

Does Managerial Ability and Auditor Report Readability Affect Corporate Liquidity and Cost of Debt?

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Abstract

Purpose: This study investigates the impact of managerial ability and auditor report readability on the cost of debt and corporate liquidity in Omani-listed industrial companies.

Design/Methodology/approach: The study uses data from the S&P Capital IQ database and audited annual reports published on Muscat Securities Market. The sample consists of 35 firms (175 firm-year observations) from 2015 to 2019. Managerial ability is measured using the data envelopment analysis proposed by Demerjian et al. (2012). Auditor report readability is measured as a log of the auditor report digital file size proposed by Loughran and McDonald (2014).

Findings: This study finds that a company's managerial ability reduces the cost of debt lending support to upper echelons and agency theory. Highly able managers of industrial companies are associated with increased corporate liquidity consistent with the precautionary motive of holding cash. In addition, less-readable auditor reports contribute to higher debt costs and reduce corporate liquidity.

Originality: To the best of our knowledge, few studies have explored the influence of managerial ability and auditor reporting readability on firms' financial policy. For industrial-sector firms, this study demonstrates the managerial ability and readability of auditor readability as significant determinants of the cost of debt and corporate liquidity, especially during periods of uncertainty. Thus, the findings can be generalized to other non-financial sector firms in the country and the Middle East.

Keywords: Managerial ability, auditor report readability, corporate liquidity, cost of debt

1. Introduction

Managerial ability is an important attribute that contributes to the success of an organization. High ability managers possess high knowledge about the businesses, industries and products to which they are related, are capable of better decision making in comparison to other managers, efficiently manage employees, and are well informed about future trends and technologies (Demerjian et al., 2012a, Demerjian et al., 2012b). Prior studies posit consistent with the upper echelon theory (Hambrick and Mason, 1984), high managerial ability is associated with a high level of innovations (Chen et al., 2015), more short-term debt financing (Khoo and Cheung, 2022), gaining more economic profits through investment opportunities (Lee et al., 2018), accounting conservatism (Haider et al., 2021), positive tone in earnings announcement (Luo and Zhou, 2017) and high-quality earnings reporting (García-Meca and García-Sánchez, 2018). There are, however, limited studies of emerging markets exploring managerial ability in the context of its costs and benefits (Inam Bhutta et al., 2021). For emerging markets, efficient use of scarce resources such as financial, infrastructure, technical and educated labour force is dependent on skilled human resources. Thus, skilled high ability managers ensure the best utilization of scarce resources and support in achieving sustainable growth. According to Tsai et al. (2022), skilful managers of non-financial sector US-based firms demonstrated improvement in the firm's cash holdings. Cash holdings or liquidity are critical elements for investment

decisions in high-value projects. Thus, the first question to be addressed is whether managerial ability impacts the financial policy decisions for an emerging market.

Financial reporting readability has witnessed burgeoning empirical research due to its high impact on the effective communication of valuation-related information between the corporation and the market (Loughran and McDonald, 2014). An important component of the annual report is the auditor report which increases its credibility (Jensen and Meckling, 1976, Healy and Palepu, 2001). The communicative value of the auditor report is important as it discloses any material misstatements and is explored to a limited extent in prior studies. Auditor report would be effective if it is easily understandable for the users and facilitates decision-making. Audit reports are important for analysts as they signal the reliability of financial statements (Coram et al., 2011), thus emphasizing audit report readability. The literature has reported a link between annual report readability and managerial information hoarding (Ertugrul et al., 2017), intellectual capital efficiency (Dalwai et al., 2021b), financial risk (Hassan et al., 2021), stock liquidity (Boubaker et al., 2019), and agency costs (Luo et al., 2018). Hasan and Habib (2020) suggest that there is a dearth of prior studies on internal corporate financial policies and consequently, reported firms with less readable disclosures hold more cash. This is consistent with the agency motive that posits that the self-serving behaviour of managers leads to hoarding more cash so that they can extract private benefits (Jensen, 1986). Similarly, less readable narrative disclosures are found to be associated with a higher cost of debt (Bonsall and Miller, 2017). In light of the extant literature review of readability, this study investigates the second research question: Does auditor report readability impact a firm's financial policies in an emerging market?

Oman's Vision 2040 aims to make its presence on the global landscape by achieving a diversified and sustainable national economy. One of its key indicators is to attain a 90% contribution of the total GDP from the non-oil sector from its current 61% (HSBC, 2021). Thus, the industrial sector firms are selected to make valuable contributions towards its development. This paper investigates the influence of managerial ability and auditor report readability on corporate liquidity and the cost of debt of listed industrial-sector companies in Oman. This study finds that lower managerial ability and less complex auditor report readability are associated with a higher cost of debt. In addition, higher managerial ability and complex auditor report readability are associated with greater corporate liquidity. These results hold to a great extent for robustness checks performed using generalized least squares (GLS) regression models and additional analyses.

This study makes several contributions. First, at the time of conducting this research, there were no studies investigating the impact of managerial ability and auditor report readability for Oman's non-financial sector. Oman is an emerging market that differs in size, low market, information efficiency and volatility compared to the developing and developed countries (Pillai and Al-Malkawi, 2018, Dalwai and Mohammadi, 2020, Dalwai and Salehi, 2021). Thus, the findings of this research contribute to the gap in extant literature for the industrial sector financial policies of Oman. Also, the characteristics of Oman's market are replicated in other Gulf Cooperation Council countries. Thus, the findings can be generalized to this region.

Second, the users of auditors' reports have argued that the information made available as important for making investment and financing decisions (Duréndez Gómez Guillamón, 2003). There are limited prior studies on audit report readability and none for its impact on financing policies in an emerging market. Thus, using the proxy of file size for auditor report readability, this research contributes to the financial decisions of industrial companies. Last, this research contributes to the growing literature on managerial ability, which has been an important topic in economics and management literature (Francis et al., 2022). Despite the importance of managerial ability, there is limited research on the impact of managerial skills on corporate liquidity and the cost of debt for an emerging market especially, during a crisis. Andreou et al. (2017), Jebran and Chen (2022) report that managerial ability plays a significant role during periods of uncertainty. The study period is 2015- 2019, a critical period for Oman due to the decline of oil prices below \$100 a barrel, the average five-year revenue as a percent of GDP was only at 23 percent in comparison to 36% in 2014 (World Bank, 2022). Thus, this research contributes to the role of managerial ability during the period of uncertainty in Oman.

The remainder of this paper is organized as follows: Section 2 presents the literature review and hypothesis development. Section 3 discusses the methodology. Section 4 presents the results. Section 5 concludes.

2. Literature Review

2.1 Contextual background

Oman is known to be one of the first countries in the Middle East and North Africa (MENA) region that implemented the International Financial Reporting Standards (IFRS) (Al-Shammari et al., 2008) and introduced the Corporate Governance Code (Baydoun et al., 2013). In December 2016, Oman revised its Code of Corporate Governance for publicly listed companies (Capital Market Authority, 2016). In addition, Oman's "Legislation Regulating the Companies Operating in the Field of Securities and Listed Companies" requires companies to publish their annual reports in English and Arabic, appoint an external auditor accredited by the Capital Market Authority and restrict this appointment to four consecutive years (Muscat Securities Market, 1998). These established regulations make Oman poised to provide a conducive environment for doing business. As part of Vision 2040, Oman seeks to build a sustainable economy through the diversification of its sources of income. As per the Foreign Direct Investment (FDI) Confidence Index 2022, the top 25 countries comprised only 4 emerging markets including China, United Arab Emirates, Brazil and Qatar (Laudicina and Peterson, 2022). Therefore, Oman is yet to be a lucrative option for building investor confidence. This research is necessary for the regulators, management and future investors as it provides insight into how managerial ability and auditor report readability will likely shape corporations' financial policy.

