

The effect of MD&A disclosures on corporate performance: a panel quantile regression analysis

MD&A disclosures and corporate performance

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Abstract

Purpose – The study aims to examine how the information disclosed by the managers in the management discussion and analysis (MD&A) reports varies at the different levels of corporate performance.

Design/methodology/approach – To understand this quantile effect, first OLS technique was adopted and then, the quantile regression method was applied to explore the impact of MD&A disclosures on the firm performance across the lower and upper quantiles. The sample size for the study is 490 firms' year observations for the period 2016–2022.

Findings – The results of the study demonstrate the negative but significant relationship between MD&A disclosures and corporate performance, supporting the two management strategies of “competitive disadvantage” in case of good performance and “management impression strategy” in case of poor performance. Furthermore, with other corporate governance variables, both the size of the board and the number of independent directors on the board are positively significant only in the case of the upper quantile indicating the heterogeneity in the relationship between the performance and the MD&A disclosures. Therefore, the overall findings of the study support that these results contradict the agency theory and the stakeholders' theory as managers are not acting well as agents on behalf of the investors and work well only when they are controlled by the large board having more independent directors.

Originality/value – To the best of the authors' knowledge, no study so far has incorporated quantile regression to assess the effect of MD&A disclosures on company performance at various levels of the firm performance, which gives more robust insights about the viewpoint of the managers on the different level of the firm performance. In other words, this study highlights the important information as to how the information provided in the MD&A reports varies as per the good or poor performance of the companies.

Keywords MD&A disclosures, Corporate performance, Quantile regression, Corporate reports, Management impression strategy, Competitive disadvantage

Paper type Research paper

1. Introduction

The main motive of managers of the company is to create value for the stakeholders through better firm performance and such information should be transparent and relevant (Fox, 2007). We have various corporate reports that provides information to the public, but management discussion and analysis (MD&A) is one of the crucial document that provides transparent and relevant and financial and nonfinancial information and the performance of the company in one place (Botosan, 1997; Bryan, 1997; Singla and Singh, 2023). The most important aspect of MD&A is that it contains the viewpoint of the manager of the company as they are the most closely associated with the operations of the business. Hence, corporate governance norms and information disclosed under MD&A improve the transparency in the



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disclosures and firm performance and the behavior of managers on the optimization of shareholders' wealth would be checked (SEC, 2003). As a part of holistic approach to the corporate reporting, it becomes important to check how the information disclosed by the managers in the MD&A reports varies at various levels of corporate performance. Therefore, the relationship between the MD&A disclosure and corporate performance needs to be done as to how the MD&A disclosures are affecting the firm performance at various levels of firm performance. Numerous researches can be found on such relationships in the case of developed economies. However, India has started to pay more emphasis on MD&A disclosures after the introduction of Listing and Obligation Disclosure Requirements, 2015 by the regulating authority, i.e. the Securities and Exchange Board of India (SEBI). In India, nine points must be disclosed in the MD&A reports of the companies, i.e. segment information, financial (profit and loss and balance sheet), key financial ratios, industry structure and nature of business, key risks and steps to mitigate risks and information related to the human resources outlook of the business. All this information makes MD&A a more meaningful document for both managers and stakeholders (Muslu *et al.*, 2015). In recent times, India has progressed towards a "Self-Reliant" economy and has adopted best practices related to corporate governance including MD&A disclosures. The expectation behind this adoption impacts the corporate performance and maximization of the shareholders' wealth. In the previous research, transparency in corporate disclosures is just a part of the impression management strategy of the managers and provides mixed results on the impact of MD&A reporting on firm performance (Meenakshi and Manoj, 2010; Srinivasan *et al.*, 2014; Moreno and Casasola, 2016; Oware, 2021; Hamza, 2022). The use of ordinary least square (OLS) methodologies to examine the relationship between company reports and their performance may account for these results. When calculating, the OLS method uses the mean as a metric. The problem with the mean is outliers and therefore the problem is not addressed properly in this method that means the relationship between the MD&A disclosure and firm performance may be different from the upper and lower magnitude (Oware, 2021). As a result, such a relation based on mean may not present the true picture due to the heterogeneity of the data. Therefore, the motive of this study is to overcome the limitations of the OLS method and adopt a quantile regression analysis to fill this gap by addressing the range of upper and lower magnitude values of dependent variables in the form of percentile. Because quantile regression can estimate an association at any percentile or point on the distribution of dependent variables, it would be better to use this method to quantify the relationship between MD&A disclosures and firm performance. Hence, the objective of the current study is to examine how the MD&A disclosures are affecting the firm performance at various levels of firm performance.

