & Tsui, 2007).

Various methods and techniques have been introduced to detect EM. According to Anh and Linh (2016), misrepresentation in the financial reports can generally appear through specific numbers. This is because there is a strong association amid balance sheets, income statements, and the statement of cash flow items in the company's annual reports. According to Beneish et al. (2013), M-Score Model (MSM) is a suitable technique to detect accounting fraud (EM). Moreover, the Beneish's MSM has also been used by many firms to detect EMN in various countries, such as USA, Italy, India, and Vietnam (Beneish, 1999; Paolone & Magazzino, 2014; Kaur et al., 2014; Anh & Linh, 2016). Extensive research has led to the substantial deduction that the Beneish's model is a decisive tool in scheming the likelihood of accounting fraud (Paolone & Magazzino, 2014). Therefore,

the current study used Beneish's MSM to detect EMN due to its simplicity, popularity, and reliability.

A few examples of high-profile cases and scandals are the financial accounting scandals surrounding the Taj company, the Mehran bank scandal, and the controversy surrounding the privatization of the PTCL in Pakistan (Abid & Ahmed, 2014; Petra & Spieler, 2020). Investors eventually lost hundreds of millions of dollars as a result of these scandals, which also damaged their confidence in the integrity of the capital markets. EM was the main problem in these cases (Goncharov, 2006). These business crises questioned the roles of management, auditors, regulators, analysts, and others, as well as the validity and dependability of financial reporting (Ajayi-Nifise et al., 2024). Gu et al. (2005) stated that different industries or sectors may have different accounting decisions made by managers. Any nation's financial and economic progress is attributed to the sectors, which are thought to be the sources of economic growth. These industries offer a suitable foundation which is necessary to determine the company's healthy financial structure. Since each sector is susceptible to varying degrees of manipulation, the unique characteristics of each one may have varying effects on the firm's mechanism across sectors.

Manipulation or fraudulent activities in the financial reports by publicly listed firms may increase the concerns of creditors, investors, auditors, and other stakeholders (Baskaran et al., 2020). One sort of deception that may have serious consequences including the loss of investor trust, possible fines, and criminal charges is material misrepresentation (Ernst & Young, 2010). In Pakistan, corporate scandals mentioned above reveal that companies in Pakistan are involved in EMN. There are only a small number of researchers who have concentrated on EM in the Pakistani context. Therefore, the current study aimed to determine the levels of EM in various sectors of the economy by using MSM.

The current study is significant since it addressed an important element of financial reporting known as EMN, primarily focusing on Pakistani non-financial firms' perspective. The study utilized MSM to identify the EMN. Likewise, the study also contributed to the body of knowledge in multiple ways. Firstly, it attempted to fill the gap in academic literature by providing empirical evidence of EMN from a Pakistani firm's perspective. Additionally, it also highlighted the need for a strict regulatory mechanism. Secondly, the study utilized MSM in the Pakistani non-financial context.

According to the researcher's best knowledge, no study is available to determine the EMN sector-wise by using MSM from Pakistani non-financial firms' perspective. Thirdly, the study would inform regulators and policymakers to examine the incidence of EMN in Pakistani non-financial firms and provide important guidelines for effective regulatory mechanisms. Finally, the study may provide important insights in helping the companies to adopt more ethical practices and improve the quality of financial reporting.

The rest of the paper is organized as follows. Section 2 of the study discusses literature review. Methodology has been given in section 3. Section 4 covers the findings along with the interpretation of the results. The final section presents the conclusion, limitations, and directions for future research.

Literature Review

Earnings are the most important indicators to measure the performance of any firm. According to Anh and Linh (2016), managers can manipulate accounting figures in financial statements of the companies to convey a positive image of the company. There is a great debate about the concept of "Accounting Manipulation" around the world by corporate businesses. Moreover, the international literature also indicates its importance. The concept supports the process of changing or altering the accounting data from balance sheets and income statement, which modifies the firm's financial position from actual one (Paolone & Magazzino, 2014). Stolowy and Breton (2004) claimed that the notion of inefficient markets (Sharpe, 1964, Macey & Miller, 1990) justifies the growth of illegal activities or accounting manipulation in financial reporting. According to this theory, there is a concept of asymmetric information that would encourage managers to manipulate the accounting figures. The actual purpose that motivates managers to use manipulation in financial reports is that they want to show the results according to the expectations of stakeholders.