2.2 Theoretical literature review

The upper echelon theory (UET) posits that managerial characteristics determine strategic choices and, in turn, affect the output generated by the firms (Hambrick and Mason, 1984, Hambrick, 2007). Hambrick and Mason (1984) argue that top managers experience is an

important element in directing the strategy of the firm, which in turn would affect the strategic outcomes. UET views top managers as crucial human resources that contribute to formulating effective strategies such as those related to capital structure. Agency theory is also useful in explaining corporate cash holdings decisions. Cash holding or corporate liquidity is a matter of managerial discretion whereby the level of cash holding is related to the agency cost of cash flow if the managers do not act in the best interests of the shareholders. From the precautionary motive context, firms would like to hold more cash to cope with uncertainty and shocks prevalent with external financing (Almeida et al., 2004). This paper argues within the same context that financial policies, such as those related to debt and corporate liquidity are strategic decisions made by the top managers and the readability of auditor reports.

Jensen and Meckling (1976) argue that debt issuance creates an agency problem between the firm and its lenders. Thus, to curb managerial myopic behavior the lenders introduce covenants and restrictions into debt contracts that lead to higher cost of debt (Armstrong et al., 2010). This viewpoint affects managerial decisions related to strategic decisions on debt. A lower cost of debt would signal their efforts to efficient decision-making related to financial policies. Chen et al. (2010) investigated the relationship between R&D and capital structure using the moderating effects of the top management team within the context of agency theory and UET. This study finds that as top management team tenure increases, they become more risk-averse and use lower debt. Jensen (1986) further argues that managers can pursue their self-interest by having no control over expenses and make unprofitable investments when firms hold excess cash. Orens and Reheul (2013) investigate the influence of CEO characteristics on corporate cash holdings using the upper echelon theory integrated with traditional theories. They report that CEOs with less experience are more prone to higher cash holdings as they are more concerned with the precautionary motive of cash. The findings of Gaio et al. (2022) lend support to UET and precautionary motive cash, suggesting that male founders who are older tend to hold more cash.

This research, therefore, investigates the role of managerial ability and auditor report readability on financial policies in light of the UET, precautionary motive and agency theory.

2.3 Empirical literature and hypotheses development

Numerous studies (Bertrand and Schoar, 2003, Rozen-Bakher, 2018) demonstrate that managers' characteristics affect corporate investment decisions. This is because managers with varying abilities have varying expectations of the future (Trueman, 1986), with risk preferences; thus decisions and competencies are affected (Gan, 2019). According to Demerjian et al. (2012a), a new measure of managerial ability was based on the efficiency with which managers generate revenues. They believe that more-capable managers better comprehend the technology and industry trends, consistently estimate product demand, invest in higher-value projects, and manage their people more efficiently than less-able managers.

As a result of Demerjian et al. (2012a) (managing ability index), researchers have been able to look at the relationship between managerial ability and business performance (Yung and Nguyen, 2020), investment (Lee et al., 2018) and mergers (Chen and Lin, 2018, Cui and Chi-

Moon Leung, 2020, Doukas and Zhang, 2020). On the other hand, high-capability managers have a greater knowledge of the macroeconomic environment and their own company's operational situations. More capable managers' ability to provide high-quality financial reports can increase the desire of their targets to collaborate, lower negotiation barriers, and lower transaction payments (Demerjian et al., 2012b). **Managers with low ability are found to inflate the disclosure tone for influencing the labor market perceptions (Yan et al., 2021). The findings of Rajabalizadeh and Oradi (2022) suggested that high-ability managers are associated with information asymmetry as they lower intellectual capital disclosures.**

ISAAB (2015) issued International Standard on Auditing (ISA) 701, Communicating Key Audit Matters (KAMs), that expanded the auditor's report's content to increase stakeholders' confidence. Auditors were expected to report areas with a higher risk of misstatement through the KAMs section. Several studies have investigated the importance of this new development. Coram and Wang (2021) findings report that KAMs do not affect the nonprofessional's perception of the information disclosed in the auditor's report. This is consistent with other archival studies that have found KAMs incremental disclosures did not create any incremental benefit to the investors (Gutierrez et al., 2018, Lennox et al., 2022). A different stream of literature has examined the impact of KAM reporting on various elements. For example, KAMs are found to be significantly associated with risk disclosures by managers (Elmarzouky et al., 2022) and stock price synchronicity (Zhai et al., 2021). The analysis of the extant literature on auditor reports suggests that no studies were conducted to measure the readability of these reports. Additionally, its impact on the financing policy is not known.

Most of the literature in readability has focused on the annual report. Capital market participants rely on publicly traded companies' annual reports as their primary information source. It is essential to know the business's operating environment, previous results, prospects, and risk exposure through qualitative information (Clarkson et al., 1994). As a result of the obfuscation of information by management, narrative disclosures are frequently difficult to comprehend in practice (Hasan, 2020). Prior study has shown a link between less readable annual reports and increased propagation in analyst forecasts (Lehavy et al., 2011), increased volatility in stock returns (Loughran and McDonald, 2014), increased debt costs, and an increased risk of stock price crashes in the future (Ertugrul et al., 2017), as well as a delay in investor reactions to 10-K filings' information content (You and Zhang, 2009). Whereas narrative disclosures that are more difficult to understand and/or lengthier tend to obscure important information, shareholders' capacity to keep tabs on management operations is affected (Lo et al., 2017). Enterprises with less understandable narrative disclosures have fewer and lower dividends distributed to shareholders (Hasan and Habib, 2020). Financial communication that is less readable requires readers to spend considerable effort and time retrieving essential information, which makes it more difficult to analyze filings (Bloomfield, 2008). It is most usually the result of managerial incompetence or obfuscation.

2.3.1 Managerial ability, cost of debt, corporate liquidity

According to Koester et al. (2016), managers with greater ability engage in more tax avoidance actions, such as tax planning and income shifting. Bonsall and Miller (2017) demonstrate that

stronger managerial skill is connected with lower risks in future earnings and stock returns, and lower bond offering credit spreads.