The results of the study show that the MD&A disclosures are negative and significant in the upper quantile, but it is insignificant in the lower quantile. It means managers are less willing to provide more disclosures when the firm is doing well. The possible reason could be competitive disadvantages. However, providing more discourse when the company is not performing poorly may be due to maintaining the trust of the stakeholders and attracting potential investors in the business this strategy is called as management impression strategy of the managers to protect the goodwill of the business. Therefore, this finding supports the agency theory which can cause agency conflict as managers are not guiding well towards the increasing of the stakeholders' wealth. Furthermore, with other corporate governance variables, both the size of the board and the number of independent directors on the board are positively significant only in the case of the upper quantile, indicating the heterogeneity in the relationship between the performance and the MD&A disclosures. This implies that managers disclose more when they are controlled by a large board size with more independent directors, which results in good performance of the company in India. The overall findings of the study support that the results of the current study contradict the

agency theory and the stakeholders' theory as managers are not acting well as the agents on behalf of the investors and work well only when they are controlled by the large-sized board having more independent directors.

This research significantly contributes to the existing literature on corporate reporting disclosures, particularly in the context of MD&A reports. By adopting a novel approach, this study investigates the association between MD&A reports and corporate performance in Indian-listed companies as how managers are disclosing information in the MD&A reports about different levels of corporate performance. This unique perspective adds value to the field of MD&A studies, as it uncovers an overlooked avenue that has not been thoroughly explored in previous research. This not only expands the theoretical framework but also provides practical insights for policymakers and practitioners looking to enhance the quality and effectiveness of MD&A reporting practices in Indian-listed companies. Furthermore, it will serve as a reference point for future researchers exploring similar avenues in corporate reporting, thereby advancing the field and encouraging further empirical studies in this area.

The remainder of this study is structured as follows: [Section 2](#) provides a comprehensive review of the existing literature, discussing relevant studies and laying the foundation for hypothesis development. In [Section 3](#), we outline the sample selection process and describe the methodological design employed in this research. [Section 4](#) presents the key findings derived from the analysis, offering insights into the relationships between corporate performance and MD&A disclosures. Finally, [Section 5](#) concludes the paper by summarizing the main findings, discussing their implications and suggesting potential avenues for future research.

2. Theoretical background and hypothesis development

2.1 Agency theory

Agency theory focuses on the problems that arise due to information asymmetry between shareholders and managers of the company. This theory explains that the goal of shareholders' wealth maximization will not be achieved if managers are not adequately and timely controlled ([Lindrianasari et al., 2017](#); [Dang et al., 2018](#); [Lee and Chae, 2018](#)). Therefore, to reduce the problem of information asymmetry, corporate reports play a dominant role which providing all relevant information in one place, thus helping to reduce the agency costs. MD&A reports focus on providing information related to the past and present performance of the corporates. It, near-future projections are also discussed in this particular report ([Jayasree and Shette, 2020](#)). Therefore, MD&A reports help a lot in solving the agency problem in the organizations and help shareholders get an idea of their actual wealth.

2.2 Stakeholder theory

Another important theory is the stakeholder's theory which focuses on the responsibility of the organization to fulfill the demands of all the stakeholders regarding the competitive advantage and survival of the business. The stakeholder theory represents a significant advancement beyond the agency theory, as it recognizes the importance of satisfying the needs of all stakeholders, not just shareholders, within a company. In the stakeholder theory, the goal is to maximize shareholder wealth by considering and addressing the interests of various stakeholders. This perspective acknowledges that making decisions that align with the interests of stakeholders can ultimately lead to the optimization of shareholder value ([Aggarwal and Singh, 2019](#)). Information provided in the MD&A reports not only fulfills the purpose of the shareholders but stakeholders as well. The disclosure of corporate performance in MD&A reports helps stakeholders and potential investors in their

decision-making and thus, follows the stakeholder theory (Brown and Tucker, 2011; Nilipour *et al.*, 2020).