According to widely accepted principles, managers and accountants must abide by accounting rules, however, they also have some latitude in choosing accounting procedures and estimating amounts that most accurately reflect a company's financial performance or position. Additionally, managers have the option to select accounting techniques that, in reality, never accurately depict the company's performance, deceiving

stakeholders, and other information consumers (Healy & Wahlen, 1999; Saleem et al., 2016). Khan (2022) conducted research on EMN as to how it affects the company performance in the context of Pakistani financial system. Utilizing the data from an extensive dataset, comprising 400 companies listed on the PSX spanning almost 20 years, the study aimed to clarify the connection between firm success and profit management. Conclusion shows that EM considerably improves the firm success. Christianto (2014) also discovered how EMN affected Indonesian stock returns. The research employed MSM as a stand-in for EMN as the independent variable, stock return as the dependent variable, and leverage and book-to-market value as the control variables. From 2009-2011, secondary data was gathered for the study from the Indonesia Stock Exchange. The results indicated a negative correlation between Indonesian stock return and M-Score. Paolone and Magazzino (2014) investigated the possibility of profits manipulation among Italian companies listed on stock exchanges. The companies that were chosen to collect the data for the current study included food, textile, automotive, apparel, and metallurgical industries. All of these industries have elevated revenue. The study attempted to ascertain whether the EMN occurred or not. The results of the M score model showed that over half of the sampled organizations were engaged in activities related to EMN. Halilbegovic et al. (2020) gathered yearly data from 2008-2015 to examine how MSM is applied to small and medium-sized businesses. Annual data from the companies' audited annual reports was gathered for the study. Regression analysis, correlation, and sample t-tests were used to interpret the data. Findings showed that majority of the enterprises had manipulated their earnings. Razali and Arshad (2014) also examined the relationship between corporate governance framework and probability of financial reporting fraud. The MSM and Altman's Z-score models were used to determine the probability of fraudulent financial reporting. Annual data for 227 companies, listed on the Malaysian stock exchange, was gathered for the study during 2010 and 2011. The findings demonstrated that strong corporate governance practices enhance the reliability of financial reporting. Roy and Debnath (2015) employed five variables of the M-score model to ascertain the variability between them in terms of EM strategies for Indian companies. The findings showed that profitability and EM techniques are negatively correlated. Conversely, EM techniques and liquidity have a favorable correlation.

Literature revealed that managers and accountants must follow the accounting rules according to generally accepted principles. However, accounting rules also provide them some flexibility to adopt accounting methods and make estimations that best represent the financial performance or position of the firms. Moreover, managers may also choose accounting methods that actually never reflect the actual performance of the company, therefore misleading other information users and stakeholders (Healy & Wahlen, 1999; Saleem et al., 2016). Khan and Kamal (2022) investigated the impact of affiliated and non-affiliated family business groups on the manipulation of earnings on a sample of Pakistani listed companies from 2014-2019. The results demonstrated a negative correlation between related enterprises of family business groupings and accrual-based profits manipulation. Furthermore, as compared to family business group associated enterprises, the extent of EMN is greater in non-affiliated firms. Likewise, Christianto (2014) determined the impact of EMN on stock return in Indonesia. The study used the MSM as a proxy for earnings manipulation which is the independent variable, stock return is the dependent variable and the control variables used in the study are book-to-market value and leverage. The findings show a negative relationship between M-Score and stock return in Indonesia. Paolone and Magazzino (2014) examine the risk of earnings manipulation among the Italian companies listed on their stock exchanges. The selection of companies is based on the revenue, the companies that have high revenue are selected in this study including food, textile, automotive, clothing, and metallurgic. The study was used to determine the presence of earnings manipulation and the findings from the M score model revealed that more than half companies from the given sample were involved in earnings manipulation practices. Halilbegovic et al. (2020) aim to analyze the application of the MSM on small and medium enterprises by collecting annual data from 2008-2015. The findings revealed that most of the companies were involved in earnings manipulation. Sultana et al. (2022) investigated some novel causes, motivational elements behind EM manipulation, and its regulating mechanisms in the context of Pakistan by adopting qualitative research methodologies. Semi-structured interviews were conducted with auditors, credit analysts, investors, and accounting academics to gather the data which was then evaluated by using NVivo 10. The results demonstrated that with appropriate governmental check and balance, the SECP and auditors may improve the quality of reporting. Moreover, Razali and Arshad (2014)

scrutinized the associations between corporate governance structure and the likelihood of fraudulent financial reporting. The study applied Altman's Z-score model and MSM to find the likelihood of fraudulent financial reporting. The result of the study revealed that effective corporate governance mechanism helps in improving the credibility of financial reporting. Roy and Debnath (2015) used five variables of M-score model and determined the variability between them in terms of EM practices by collecting the data from Indian companies. The results revealed that there is a negative association between profitability and EM practices. On the contrary, there is a positive relationship between liquidity and EM practices.