When it comes to capital structure, a company's market value is influenced by its ability to manage. Petkevich and Prevost (2018) discover that high-ability managers play a substantial role in corporate finance policy. Bhagat et al. (2011) develop a principal-agent model that included taxes, bankruptcy costs, and managerial transparency in financing and performance to assist the derivation of a manager's contract and a company's capital structure. Managerial decisions that reduce long-term debt lead to a decline in managerial skill and internal equity ownership of managers, creating long-term threats to the value of a corporation. A study by Matemilola et al. (2018) indicate that experienced and capable managers leverage greater debt to protect the firm's profits from taxation, enhancing debt capital. Table 1 articulates a review of sample prior studies on managerial ability published between 2020 to 2022. The review suggests that most studies have focused majorly for developed (Kumar and Zbib, 2022, Khoo and Cheung, 2022, Magerakis, 2022, Haider et al., 2021, Curi and Lozano-Vivas, 2020) or Asian economies (Jebran and Chen, 2022, Phan, 2021, Naheed et al., 2021). Some studies have shown higher ability managers are associated with short-term debt (Khoo and Cheung, 2022, Shang, 2021). There are no studies assessing the managerial ability impact on financial policy for emerging economies, especially for GCC countries. In summary, from the upper echelons and agency theory perspective, this study hypothesizes that:

H1: A high managerial ability leads to a lower cost of debt

Investing in higher-profit initiatives is easier when managers have more expertise in discovering high-net present value (NPV) opportunities (Chemmanur et al., 2009). The research conducted by Lin et al. (2011) shows that the characteristics of a company's CEO, such as professional history and educational level, considerably impact on the company's R&D production and output. Dittmar and Mahrt-Smith (2007) find that excellent corporate governance increases the value of cash holdings. This study hypothesized that well-trained CEOs invest their monetary resources in high-value ventures. As a result, investors considered the cash reserves of resourceful CEOs as a favorable sign.

The quality of management forecasts is connected with greater investment efficiency (Goodman et al., 2013). Because better earnings forecasts are produced by more capable managers (Bamber et al., 2010a, Baik et al., 2011), this suggests that the positive relationship between managerial ability and firm performance is due to the ability of able managers to make efficient investment decisions. Jebran and Chen (2022) report high ability managers are associated with reduced cash holdings in China. However, Magerakis (2022) find that high-ability managers are associated with high cash holdings in US. This suggests that prior studies have mixed findings on the role of highly able managers in cash holdings. The following hypothesis is formulated based on the upper echelon theory and precautionary motive perspective:

H2: A high managerial ability leads to a higher corporate liquidity

2.3.2 Audit report readability, cost of debt, corporate liquidity

Through the perspective of agency theory, it is possible to better understand the function of audit and how it impacts the cost of debt of borrowers (Jensen and Meckling, 1976, Watts and Zimmerman, 1983). In principle, audited financial statements should lower companies' cost of debt (CoD) since they narrow the knowledge gap between the company and its lender (Jensen and Meckling, 1976). The relationship between the readability of narrative disclosures and rating qualities and the influence of these complex financial disclosures on the spread between lending and borrowing (i.e., offering yields-to-maturity over similar duration treasuries) are also investigated. If fewer readable filings lead to higher uncertainty, it is expected to see an increase in the cost of debt. Livingston and Zhou (2010) found that complex reporting could affect credit spreads by increasing the likelihood of disagreement among rating agencies or directly optimizing the processing expenses incurred by investors. Financial statement readability does not appear to be associated with a higher cost of equity, even though narrative indicators that convey performance expectations are associated with higher equity costs (Kothari et al., 2009). Bonsall and Miller (2017) reported fewer financial disclosures were related to higher cost of debt.

Table 2 summarises relevant literature on readability published from 2019 to 2022. This summary reflects that the readability has been investigated mainly for the company's annual reports (Lebelle et al., 2022, Cho et al., 2022, Dalwai et al., 2021a, Dalwai et al., 2021b, Satt and Iatridis, 2022, Rjiba et al., 2021). Only one of the recent studies has taken into account the readability of auditor reports by exploring its relationship with managerial entrenchment, managerial ownership and corporate governance (Salehi et al., 2022), and another explored the readability of key audit matters with the cost of debt (Wuttichindanon and Issarawornrawanich, 2022). This highlights the gap in studies related to auditor report readability. These studies focus on financial, non-financial or both sectors. While there are abundant readability studies focusing on US companies (Lebelle et al., 2022, Hsieh, 2022, Rjiba et al., 2021, Hasan and Habib, 2020), there are no for Omani non-financial sector. This research hypothesizes the relationship between audit report readability and cost of debt based on the agency theory perspective as follows:

H3: Less complex readability of audit reports results in a lower cost of debt

The precautionary motive of cash holding suggests that companies with greater frictions in promoting external financing hold more cash to deal with adverse shocks in the presence of high-priced sources of financing, which suggests a positive relationship between less readable annual reports and corporate cash holdings can be imagined (Almeida et al., 2004). Companies gain from cash holdings by decreasing transaction costs, avoiding financial distress, and enhancing opportunities to take advantage of positive NPV projects, especially for enterprises that have difficulty obtaining external financing. As a result, external capital providers must spend more time and money processing information on the capital's potential future uses because the disclosures are less understandable.

Financial institutions offer loans with short terms to reduce their exposures to the risks and agency costs associated with long-term loans. Still, these loans expose the borrowers to refinancing risk because of their short terms (Hasan and Habib, 2020). The risk of refinancing emerging from less accessible narratives drives enterprises to raise their corporate cash holdings.

Accordingly, from the foregoing evidence, more cash is likely to be held by companies with less readable narrative disclosures in annual reports. The evidence from Table 2 also suggests that the impact of auditor report readability remains neglected for non-financial sector firms in Oman. Therefore, this research investigates the following hypothesis from a precautionary motive perspective:

H4: Less complex readability of audit reports results in lower corporate liquidity

3. Research Design

3.1 Data collection and sample selection

The association of managerial ability and auditor report readability with corporate liquidity and cost of debt is elucidated through the data collection for listed industrial companies on Muscat Securities Market (MSM). The financial data is collected from the S&P Capital IQ database for 2015 to 2019. This research was conducted in early 2022. However, the financial years ending 2020 and 2021 were excluded from the study as they were affected by the COVID-19 pandemic. This study collects data from the financial year ending 2015, as it is the year that marked the decline in oil prices. In 2015 Oman's economy contracted for the first time after five years of robust growth (Times News Service, 2016), and oil prices averaged around \$56 per barrel over the five years (Central Bank of Oman, 2020). Thus, this is an ideal period of study due to the consistent economic conditions and the importance of the industrial sector in the country's diversification plan. The auditor reports are part of the annual reports published by the listed companies. These were manually downloaded for all the companies. The sample selection process is outlined in Table 3. As of 2022, a total of 114 listed companies, of which financial and services sector firms, were excluded from the sample. Further industrial sector companies that had missing observations were excluded from the study. Therefore, the final sample consisted of 35 companies and 175 firm-year observations.

3.2 Research Model

The study's hypotheses are explored using the following empirical models:

$$COD_{i,t} = \beta_0 + \beta_1 MA_{i,t} + \beta_2 ARR_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 Lev_{i,t} + \beta_5 Age_{i,t} + \beta_6 FCF_{i,t} + \beta_7 ROA_{i,t} + \beta_8 M/B_{i,t} +$$

(equation 1)

$$Liquidity_{i,t} = \beta_0 + \beta_1 MA_{i,t} + \beta_2 ARR_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 Lev_{i,t} + \beta_5 Age_{i,t} + \beta_6 FCF_{i,t} + \beta_7 ROA_{i,t} + \beta_8 M/B_{i,t}$$

+ (equation 2)

Where,

COD refers to the cost of debt,

Liquidity refers to corporate liquidity

MA refers to managerial ability

ARR refers to auditor report readability

Size refers to firm size

Lev refers to leverage

Age refers to the age of the firm
 FCF refers to free cash flow
 ROA refers to return on asset
 M/B refers to market-to-book value.