2.3 MD&A in India

MD&A reports in India are guided and regulated by the SEBI. Although, in India, this concept was adopted in early 2000, in clause 49 of the listing agreement, not much emphasis was laid on the MD&A reports and was just needed to provide in addition to the directors' report. After a decade, the Company Act (2013), again highlighted the MD&A to be disclosed in the annual reports of Indian companies as part of the director's report and addition thereto forming part of the annual report. has Company Act (2013) specified the MDAR (MD&A report) in clause 49 VII (D) in the board that requires the MDA as a part of mandatory disclosure for all the listed companies to be disclosed. Then, almost after two years, SEBI (Securities and Exchange Board of India) revised the MD&A disclosures in Listing and Obligation Requirements (2015) section 34(2) (e) as to disclosed every listed company on the Indian Stock Exchange requires to disclose the MD&A section in their annual reports which provide information from the eyes of the management . It means that all the information which are disclosed in the MD&A reports should reflect the views and opinions of the management of the companies. Since, managers are the only people who are closely associated with the operations, strategies, vision and mission of the organization. Therefore, their views about the company's performance and plans are important. Hence, MD&A is a very crucial document to study in the corporate annual report for better decision-making (Singh and Singla, 2022; Singh *et al.*, 2022). In India, SEBI has prescribed nine points that must be disclosed in the MD&A reports of the companies, i.e. segment information, financial (profit and loss and balance sheet), key financial ratios, industry structure and nature of business, key risks and steps to mitigate risks, information related to the human resources outlook of the business. All this information makes MD&A a more meaningful document for both managers and stakeholders. Since, the concept is the youngest one, not much research has been conducted on MD&A in the Indian Scenario and MD&A disclosures are mainly for fulfilling the legal obligations (Singh and Singla, 2021; Singla and Singh, 2023).

2.4 Hypothesis development

2.4.1 MD&A reports and firm performance. MD&A reports are emphasized by the regulators more as it provides all kind of financial and nonfinancial information in one place (Botosan, 1997; Cole and Jones, 2005). Moreover, MD&A is a set of disclosures that helps to ascertain the objectives of the firm and the way to achieve those goals (Clarkson *et al.*, 1999; Hufner, 2007). Therefore, protects the interests of the shareholders and serves as the best means of communication which improves the relationship between the managers and the stakeholders. Better the agent–principal relationship, decreasing agency cost, hence increasing the firm profitability (Bryan, 1997; Brown and Tucker, 2011; Cole and Jones, 2014; Jayasree and Shette, 2020). However, in certain studies, the relationship is found negative because managers use an impression management strategy to attract potential investors and avoid any questions from the existing shareholders. Moreover, the information provided in the MD&A reports is less because of the competitive disadvantages. Hence, if the firm is performing well, less information is disclosed in the MD&A reports of the companies (Moreno and Casasola, 2016; Caserio *et al.*, 2019; Hamza, 2022). Due to such conflicting results, it is important to check this relationship with more empirical evidence. Therefore, the proposed hypothesis is:

H1. There is a positive relationship between MD&A disclosures and firm performance.

2.4.2 Size of the board and corporate performance. As per the agency theory, the total number of directors on the board is important to influence the firm performance. Hence, proper coordination and communication should be maintained by adequate board size. [Srinivasan et al. \(2014\)](#) favor the more number of directors on the board. The operations of corporations are complex and need a large board size for resolving those activities. It also allows better control and better decision-making ([Erin and Adegbeye, 2022](#); [Hichri, 2022](#)). However, some studies favor the small board size as the small board is more effective in controlling the activities of the managers and quick decision-making. Also, the small board size does not feel much conflict as compared to the big one ([Nicol et al., 2022](#)). The association between board size and business performance is ambiguous and contradictory based on prior studies. As a result, further empirical research is still needed to fully understand this relationship. In the case of MD&A reporting, we anticipate a favorable correlation between board size and company performance. As a result, the following is the hypothesis on the effect of board size on corporate performance:

H2. The size of the board and company performance has a positive association.