There are two types of EM, for instance, one is accruals EM known as the accrual-based manipulation, whereas the other type is known as the real EM which uses real manipulation (Bartov, 1993). Various measurements of earnings show the choices made regarding earnings reporting (Walker, 2013). The existence of electromagnetic fields has been studied for many years using a variety of models that have been documented in earlier research. More precisely, research has shown that a number of models including the Modified Jones model (Dechow et al., 1996), the Earnings Distribution model (Chen et al., 2010), the Aggregated Accruals Jones model (Jones, 1991), Specific Accrual models (McNichols & Wilson, 1988), or the MSM (Beneish, 1999) are used to determine the presence of EM.

All the above mentioned models are important to detect EMN. The most commonly used and one of the powerful models for quick detection of EMN is the MSM developed by Beneish (1999). Beneish applied MSM on a sample of 74 US firms from 1982-1992 to detect manipulation firms from non-manipulation. This model was used for the very first time and the results revealed that about half of the selected firms were involved in EMN. Since then, this model has been used by many researchers worldwide (Aris et al., 2013; Dechow et al., 2011; Kaur et al., 2014; Mahama, 2015; Marinakis, 2011; Nwoye et al., 2013; Omar et al., 2014; Paolone & Magazzino, 2014). Using Beneish's MSM to analyse an organization's earning quality, Warshavsky (2012) discovered that all of the companies selected for the data collection of the current study fall into the category of earning manipulators, based on the model's standard value. By using the Beneish's MSM to financial statements, Omar et al. (2014) investigated EMN practices in Malaysia and discovered that corporations were engaged

in them. Using MSM, Kaur et al. (2014) examined 332 Indian enterprises over the course of 2011–2012. The findings indicated the existence of EMN. Mahama (2015) used Enron data from 1996-2000 and the results indicated the presence of EMN. Literature reviews show that numerous studies have been conducted on EMN in Western countries in the context of emerging economies, such as Pakistan. However, according to the author's best knowledge, no studies have been conducted in this field in different sectors listed on Pakistan Stock Exchange (PSX). The current study used Beneish's (1999) MSM to detect the presence of EMN in listed non-financial sectors of Pakistan.

Methodology

The current study collected the data from seven major non-financial sectors listed on the Pakistan Stock Exchange (PSX). The data was obtained from DataStream (Thomson Reuters) and annual reports by the listed companies. Annual data of eight years spanning from 2012-2019 was collected. Table 1 shows the details and list of companies selected from each industry or sector under investigation.

Table 1

List of Selected Non-Financial Firms

Sector	Number of Companies
Cement	19
Chemicals	40
Food	13
Oil and Gas	24
Manufacturing	24
Sugar	23
Textile	92
Total	235

The identification of EM is vital for financial statement users to measure the existing financial enactment, to envisage upcoming productivity, and to regulate firm assessment (Jansen et al., 2012). According to Kaur et al. (2014), the MSM used various ratios to estimate the probability that the firms are involved in EMN. Beneish (1999) proposed a model known as MSM to determine the manipulation or distortion in the financial statements. Most of the prior researches used MSM to determine the level

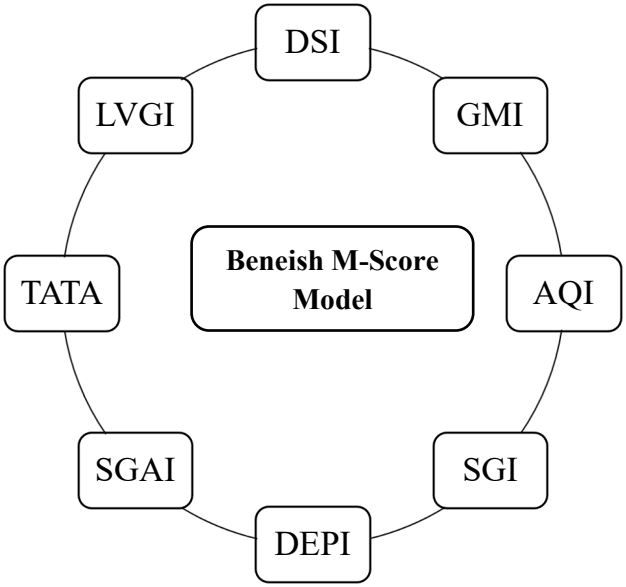
of EM in various firms and sectors, respectively (Beneish, 1999; Busirin et al., 2015; Busirin et al., 2016; Razali & Arshad, 2014). The MSM is symbolically presented as follows:

$$M\ score = -4.84 + 0.92(\text{DSRI}) + 0.528(\text{MI}\ ) + 0.404(\text{AQI}) + 0.892(\text{SI}\ ) + 0.115(\text{DEPI}) - 0.172(\text{SAI}\ ) + 4.679(\text{TATA}) - 0.327(\text{LVI}\ )$$

The M score equation used eight ratios with some specific value. The value of each ratio was determined for every selected sector of this study and then the values were put in the above Beneish regression model. The equation shows the result for each sector. There is a set benchmark for this equation, if the value of M-Score is more than (-2.22), then it can be said that the sectors or companies are involved in EMN.

Figure 1

M-Score Model



where,

DSRI = Days' Sales in Receivable Index.

GMI = Gross Margin Index

AQI = Asset Quality Index

SGI = rowth Index

DEPI = Depreciation Index

SGAI = Sales, General and Administrative Expenses Index

TATA = Ratio of Total Accruals

LVGI = Leverage Index

Data Analysis and Findings

The current study used Beneish's MSM to determine the level of EM. Table 2 shows the sector-wise list of companies involved in EM by using the overall dataset spanning the time period from 2013-2020.

Table 2

PSX Sector Classification for Earnings Manipulation (EMN)

Selected Sectors	Total sample companies	M-score greater than -2.22	Final Percentage (%)
Cement	19	10	52
Chemicals	40	20	50
Food	13	4	30
Oil and Gas	25	14	56
Manufacturing	24	8	33
Sugar	23	15	65
Textile	92	37	40
Total	236	108	46

The findings revealed that 46% of the firms listed in PSX had a greater probability for EMN, whereas, 54% of the companies were not involved in EMN. The study performed sector-wise analysis to detect EMN by using Beneish's MSM. The results indicated that the sugar sector in PSX was involved in EMN in which more than 65% of the firms had a greater probability of EMN, whereas the remaining did not have. In the oil and gas sector, 56% of the firms were involved in EMN and they had an M score of more than -2.22. In the cement sector, 52% of the companies from the selected sample were involved in EMN, closely followed by the chemicals sector where 50% of the firms were involved in EM. In textile sector, 40% of the companies had M-score greater than -2.22. In the manufacturing sector, 33% of the companies from the selected sample had the sign of

EMN. Thirty (30%) of the companies from the food sector were committed to adjusting earnings.

Table 1

M-Score Values for Relevant Industry

Sector	DSRI	GMI	AQI	SGI	DEPI	SGAI	TATA	LVGI	M-Score
Cement	1.271	0.677	0.603	1.164	0.147	0.263	-0.220	0.325	-1.7865
Chemicals	1.165	0.348	0.894	1.207	0.180	0.187	-0.046	0.362	-1.6418
Food	0.523	0.268	4.827	0.694	0.121	0.164	-0.010	0.197	1.22346
Oil and Gas	1.134	0.485	2.162	1.462	1.011	1.740	-0.113	0.349	-0.7887
Manufacturing	1.2592	0.475	0.024	1.092	0.122	0.212	-0.008	0.325	-2.4140
Sugar	1.863	1.019	0.334	1.121	0.120	0.217	-0.107	0.377	-1.0840
Textile	1.882	0.650	-0.344	1.007	0.139	0.565	-0.117	0.353	-2.5401

Table 3 shows the details of each M-score indicators for all the sectors by using the overall dataset from the period 2012-2019. The results showed that cement, chemicals, food, oil and gas, and sugar sectors fall within the EMN region with an M-score greater than -2.22. A higher probability of manipulated financial records exists in the oil and gas sector (-0.789), then in the sugar sector (-1.084), then in the chemical sector (-1.642), then in the cement sector (-1.787), and finally in the food sector (1.223).

Discussion

Table 3 shows the comprehensive M score indications for every industry which also shows the degree of EMN. Significant insights on practices of EMN may be gained from a review of MSM values from 2012-2019 in a variety of industries listed on PSX.