The variable definitions are summarized in Table 4 and also explained in section 3.3.

3.3 Variables measurement

3.3.1 Dependent variable

a. Cost of debt (COD)

The study examines the influence of managerial ability and auditor report readability on the cost of debt. COD is measured as interest expense divided by total debt (Tran, 2020, Khaw et al., 2019, Shailer and Wang, 2015). Both components of the COD are available from the financial statements. The alternative measure of COD is credit spread divided by corporate. However, this could not be used in the current study due to the unavailability of publicly traded debt information.

b. Corporate Liquidity

This research investigates the impact of managerial ability and auditor report readability on corporate liquidity. Corporate liquidity is also known as balance sheet liquidity. Cash as liquid assets is important for firms' working capital needs. This study uses five proxies for corporate liquidity consistent with prior studies (Yu-Thompson et al., 2016, Bates et al., 2009, Kim et al., 2011, Bugshan et al., 2021). These measures are: the ratio of cash and cash equivalents to total assets; the ratio of cash to its current liabilities; the ratio of a firm's net cash flow from operations to its total assets; the ratio of current assets less inventories to its current liabilities and the ratio of firm's working capital to its total assets.

3.3.2 Independent variables

a. Managerial ability (MA)

This study adopts the Demerjian et al. (2012a) proposed managerial ability measurement. This measure is computed through two stages. In stage 1, the data envelopment analysis (DEA) is used to calculate firm efficiency (FE) scores based on firm-specific characteristics (Habib and Kayani, 2022, Mourad et al., 2022, Habib and Mourad, 2022, Habib, 2022). FE is estimated using the output value of sales and input values of the cost of goods sold, selling, general and administrative expenses, property, plant and equipment, operating lease, research & development costs, goodwill and other intangibles. The second stage involves identifying the manager's specific characteristics that affect the FE. FE is regressed on six variables that include firm size, firm market share (MS), cash available (FCF), firm age (Age), operational complexity (BSC) and foreign operations (FCI). The residuals from the Tobit regression analysis are used as the proxy for managerial ability.

b. Auditor Report Readability (ARR)

The auditor report readability is measured as the natural logarithm of the digital file size of the auditor report. The auditor report is available as a separate pdf document as part of the audited annual report uploaded by the listed firms on the Muscat Securities Exchange. This measure of readability has been widely used in prior studies (Semenenko and Yoo, 2020, Dalwai et al., 2021a, Loughran and McDonald, 2014, Luo et al., 2018). The more popular measures of readability, such as Flesch Reading Ease, Fog Index, Flesch Kincaid Indices, are based on the number of sentences, average sentence length and proportion of complex words. However, it is argued that these measures fail to capture the readability features through the suggested formula (Loughran and McDonald, 2014). Thus, it is recommended to use the file size that is adopted for this study.

3.3.3 Control variables

Consistent with prior studies, this study includes the following control variables. Firm Size (Size) is the natural logarithm of total assets. Larger companies have better information environments and may have less uncertainty than smaller firms, thus attracting lower costs of debt (Li et al., 2022, Tran, 2021). Leverage (Lev) reflects the company's debt levels and is measured as the ratio of total debt to total assets. High levels of firm leverage increase the risk of financial distress, thus leading to an increase in the cost of debt (Ugur et al., 2022). Also, as leverage can be used as a substitute for cash, it is negatively related to cash (Ozkan and Ozkan, 2004). Firm Age (Age) is measured as the natural log of the number of years in operation. Free Cash Flow (FCF) is a dummy variable that takes the value of 1 if the firm has positive cash flow during the year and 0 if otherwise. FCF represents cash adequacy of the firm, whereby cash rich firms are less dependent on debt financing (Ding et al., 2022) and are negatively related to cash holdings (Almeida et al., 2004). Return on Assets (ROA) is a measure of firm profitability calculated as net income on extraordinary items divided by total assets. Firms with higher profitability face a lower risk of default and thus have lower debt financing costs (Khaw et al., 2019, Tran, 2021). The market to Book value (M/B) ratio represents as firm's growth opportunity and is measured as the ratio between market value and the book value of the company's equity. Debt financing is constrained by the growth of the firm (Ding et al., 2022) and thus based on trade-off model high growth firms have lower cost of debt (Valta, 2012) and higher liquidity (Opler et al., 1999).

4. Empirical results and discussion

4.1 Descriptive statistics

Table 5 provides descriptive statistics of the dependent, independent, and control variables for the entire sample. Panel A provides a descriptive statistics summary of the Tobit regression model. Regarding the dependent variable (EFF), the minimum and maximum values of 0.618 and 1, respectively, and the mean value of 0.953. Regarding independent variables, the minimum size is 0.604, and the maximum is 6.928, with a 3.7 mean, while the mean of age is about 3.284, with minimum and maximum values of 2.3 and 3.85, respectively. The mean MS is approximately 2.286, with a minimum of 0.001 and a maximum of 24.47, indicating a discrepancy in the sample market share of companies. Regarding the other variables, the FCF of

the firms ranges between 0 and 1 with 0.646 means, while the BSC ranged from 0.23 to 51.77, with a mean of 29.98. Besides, firms' FCI ranged between 0 and 1, with a mean of 0.337.

[Insert Table 5 here]

In contrast, Panel B provides the descriptive statistics summary of the essential regression models. Managerial ability (MA) has a minimum and maximum of 0.86, and the maximum is 4.55, with a 3.54 mean. The mean of audit report readability (ARR) is about 6.21, with a minimum of 2.56 and a maximum of 8.96. The firm size (SIZE) has a minimum of 0.604, and a maximum of 6.928, with a 3.7 mean. The mean of firm leverage (LEV) is about 4.11, with a minimum of 1.86 and a maximum of 8.55. The firm age (AGE) is approximately 3.284, with a minimum of 2.3 and a maximum of 3.85. The free cash flow (FCF) ranged from 0 to 1, with a mean of 0.646, while the market to book (M/B) ratio ranges from 0 to 7.87, with a mean of 4.61.

4.2 Pairwise correlation and Multicollinearity test

Table 6 provides pairwise correlation and multicollinearity tests of the independent variables for the entire sample. According to Panel A, the results show no multicollinearity problems when calculating the variance inflation factor (VIF), as the highest value was 1.48. Similarly, the tolerance values of the variables ranged from 0.676–0.965. Thus, there was no multicollinearity concern among the study variables in the Tobit model.

[Insert Table 6 here]

In contrast, Panel B provides pairwise correlation and multicollinearity tests of the independent variables for essential regression models. The results showed no multicollinearity problems, as the highest variance inflation factor value of VIF is 1.7. Similarly, the tolerance values of the variables ranged from 0.587–0.950. Therefore, the essential regression models had no multicollinearity concerns among the study variables.