2.4.3 Board independence and firm performance. The inclusion of independent directors on the board aligns with the principles of the agency theory. Numerous studies have demonstrated a positive correlation between the presence of independent directors and corporate performance. The rationale behind this association lies in the expertise and control abilities of external directors. Independent directors are typically considered skilled individuals capable of effectively monitoring managerial actions. Moreover, it is commonly observed that director remuneration is linked to corporate performance ([Younas et al., 2021](#); [Din et al., 2022](#)). This incentive structure encourages enhanced monitoring of managers, thereby reducing agency costs ([Salehi and Farzaneh, 2018](#); [Shafeeq Nimr Al-Maliki, Salehi and Kardan, 2023](#)). The appointment of independent directors serves as a mechanism to mitigate agency conflicts, as their objective viewpoint and independent judgment contribute to effective corporate governance and ultimately lead to improved company performance ([Erin and Adegbeye, 2022](#); [Nicol et al., 2022](#)). However few studies have established a negative relationship between independent directors and firm performance as independent directors are merely for fulfilling the norms and they do not actively participate in board meetings ([Abdullah, 2022](#); [Hichri, 2022](#)). Therefore, we expect a positive relationship between the firm performance and independent directors in the case of MD&A reporting. The proposed hypothesis is as follows:

H3. There is a positive relationship between board independence and corporate performance.

2.4.4 Control variables. To account for potential influences on both financial performance and MD&A practices, we incorporated controls for firm size (market capitalization) and leverage (debt-equity ratio) in this analysis as they are directly associated with the firm performance and negligence which can cause more unexplained variance. Therefore, it is important to control the firm size and leverage of the firm. Prior research by [Bryan \(1997\)](#) and [Liu et al. \(2019\)](#) has argued that corporate performance is highly impacted by these variables. It is anticipated that larger firms may benefit from economies of scale, leading to better performance ([Shawtari et al., 2016](#)). In this study, the natural logarithm of market capitalization is utilized as a proxy for company size. Additionally, leverage can affect corporate performance, as higher levels of debt require closer monitoring by creditors to ensure sound managerial practices within the companies. Therefore, in line with previous studies ([Liu et al., 2017](#); [Usman et al., 2022](#)), the following hypotheses have been set forth.

3. Research methodology

The data sources, sampling approach and empirical model used in this study are discussed in this section. Two sources were used to get the data for this investigation. The first source uses manually gathered data from annual reports with a focus on nonfinancial and MD&A disclosure characteristics. The Prowess IQ database from the CMIE (Center for Monitoring Indian Economy) is the second source of data. The final sample selected for this study comprises 70 nonfinancial firms out of the NIFTY 100 index listed on the National Stock Exchange (NSE), accounting for approximately 77% of the total market capitalization during the period from 2016 to 2022. It is important to note that out of the NIFTY 100 indexed firms, financial sector companies have been excluded from the sample due to differences in their data and the regulatory framework governed by the Banking Regulation Act, of 1949. The data were carefully filtered, and any missing data points were removed, resulting in a final sample size of 490 (70*7) effective firm-year observations. For nonfinancial data, a thematic content analysis has been done to collect the total number of disclosures made by the companies in their MD&A reports. There are nine mandatory disclosures provided in the MD&A reports by companies in India, categorized further into 13 sub-disclosures, hence 24 disclosure points were identified to measure the levels of MD&A disclosure. As per the thematic content analysis, score 1 is assigned, if the disclosure is given in the MD&A report, otherwise zero. Therefore, the maximum score a firm can obtain is 23. The MD&A disclosure index is discussed in the Appendix (available online at: https://docs.google.com/document/d/1yuiMs5UueVxgR6bGMbSIMYxv18ue0VHn/edit?usp=drive_link&oid=114750685720854299548&rtpof=true&sd=true).

In this study, we adopt a comparative approach by combining the quantile regression technique with OLS to investigate the relationship between performance indicators (return on assets [ROA] and earnings per share [EPS]) and MD&A disclosures. ROA and EPS are the two proxies for the firm performance selected based on previous studies for resolving the issue of selection biases (Liu *et al.*, 2017; Din *et al.*, 2022). This methodology allows us to assess whether these associations hold consistently or vary across different percentiles of performance. The regression model used to examine this relationship is outlined as follows:

$$\begin{aligned} \text{ROA}_q &= \beta_0 + \beta_{1q} * \text{MDAD} + \beta_{2q} * \text{BSIZ} + \beta_{3q} * \text{BIND} + \beta_{4q} * \text{LEVE} + \beta_{5q} * \text{SIZE} \\ &+ \varepsilon \end{aligned} \quad (1)$$

$$\begin{aligned} \text{EPS}_q &= \beta_0 + \beta_{1q} * \text{MDAD} + \beta_{2q} * \text{BSIZ} + \beta_{3q} * \text{BIND} + \beta_{4q} * \text{LEVE} + \beta_{5q} * \text{SIZE} \\ &+ \varepsilon \end{aligned} \quad (2)$$