Cement industry has an M-Score of -1.787 which is indicative of EMN. Important metrics, such as GMI and DSRI point to possible problems with revenue recognition and diminishing gross margins, respectively. In industries with significant capital expenditures, the TATA ratio is typically negative. The aggregate M-Score, nevertheless, indicates manipulation within the threshold in spite of these indications. With a rating of -1.642, the chemicals industry is likewise located in the EMN region. The industry displays indications of aggressive revenue and margin management, as evidenced by its comparatively high DSRI and GMI. Leverage modifications to smooth the earnings are indicated by LVGI, which are

somewhat high. EMN, based on accruals, is indicated by the negative TATA. Food industry, in contrast to other industries, has an M-Score of 1.223, higher than -2.22, which is beyond the usual range for manipulation detection and indicates a low likelihood of EMN. On the other hand, AQI score suggests a big increase in assets, which may be the result of aggressive capitalization practices or actual business expansion. The industry with the highest likelihood of manipulating earnings is oil and gas, with an M-Score of -0.789, which is very close to zero. Aggressive revenue development tactics and possible problems with depreciation procedures are implied by high values in the SGI and DEPI, respectively. Increased sales, general, and administration costs are suggested by the high SGAI, possibly as a way to level out revenue. Similarly, with an M-Score of -2.414, the manufacturing industry has the lowest probability of EMN. The DEPI and AQI readings, which are almost zero, indicate consistent depreciation and asset quality policies. The sector has a decreased manipulation probability, which is supported by minimal negative TATA. With a value of -1.084, the sugar sector's M-Score indicates moderate EMN. High DSRI and GMI numbers suggest potential revenue and margin management, such as cement and chemicals sectors. The negative AQI and TATA scores suggest conservative accounting methods with steady asset management and few accrual-based earnings adjustments.

The findings indicate that five of the seven sectors are using EMN practices. Given its substantial economic impact, investors and regulators should pay particular attention to the oil and gas sector, which has the highest probability of manipulation. Cement, chemicals, and sugar are three industries that indicate a moderate level of manipulation. With M-Scores outside the manipulation range, the food and textile industries point to more trustworthy and transparent financial reporting procedures. These industries may act as highest standards of corporate governance and financial reporting. The study emphasized the usefulness of MSM in identifying profits manipulation in various industries in a setting of rising markets, such as Pakistan. The findings underlined the need for stronger corporate governance procedures and better regulatory monitoring, offering crucial insights to scholars, investors, and regulators alike.

Conclusion

The current study highlights various major findings. For instance, one major finding is that most of the sectors under study were engaged in EM.

Moreover, the results also show that most of the sectors listed in PSX are involved in EMN. Therefore, it can be said that MSM is considered to be quite effective to identify the presence of EM, both in developed and developing countries.

The current study made a substantial theoretical contribution pertaining to EMN as to how to identify it in emerging markets, particularly in Pakistani non-financial companies. The primary theoretical implications are as follows:

Firstly, by utilizing MSM on a sample of non-financial Pakistani companies, this research validated the model's ability to identify in a variety of economic settings. Secondly, the study attempted to close a significant gap in the body of EMN research on emerging markets. Prior research has mostly concentrated on Western economies, leaving a lack of information regarding EMN practices in nations, such as Pakistan. Thirdly, the study offered intricate insights into sector-specific EMN practices by examining seven different sectors. These sectors included manufacturing, sugar, textile, oil and gas, food, chemicals, and cement. The theoretical underpinning to comprehend the diversity of EMN across various industries has been strengthened by this sectoral analysis.

The current study has some practical implications that offer valuable information for different stakeholders. The results may help regulatory agencies understand the presence of EMN in Pakistan's non-financial firms. By reducing EMN behaviours, strict regulatory laws and supervision procedures can be developed which would be helpful in improving the financial reporting quality. Moreover, the study also provided investors with a useful tool to identify EMN and in helping them make a better investment decision. Banks and other financial institutions may also enhance their risk assessment and due diligence procedures by knowing which industries are more involved in EMN.

There are some limitations and future directions for researchers. Firstly, future researchers may increase the sample size to obtain more generalized results. Secondly, future researchers may use this concept and may perform a cross-country analysis instead of analyzing it by using the data only from one country. Finally, future researchers may do a sector-wise comparison by setting a benchmark for high-performing and low-performing firms, respectively.

Conflict of Interest

The authors of the manuscript have no financial or non-financial conflict of interest in the subject matter or materials discussed in this manuscript.

Data Availability Statement

The data associated with this study will be provided by the corresponding author upon request.

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