4.3 Results of the study models

Tobit regression analysis was employed to recognize managerial ability (MA) estimates. Prior studies confirm the capability of Tobit regression analysis as a practical mean for exploring the association between variables when the dependent variable is censored or has a range constraint (Şahin et al., 2021, Shahwan and Habib, 2021, Mourad et al., 2021, Habib and Shahwan, 2020, Shahwan and Habib, 2020, Lee and Joo, 2019).

[Insert Table 7 here]

Table 7 presents the estimation from the Tobit model; the residual of the estimation is MA. For illustrative purposes, the table shows the average of the coefficients and the t-statistic based on the coefficients' standard error. Firm efficiency (EFF) was measured using the DEA approach, as described in the previous section. Firm size is computed as the natural logarithm of total assets at the end of year t , while firm age is computed as the natural logarithm of the number of years from establishment until the end of year t . The firm market share (MS) is a ratio of its sales achieved to total industry sales in year t . The firm free cash flow (FCF) is computed as a coded or binary indicator, having a value of one when a firm has a non-negative FCF in year t and zero otherwise. A firm's business segment concentration (BSC) is the percentage of its segment sales divided by total business segment sales in year t . A firm's foreign currency

indicator (FCI) is computed as a coded or binary indicator, having a value of one when a firm declares a non-zero value for adjustment of foreign currency in year t and zero otherwise.

Table 8 summarizes the results of the essential regression models used. As a result of the Hausman test, the current study uses a random-effects approach. In addition, the current study adopts the cluster-robust standard errors in appraising the impact of managerial ability (MA) and audit report readability (ARR) on the corporate cost of debt (COD) and liquidity indicator (LIQ). In addition, based on the literature, the regression models depend on size, leverage, age, FCF, and market-to-book ratio (M/B) as control variables.

[Insert Table 8 here]

Panel A reveals a significant and negative influence of MA on COD at a 0.01 significance level. This indicates that higher managerial ability for firms will lead to a lower cost of debt. Therefore, H1 is supported. This result is consistent with Demerjian et al. (2012a), as this finding reveals that more capable managers' ability can decrease transaction payments. In addition, Alex and Andrew (2018) found that high-ability managers play a significant role in corporate finance policy. Besides, Matemilola et al. (2018) indicated that experienced and capable managers leverage greater debt to protect the firm's profits from taxation, enhancing debt capital. Bhagat et al. (2011) argued that managerial decisions that reduce long-term debt led to a decline in managerial skills and internal equity ownership, thereby creating long-term threats to a corporation's value.

In contrast, the linkage between ARR and COD reveals a negative and insignificant influence at a significance level of 0.10 or less. This indicates that the less complex readability of audit reports results in a higher cost of debt. However, we cannot support this because the linkage is insignificant. Therefore, H3 is not supported. Based on the literature, Ertugrul et al. (2017) find a link between less-readable and ambiguous annual reports and the increasing debt costs of external financing. Similarly, their study demonstrated that fewer understandable disclosures increase financial limitations and refinancing risks (Ertugrul et al., 2017). Similarly, less-readable narrative disclosures are found to be related to a higher cost of debt (Bonsall and Miller, 2017). In addition, the results reveal a significant and positive influence of LEV on COD at a 0.01 significance level, this indicates that higher leverage for firms will lead to a higher cost of debt. Additionally, the results reveal a significant and positive influence of FCF on COD at a 0.01 significance level. This indicates that if a firm has non-negative free cash flow, the cost of debt seems to be higher. Further, the results reveal a significant and negative influence of M/B on COD at a 0.01 significance level. This indicates that higher market-to-book ratio for firms will lead to a lower cost of debt.

Panel B reveals a significant and positive influence of MA on LIQ at a 0.01 significance level. This indicates that a higher managerial ability for firms will lead to a higher liquidity ratio. Therefore, H2 is supported. This result is consistent with Dittmar and Mahrt-Smith (2007), as this finding reveals that excellent corporate governance increases the value of cash holdings. Bamber et al. (2010b), Baik et al. (2011) suggest that the positive relationship between managerial ability and firm performance is due to the ability of able managers to make efficient investment decisions. In addition, the results showed a positive and significant influence of ARR on LIQ at a 0.01 significance level. This indicates that the less complex readability of audit reports results in a lower liquidity ratio. Accordingly, H4 is supported. This result is consistent with Almeida et al. (2004), who find a positive relationship between less-readable reports and

firm cash holdings. Similarly, Lang and Stice-Lawrence (2015) showed that improved disclosure readability improves liquidity. Unlike, this result is inconsistent with Huang and Zhang (2012). This finding reveals managers of businesses that file lengthier and/or more difficult-to-read financial reports are more likely to use company resources opportunistically, which supports the "agency" incentive for cash holdings. Hasan and Habib (2020) reported that corporates with less-readable disclosures hold more cash. Further, the results reveal a significant and positive influence of M/B on LIQ at a 0.05 significance level. This indicates that higher market-to-book ratio for firms will lead to a higher liquidity ratio.

Based on the above, the agency motive posits that managers' self-serving behavior leads to hoarding more cash to extract private benefits (Jensen, 1986). Therefore, managerial ability is an important attribute that contributes to the success of an organization, as skilled, high-ability managers ensure the best utilization of scarce resources and support to achieve sustainable growth. In addition, Huang and Zhang (2012), reveal that managers of businesses that file lengthier and/or more difficult-to-read financial reports are more likely to use company resources opportunistically, which supports the agency-incentive for cash holdings. The literature demonstrates that fewer understandable disclosures lead to increased financial limitations and refinancing risks (Ertugrul et al., 2017). The literature suggests that these unfavorable results increase the amount of capital in corporations (Almeida et al., 2004, Harford et al., 2014).

4.4 Endogeneity issues and additional analyses

4.4.1 Omitted variable bias

Endogeneity is a fundamental concern, as it prevents causal claims (Wooldridge, 2009). In econometrics, endogeneity broadly refers to situations in which an explanatory variable is correlated with the error term and ignoring endogeneity problems in the estimation leads to biased estimates (Kmenta, 1986). We adopt Ramsey's regression equation specification error test to test for omitted variable bias. In our models, the p-values for the omitted variable test were 0.1298 and 0.8138 for the COD and LIQ models, respectively. The results indicate that our models do not have an omitted variable bias.

4.4.2 Generalized least squares (GLS) approach

The generalized least squares (GLS) estimator of the linear regression coefficients is a generalization of the ordinary least squares (OLS) estimator. In practice, the GLS estimator provides superior inferences (Lu and White, 2014). We adopt the GLS estimator via a robust standard error as a robustness check. In addition, this study determines whether different ways of measuring key variables resulted in significant differences in the essential models. Furthermore, we adopt COD* and LIQ* as alternative dimensions of a firm's cost of debt and liquidity, respectively. COD* is the percentage of a firm's interest expenses to its total liabilities at the end of year t and LIQ* is the percentage of a firm's cash and cash equivalents to its total assets at the end of year t.

[Insert Table 9 here]

The results in Table 9 indicate that even when the GLS estimators are used, the coefficients for the variables COD* and LIQ* are statistically significant and in the same direction, therefore matching our prediction. The findings are consistent with the main results shown in Table 7. We can, thereby, be confident of the integrity of the study results.