Here, Q stands for the percentile in the conditional distribution of measure of corporate performance (ROA and EPS) in Equation (1) and Equation (2). First, an OLS regression is performed on the aforementioned model to determine a relationship based on the mean. This will show the ambiguity in the results raised due to the outliers. On the subsequent, the same association is examined across nine equal quantiles using the quantile regression method which gives the more robust result and provides an insight as to how managers are disclosing in the MD&A reports across the various levels of the firm performance. The analysis is conducted using Eviews 12. The dependent variables in this study are firm performance, measured by ROA and EPS.

Quantile regression, introduced by Koenker and Bassett (1978), incorporates a variety of models for various conditional quantile functions into the traditional least square estimation

of the conditional mean. Traditional least squares regression gives a partial picture of the full conditional distribution, as it only approximates the conditional mean at the distribution's center. Quantile regression, on the other hand, enables the estimation of conditional quantile functions, each of which characterizes the behavior of certain points within the conditional distribution and so provides a thorough description of the complete distribution (Liu *et al.*, 2019). Therefore, quantile regression serves a broader purpose than merely estimating different quantiles within a population. It offers several additional advantages. Firstly, the quantile regression estimator is less affected by outliers since it minimizes the weighted sum of absolute residuals rather than squared residuals. This robustness ensures that the estimated coefficient vector remains reliable, even in the presence of extreme observations. Secondly, quantile regression employs linear programming techniques, simplifying the examination of relationships between variables. Finally, when dealing with conditional distributions that have irregular shapes, such as being asymmetric, this type of analysis is especially helpful. As a result, quantile regression offers an insightful look into the entire distribution and offers a more thorough perspective of the impact of explanatory variables on the dependent variable.

4. Results and discussion

The variables used in this model are listed in Table 1 (available online at: https://docs.google.com/document/d/1yuiMs5UueVxgR6bGMbSIMYxvl8ue0VHn/edit?usp=drive_link&oid=114750685720854299548&rtfpof=true&sd=true).

In Table 2 (available online at: https://docs.google.com/document/d/1yuiMs5UueVxgR6bGMbSIMYxvl8ue0VHn/edit?usp=drive_link&oid=114750685720854299548&rtfpof=true&sd=true) the descriptive statistics reveal important insights for the investigated period. The ROA demonstrates an average of 18.03%, indicating the profitability of the firms. The EPS show an average of 4.87%, providing insights into the companies' earnings performance. The MDAD variable indicates that, on average, approximately 75% of companies made relevant disclosures in their MD&A reports. Regarding corporate governance, the board size reveals an average of seven directors, ranging from a minimum of three directors to a maximum of 19 directors. The proportion of independent directors on the board is approximately 40%, highlighting the level of independence within the board structure. Furthermore, the firm size, measured by the natural logarithm of market capitalization, has an average value of 10.87. This provides insights into the companies' market valuation and relative size. The leverage variable showcases an average of 0.59, indicating the level of financial leverage employed by the selected firms. The comprehensive descriptive statistics presented in this study offer valuable insights into the key variables under investigation, establishing a solid groundwork for further analysis in this research paper. Notably, all the variables used in this study exhibit skewed distributions, challenging the assumption of a normal error term distribution in the OLS method. Consequently, relying solely on the normal distribution of the error term may lead to misleading results.

The correlation matrix is shown in Table 3 (available online at: https://docs.google.com/document/d/1yuiMs5UueVxgR6bGMbSIMYxvl8ue0VHn/edit?usp=drive_link&oid=114750685720854299548&rtfpof=true&sd=true) and it shows that there are no highly high correlations among the variables. The variance inflation factor (VIF) for the independent variables is computed in this study to further evaluate the potential for multicollinearity. The independent variable with the highest VIF value is 1.56. In this study, multicollinearity is therefore, unlikely to be considered an important risk, ensuring the reliability of the regression analysis.

As highlighted earlier, quantile regression proves instrumental in addressing these issues and offers a more flexible and complete characterization of the association between MD&A and corporate performance. By capturing the impact of MD&A on corporate performance across different percentiles of performance, quantile regression enables a deeper understanding of the association at both higher and lower levels of performance. As a result, employing quantile regression in this study provides a robust and comprehensive analysis, enhancing the validity and reliability of the research findings.