4.4.3 Firm fixed effects approach

The fixed-effects model is a statistical model in which the model parameters are fixed or non-random quantities. This is in contrast to random effects and mixed models, in which all or some of the model parameters are random variables (Greene, 2011). We adopted the fixed-effects approach as a robustness check to enhance our confidence in the integrity of the study findings.

The results in Table 10 indicate that, even when the fixed-effects approach is used, the coefficients for COD and LIQ are statistically significant and in the same direction, thereby matching our predictions. These findings are consistent with the results in Table 8. Therefore, we can be more confident in the integrity of the study results.

[Insert Table 10 here]

5. Summary and conclusion

This study investigated the impacts of managerial ability and auditor report readability on the cost of debt and corporate liquidity in listed companies in the Omani industrial sector. Our empirical results contribute to a relatively new but growing body of literature on the effects of managerial ability and auditor report readability. We extend this line of research by including a corporate liquidity analysis and the cost of debt. We test whether managerial ability and auditor report readability affect corporate liquidity and the cost of debt. Using DEA as a platform to estimate the efficiency of a firm, we quantify MA by discerning between managerial aptitude and firm-driven influences on firm efficiency. Our results suggest that high-ability managers are a more significant factor in corporate liquidity and the cost of debt than their less-able peers. In contrast, the results of auditor report readability suggest a significant linkage with the corporate liquidity indicators. Our findings are consistent with prior literature (Alex and Andrew, 2018, Matemilola et al., 2018, Ertugrul et al., 2017, Dittmar and Mahrt-Smith, 2007, Bamber et al., 2010b, Baik et al., 2011).

5.1 Managerial implications

Research on managerial abilities has been conducted in several disciplines. The findings of this study could assist many stakeholders, including decision-makers, managers, financiers, investors, and financial consultants, in monitoring managers' managerial ability and their efficiency in employing corporate assets and liabilities. This is consistent with the findings regarding accountability, whereby managerial ability is an important attribute that contributes to the success of an organization and skilled, high-ability managers ensure the best utilization of scarce resources and support to achieve sustainable growth. Accordingly, this should encourage reporting managerial performance to internal and external stakeholders. The implications of managerial ability and auditor reporting readability on social interests would cause decision-makers to use the best strategies and procedures to enhance managers' ability and re-systematize report readability activities.

5.2 Theoretical implications

This study indicates that a company's managerial ability reduces the cost of debt and leads to an increase in corporate liquidity. In addition, less-readable auditor reports contribute to higher debt costs and reduce corporate liquidity. Overall, high-ability managers possess high knowledge about the businesses, industries, and products to which they are related, are capable of better

decision-making than other managers, efficiently manage employees, and are well-informed about future trends and technologies. Furthermore, audited financial statements should theoretically reduce debt costs by closing the knowledge gap between a company and its lender. Additionally, firms with higher marketing frictions store more cash to deal with adverse shocks in high-priced financing sources, demonstrating a relationship between less-readable annual reports and corporate cash holdings. Because of less intelligible disclosure, we estimate that external capital providers will have to spend more time and money processing information on potential future uses of capital as a result of our research.

5.3 Limitations and future directions

The study suffers from some limitations. This study focuses on the industrial sector only in Oman. While the findings can be generalized to other non-financial sectors for Oman, other GCC and Middle East countries, future research may include all the non-financial sector companies for broader applicability. The findings are limited to the period before COVID-19. Future research should examine the generalizations of the findings beyond Omani firms and consider the influence of the crisis of COVID-19 pandemic on managerial ability, auditor report readability, corporate liquidity, and cost of debt. Cost of equity is also an important element of the financial policy not currently considered in this study that can be investigated in future studies.

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Table 1: Prior Studies related to managerial ability

Author(s)	Country	Sample Period	Sample Size	Type of firms	Dependent variables	Independent variables	Result
Kumar and Zbib (2022)	US	3 rd Feb to 23 rd March 2021	738 firms	Non-financial firms	Firm performance (Cumulative raw returns, cumulative abnormal returns, ROA, ROE)	CEO Managerial Ability	Positive association
Jebran and Chen (2022)	China	Three quarters, 31 st March, 30 th June and 30 th September	3679 firms	Non-financial firms	Corporate policies (investment, financing, dividend, cash holding) Firm performance	Managerial ability	High ability managers were associated with reduced investment, financing and cash holding, and increased dividends
Khoo and Cheung (2022)	US	1981-2016	17,295 firms	Non-financial firms	Debt maturity – proportion of debt maturing within one year, proportion of debt maturing within two years	Managerial ability	High ability managers are associated with more short-term debt financing
Magerakis (2022)	US	1980-2016	92,823 firm year observations	Non-financial firms	Cash holding	Managerial ability, managerial discretion	Positive association between CEO managerial ability and cash holdings,

							weakened by managerial discretion
Francis et al. (2022)	S&P Compustat	1998-2009	42,329 firm year observations	Financial and Non-financial firms	Tax aggressiveness	Managerial ability	Negative relationship between managerial ability and tax aggressiveness
Phan (2021)	Vietnam	2009-2013	149,472 firm year observations	Financial and Non-financial firms	Profitability (ROA, ROE, TobinQ) Risk (Leverage)	Managerial ability	Positive relationship between managerial ability and leverage
Shang (2021)	US	1985-2018	11,913 firms	Non-financial firms	Short term debt	Managerial ability	High ability managers prefer short term debt for firms with greater growth opportunities
Luu et al. (2021)	Vietnam	1990-2018	91,361 bank year observations	Financial	Bank stability	Managerial ability	More ably managed banks experience lower probability of failure
Haider et al. (2021)	Australia	2004-2013	8,541 firm year observations	Non-financial	Accounting conservatism – accruals, market, balance sheet based approach	Managerial ability	Positive association between managerial ability and accounting conservatism
Curi and	European Union	1997-2016	1148 firm year	Financial firms	Bank risk taking	Managerial	Higher

Lozano-Vivas (2020)			observation			ability	managerial ability is associated with higher franchise value, leading to decrease in bank risk-taking
Naheed, Rehana et al (2021)	China	2005 - 2018	1,523	Non- Financial Firms	Firm Investment	Managerial ability	The impact of MA on firm investment is a significant and positive.

Table 2: Prior Studies related to readability

Author(s)	Country	Sample Period	Sample Size	Type of firms	Variables Dependent	Independent Variable	Result
Salehi et al. (2022)	Iran	2012-2018	150 firms	Non-financial firms	Auditor report readability (ARR) – FOG Index, Flesch Index, Text length	Managerial Entrenchment, Managerial Ownership, Corporate Governance	Negative relationship between managerial entrenchment, earnings management, and ARR using Fog Index
Lebelle et al. (2022)	US, European and Asian countries	2011-2018	102 firms (from 23 countries)	Financial and non-financial firms	Liquidity – Bid-ask spread	Green Bond annual report - FOG Index	Green bonds framework disclosure and Annual reports readability increase bonds liquidity
Hsieh (2022)	US	1985-2015	31,352 firms	Non-financial firms	Credit rating conservatism	Financial statements – Fog index, text length	Hard to read ARR have more conservatism
Wuttichindanon and issarawornrawanich (2022)	Thailand	2016-2017	770 firm observations	Non-financial firms	Cost of debt	KAM disclosures readability – no of words, number, Flesch reading ease	KAM readability is negatively related to cost of debt
Cho et al. (2022)	Korea	2002-2015	14,026 firm-year observations	Non-financial firms	Audit pricing – fees, hours	Annual report reporting – Fog Index, Flesch Index, Length of annual report	Hard to read annual reports are positively associated with audit fees and hours
Satt and Iatridis (2022)	US	2011-2019	2,104 firms	Non-financial firms	Dividend policy	Annual report – tone complexity (average number of characters per word among total	Firms with complex annual reports distributed more dividends

						number of words)	
Soepriyanto et al. (2021)	Indonesia	2014-2017	967 firm – year observations	Non – financial firms	Accounting irregularities	Annual report readability – Fog Index, Flesch Index	Annual report readability is not associated with accounting irregularities
Rjiba et al. (2021)	US	1995-2017	39,181 firm year observations	Financial and non-financial firms	Cost of equity capital	Annual report readability – Bog Index	High textual complexity is associated with higher cost of capital
Dalwai et al. (2021a)	Oman	2014-2018	150 firm year observations	Financial sector	Agency cost, firm performance	Annual report readability – Flesch Index, file size	Easier to read annual reports are associated with high asset utilisation ratio and Tobin Q
Dalwai et al. (2021b)	Oman	2014-2018	150 firm year observations	Financial sector	ARR – Flesch Index, file size	Intellectual capital efficiency (ICE)	Decreased in ICE is associated with easier to read annual reports
Hasan and Habib (2020)	US	1994-2017	All US listed companies	Non-financial	Cash holding, Payout policy	10K document - Fog Index, Sensitivity – log of net file size, BOG index, SMOG index	Less readable disclosures are associated with more cash holdings and pay less dividends
Ezat (2019)	Egypt	2013 – 2015	200 observations	Financial and Non-financial	Cost of capital	Board of Directors Report -LIX	Readability does not impact cost of capital

Table 3
Sample selection process

Description	No of firms
Total number of firms listed on Muscat Securities Market as of 2022	114
Excluded financial sector firms	35
Excluded service sector firm	38
Excluded industrial firms with missing data for the period 2015-2019	6
Final sample: Industrial sector companies	35 (175 firm-year observations)

Table 4
Variables definition

Variable	Definition
Firm efficiency (EFF)	EFF is the total efficiency of a firm measured using the DEA platform. DEA scores have a range from zero to one, where 1 signifies a relative efficiency of a firm at the end of year t. In contrast, a score of less than 1 to 0 purports a relative inefficiency of a firm at the end of year t.
Firm size (SIZE)	Size is the natural logarithm of a firm total assets at the end of year t.
Firm age (AGE)	Age is the natural logarithm of a number of years from establishment until the end of year t.
Market share (MS)	MS is a percentage of a firm sales achieved to total industry sales in year t.
Free cash flow (FCF)	FCF is computed as a coded or binary indicator, having a value one when a firm has non-negative FCF in year t and zero otherwise.
Business segment concentration (BSC)	BSC is the percentage of a firm segment sales divided by total business segments sales in year t.
Foreign currency indicator (FCI)	FCI is computed as a coded or binary indicator, having a value one when a firm declares a non-zero value for adjustment of foreign currency in year t and zero otherwise.
Cost of debt (COD)	COD is the percentage of a firm net interest expense (interest expense – interest income) to its total liabilities at the end of year t.
Cost of debt (COD*)	COD* is the percentage of a firm interest expense to its total liabilities at the end of year t.
Liquidity ratio (LIQ)	Liquidity ratio is a financial metric used to determine a debtor's ability to pay off current debt obligations, without raising external capital. LIQ is computed as a percentage of a firm net cash flow from operations to its total assets at the end of year t.
Liquidity ratio (LIQ*)	LIQ* is computed as a percentage of a firm cash and cash equivalents to its total assets at the end of year t.
Managerial ability (MA)	MA is the residual of the tobit model estimation at the end of year t, by regressing the total efficiency of a firm on six firm characteristics that influence firm efficiency: Size, Age, MS, FCF, BSC, and FCI.
Audit report readability (ARR)	ARR is the natural logarithm of an auditor report file size at the end of year t.
Leverage (LEV)	Lev is the natural logarithm of a firm debt to its total assets at the end of year t.
Market to book (M/B)	M/B is the natural log of a firm market value to its book value at the end of year t.

Table 5
Descriptive statistics summary

<i>Panel A: Tobit regression model.</i>					
Variables	Obs	Min.	Max.	Mean	Std. Dev.
Firm efficiency (EFF)	175	0.618	1.000	0.953	0.070
Firm size (SIZE)	175	0.604	6.928	3.700	1.381
Firm Age (AGE)	175	2.303	3.850	3.284	0.349
Market share (MS)	175	0.001	24.468	2.286	3.821
Free cash flow indicator (FCF)	175	0.000	1.000	0.646	0.480
Business segment concentration (BSC)	175	0.230	51.772	29.977	13.397
Foreign currency indicator (FCI)	175	0.000	1.000	0.377	0.486
<i>Panel B: GLS regression model.</i>					
Variables	Obs	Min.	Max.	Mean	Std. Dev.
Managerial ability (MA)	175	0.863	4.553	3.542	0.798
Audit report readability (ARR)	175	2.565	8.964	6.208	1.257
Firm size (SIZE)	175	0.604	6.928	3.700	1.381
Leverage (LEV)	175	1.863	8.550	4.109	1.347
Firm Age (AGE)	175	2.303	3.850	3.284	0.349
Free cash flow (FCF)	175	0.000	1.000	0.646	0.480
Market to book (M/B)	175	0.000	7.868	4.612	0.870

This table reports the descriptive statistics summary. The independent variables include firm size (SIZE), firm age (Age), market share (MS), free cash flow (FCF), business segment concentration (BSC), foreign currency indicator (FCI), managerial ability (MA), audit report readability (ARR), firm leverage (LEV), and market to book (M/B).

Table 6

Pairwise correlation and multicollinearity test							
<i>Panel A: Tobit regression model.</i>							
Variables	SIZE	AGE	MS	FCF	BSC	FCI	
SIZE	1.000						
AGE	0.342**	1.000					
MS	0.254**	0.185*	1.000				
FCF	0.092	0.122	-0.027	1.000			
BSC	0.270**	-0.245**	-0.224**	0.192*	1.000		
FCI	0.041	0.091	0.060	0.133	0.071	1.000	
VIF	1.48	1.37	1.19	1.09	1.46	1.04	
Tolerance	0.676	0.730	0.838	0.921	0.687	0.965	
<i>Panel B: GLS regression model.</i>							
Variables	MA	ARR	SIZE	LEV	AGE	FCF	M/B
MA	1.000						
ARR	-0.067	1.000					
SIZE	0.429**	-0.048	1.000				
LEV	-0.186*	-0.130	0.081	1.000			
AGE	0.238**	0.043	0.342**	0.036	1.000		
FCF	0.368**	-0.098	0.092	-0.293**	0.122	1.000	
M/B	-0.072	-0.150*	-0.124	0.508**	-0.151*	0.011	1.000
VIF	1.47	1.05	1.41	1.70	1.20	1.31	1.53
Tolerance	0.680	0.950	0.709	0.587	0.836	0.762	0.652

Note: ** and * denote significance at the 1% and 5% levels, respectively. Refer table 4 for variables definition.