Initially, we conducted OLS estimation to estimate the regression model, and the results are presented in Table 4 (available online at: https://docs.google.com/document/d/1yuiMs5UueVxgR6bGmbS1MYxvl8ue0VHn/edit?usp=drive_link&oid=114750685720854299548&rtfpof=true&sd=true). The table displays the outcomes for corporate performance, measured as ROA and EPS in the model (1) and model (2), respectively. The two models account for 25.58 and 35.34% of the relationship, respectively. The results indicate a significant negative correlation between MD&A disclosures and ROA, while no significant association is found with EPS. These findings suggest that MD&A disclosures play a crucial role in influencing firm performance. Interestingly, these results differ possibly due to variations in corporate reporting effectiveness between Asian countries and other regions, where the former may have more window dressing and illusionary practices (Shawtari *et al.*, 2016; Hamza, 2022). Additionally, the presence of heterogeneity in the data led us to employ quantile regression for further testing.

Regarding board size, we observed a positive and significant impact on firm performance, measured with ROA and EPS. These results align with previous studies by Srinivasan *et al.* (2014) and Erin and Adegboye (2022), suggesting that a larger board size contributes to better decision-making. However, these findings contrast with the results of Nicol *et al.* (2022) proposition that a larger board size might pose challenges to effective CEO control.

Furthermore, the presence of independent directors on the board positively and significantly influences firm performance. Our control variables also demonstrate significant relationships with the performance measure. Firm size exhibits a positive and significant relationship with performance, while leverage displays a negative but significant relationship, consistent with prior literature (Liu *et al.*, 2017; Oware, 2021). This suggests that big-size firms may benefit from economies of scale, leading to increased cost efficiency in production.

We next use quantile regression to examine the association in the aforementioned model to see if the relationship between MD&A disclosures and performance differs across different performance levels. We specify seven quantiles to be examined at 20, 30, 40, 50, 60, 70 and 80% for this explanation. Tables 5 (available online at: https://docs.google.com/document/d/1yuiMs5UueVxgR6bGmbS1MYxvl8ue0VHn/edit?usp=drive_link&oid=114750685720854299548&rtfpof=true&sd=true) and Table 6 (available online at: https://docs.google.com/document/d/1yuiMs5UueVxgR6bGmbS1MYxvl8ue0VHn/edit?usp=drive_link&oid=114750685720854299548&rtfpof=true&sd=true) provide the various models for each quantile as well as their explanatory power. The analysis provides insights into the unique nature of the relationship between MD&A disclosures and performance across diverse performance scales.

The findings presented in Table 5 reveal that the estimated coefficient of MD&A disclosures varies across different quantiles, suggesting heterogeneity in the relationship. Specifically, the coefficient is negative and significant for upper quantiles, while it remains insignificant for lower quantiles. These results indicate that MD&A disclosures tend to be poorer when corporate performance is better. This may be possible due to competitive disadvantages and disclosure more when a firm is doing poorly, to maintain the goodwill of

the firm by using management impression strategy. These results align with previous studies (Moreno and Casasola, 2016; Caserio *et al.*, 2019; Hamza, 2022). Regarding corporate governance characteristics, both board size and the presence of independent directors on the board show positive and significant relationships with corporate performance, but primarily at the upper quantiles. This implies that when a firm performs well, having a larger number of directors on the board, along with a higher proportion of independent directors, becomes beneficial. These variables exemplify the heterogeneity present within the dataset. Furthermore, our control variables, namely firm size and leverage, demonstrate significant relationships with all the quantiles, consistently aligning with the results obtained from the OLS analysis.

In Table 6 the findings reveal that the relationship between corporate performance and leverage is consistently negative and insignificant across all quantiles. This indicates no heterogeneity and no significant impact on corporate performance as measured by EPS. On the other hand, the other independent variables excluding MD&A disclosures demonstrate positive and significant relationships with EPS, but primarily in the case of the upper quantile. These results for MD&A disclosures and corporate governance variables align with those obtained for ROA, indicating the heterogeneity in the dataset. Another control variable firm size is also significant only for the upper quantile, suggesting that a larger firm size impacts corporate performance positively.

Summarizing the results in Table 7 (available online at: https://docs.google.com/document/d/1yuiMs5UueVxgR6bGMbS1MYxv18ue0VHn/edit?usp=drive_link&oid=114750685720854299548&rtpof=true&sd=true) discusses how the hypothesis model aligns with the actual estimation. The application of quantile regression has identified and addressed the limitations of OLS estimation, providing a more comprehensive understanding of the relationship. The quantile regression for corporate performance measured by ROA and EPS, the results are consistent with previous studies, fully supporting all the hypotheses except H1. MD&A disclosures are negatively related to corporate performance, hence H1 is rejected. Overall, the findings demonstrate that quantile regression offers valuable insights, especially in capturing heterogeneity and comprehending the nuances of the relationships under examination. The results of the study indicate that MD&A disclosures are significant but negative in signs associated with firm performance at higher quantiles. These findings are in contrast to the expectations based on the agency theory and stakeholder theory. The negative relationship suggests that managers may be less inclined to provide more disclosures when the firm is performing well, possibly due to concerns about “Competitive Disadvantages”. Conversely, providing more disclosures when the company is not performing poorly may be a strategy to maintain stakeholder trust and attract potential investors, referred to as the “Management Impression Strategy”. Therefore, this finding supports the agency theory which can cause agency conflict as managers are not guiding well towards the increasing of the stakeholders’ wealth.

Furthermore, examining other corporate governance variables, such as board size and the number of independent directors, showed positive and significant effects only in the case of the upper quantiles (60th, 70th and 80th), indicating heterogeneity in the relationship between performance and MD&A disclosures. This implies that managers disclose more when they are controlled by a large board size with more independent directors, which results in good performance of the company in India. The overall findings of the study support that the results of the current study contradict the agency theory and the stakeholders’ theory as managers are not acting well as the agents on behalf of the investors and work well only when they are controlled by the large-sized board having more independent directors.

5. Conclusion and suggestion

The main objective of this paper is to analyze the impact of MD&A disclosures on a company's performance at different levels of corporate performance. To achieve this, an MD&A disclosure index was constructed to assess company transparency based on mandatory information disclosed in MD&A reports. The study's framework draws upon the agency theory and stakeholder theory to gain a deeper understanding of the complex phenomenon of MD&A reporting.

Traditionally, previous international studies have employed the OLS method to estimate the relationship between corporate nonfinancial disclosures and firm performance. Such results had not addressed the extreme cases in the case of firm performance suggesting the possibility of overlooking the fact that such relationships may vary depending on the scale of the dependent variable. To address this limitation, we employ the quantile regression approach, which produces multiple coefficients, each describing the relationship between MD&A disclosures and performance at different points on the scale.

The results of the study indicate that MD&A disclosures are significant but negative in signs associated with firm performance at higher quantiles. These findings are in contrast to the expectations based on the agency theory and stakeholder theory. The negative relationship suggests that managers may be less inclined to provide more disclosures when the firm is performing well, possibly due to concerns about "Competitive Disadvantages". Conversely, providing more disclosures when the company is not performing poorly may be a strategy to maintain stakeholder trust and attract potential investors, referred to as the "Management Impression Strategy". Therefore, this finding supports the agency theory which can cause agency conflict as managers are not guiding well towards the increasing of the stakeholders' wealth.

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The implications of these results underscore the importance of the adopted methodology in studying corporate MD&A disclosures and their relationship with performance. It reveals a previously unnoticed effect of corporation size on corporate performance, with firm size impacting corporate performance positively in higher quantiles. The relationship of firm performance with leverage supports the agency theory, indicating that higher debt levels may lead to greater agency costs.

The study has theoretical and practical implications. Firstly, it provides a broad overview of how the information disclosed by the managers in the MD&A reports varies at different levels of corporate performance. It may help academics to determine that nonfinancial corporate reports need to be more emphasized to fill the gap between theoretical and practical aspects followed by the companies and countries where further research can be carried out. Understanding all these issues pointed out by this study is crucial for policymakers, business leaders and society as a whole. Policymakers and business leaders can benefit by prioritizing stakeholder interests and implementing effective MD&A disclosures to promote social equality, ethical behavior and sustainable development. Additionally, expanding the research to include MD&A reporting practices from different countries in a single study

could examine the influence of diverse reporting regulations on the extent of MD&A disclosures and improve generalization.

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