This table reports the full pairwise correlation and multicollinearity results. The independent variables include firm size (SIZE), firm age (Age), market share (MS), free cash flow (FCF), business segment concentration (BSC), foreign currency indicator (FCI), managerial ability (MA), audit report readability (ARR), firm leverage (LEV), and market to book (M/B).

Table 7
Tobit regression results

Tobit regression					Num. of obs	=	175
					LR chi2(6)	=	32.02
					Prob > chi2	=	0.0000
Log pseudolikelihood = 30.718594					Pseudo R2	=	-1.0883
Independent Variables	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]		
SIZE	0.0133	0.0077	1.73*	0.085	-0.0019	0.0284	
AGE	-0.0154	0.0286	-0.54	0.590	-0.0718	0.0409	
MS	0.0092	0.0030	3.07**	0.002	0.0033	0.0150	
FCF	0.0572	0.0178	3.21**	0.002	0.0220	0.0924	
BSC	-0.0004	0.0008	-0.50	0.620	-0.0019	0.0012	
FCI	0.0217	0.0178	1.22	0.224	-0.0134	0.0569	
_cons	0.9410	0.0970	9.70**	0.000	0.7494	1.1325	

Note: ** and * denote significance at the 1% and 10% levels, respectively. Refer table 4 for variables definition.

This table reports estimations from the Tobit regression model. The residuals from the Tobit regression analysis are used as a proxy for managerial ability (MA). The MA measure was computed in two stages. In stage 1, the data envelopment analysis (DEA) is used to calculate firm efficiency (EFF) scores based on firm specific characteristics. The second stage involves identifying manager-specific characteristics that affect firm efficiency. The EFF is regressed on six variables: firm size (SIZE), firm age (AGE), firm market share (MS), free cash flow (FCF), business segment concentration (BSC), and foreign currency indicator (FCI).

Table 8
Regression of the study models

	Panel A: COD model				Panel B: LIQ model			
	Clustered robust	R-sq: within = 0.1187 between = 0.3001 overall = 0.2172	Num. of obs = 175 Num. of groups = 35 Wald chi2(7) = 33.25 Prob > chi2 = 0.0000			R-sq: within = 0.0465 between = 0.3694 overall = 0.2699	Num. of obs = 175 Num. of groups = 35 Wald chi2(7) = 29.24 Prob > chi2 = 0.0001	
Independent Variables	Coef.	Robust Std. Err.	z	P> z	Coef.	Robust Std. Err.	z	P> z
MA	-0.146	0.049	-2.99**	0.003	0.452	0.168	2.69**	0.007
ARR	-0.022	0.035	-0.62	0.535	0.146	0.027	5.44**	0.000
SIZE	-0.152	0.051	-2.97**	0.003	0.124	0.207	0.60	0.548
LEV	0.314	0.084	3.75**	0.000	-0.270	0.167	-1.61	0.106
AGE	0.631	0.436	1.45	0.147	-0.230	0.702	-0.33	0.743
FCF	0.345	0.093	3.69**	0.000	0.088	0.320	0.28	0.783
M/B	-0.457	0.078	-5.89**	0.000	0.369	0.164	2.25*	0.025
_cons	0.179	1.225	0.15	0.884	-0.797	1.445	-0.55	0.581

Note: ** and * denote significance at the 1% and 5% levels, respectively. Refer table 4 for variables definition.

This table reports estimations from the generalized least squares (GLS) regression model by adopting cluster-robust standard errors. Panels A and B show the cost of debt (COD) and liquidity (LIQ) models. COD is the percentage of a firm's interest expense (interest expense – interest income) to its total liabilities at the end of year t and LIQ is the percentage of a firm's net cash flow from operations to its total assets at the end of year t. The independent variables are managerial ability (MA) and audit report readability (ARR), whereas the control variables are firm size (SIZE), leverage (LEV), firm age (Age), free cash flow (FCF), and market-to-book ratio (M/B).

Table 9
Additional analysis using the GLS approach with alternative dimensions for key variables

Independent Variables	Panel A: COD* model				Panel B: LIQ* model			
	Coef.	Robust Std. Err.	z	P> z	Coef.	Robust Std. Err.	z	P> z
MA	-0.079	0.046	-1.72*	0.085	0.340	0.110	3.08**	0.002
ARR	-0.017	0.018	-0.95	0.341	0.111	0.025	4.37**	0.000
SIZE	-0.067	0.080	-0.83	0.404	0.045	0.128	0.35	0.725
LEV	0.260	0.069	3.77**	0.000	-0.080	0.101	-0.79	0.427
AGE	0.455	0.384	1.18	0.236	-0.040	0.635	-0.06	0.950
FCF	0.223	0.042	5.29**	0.000	0.150	0.315	0.48	0.633
M/B	-0.371	0.057	-6.55**	0.000	0.162	0.111	1.46	0.144
_cons	0.211	1.085	0.19	0.846	-1.721	1.099	-1.57	0.117

Note: ** and * denote significance at the 1% and 10% levels, respectively. Refer table 4 for variables definition.

This table reports an additional analysis of the robustness test that was used to assess the validity of the findings. The generalized least squares (GLS) estimator is adopted via a robust standard error as a robustness check. In addition, we determined whether the different methods of measuring key variables resulted in significant differences in the essential model. Panels A and B show the cost of debt (COD*) and liquidity (LIQ*) models. COD* is the percentage of a firm's interest expenses to its total liabilities at the end of year t and LIQ* is the percentage of a firm's cash and cash equivalents to its total assets at the end of year t.

Table 10
Additional analysis using the fixed-effects approach

Independent Variables	Panel A: COD model				Panel B: LIQ model			
	Coef.	Robust Std. Err.	z	P> z	Coef.	Robust Std. Err.	z	P> z
MA	-0.144	0.023	-6.38**	0.008	0.368	0.132	2.78*	0.069
ARR	-0.053	0.028	-1.92	0.151	0.067	0.023	2.92*	0.061
SIZE	-0.136	0.160	-0.85	0.457	0.024	0.556	0.04	0.968
LEV	0.212	0.095	2.24	0.111	-0.107	0.272	-0.39	0.720
AGE	3.982	0.549	7.25**	0.005	-0.067	0.632	-0.11	0.922
FCF	0.415	0.059	7.08**	0.006	0.006	0.294	0.02	0.986
M/B	-0.257	0.138	-1.87	0.158	0.155	0.380	0.41	0.710
_cons	-11.244	1.167	-9.64**	0.002	0.193	2.667	0.07	0.947

Note: ** and * denote significance at the 1% and 5% levels, respectively. Refer table 4 for variables definition.

This table reports estimations from the generalized least squares (GLS) regression model by adopting cluster-robust standard errors. Panels A and B show the cost of debt (COD) and liquidity (LIQ) models. COD is the percentage of a firm's interest expense (interest expense – interest income) to its total liabilities at the end of year t and LIQ is the percentage of a firm's net cash flow from operations to its total assets at the end of year t. The independent variables are managerial ability (MA) and audit report readability (ARR), whereas the control

variables are firm size (SIZE), leverage (LEV), firm age (Age), free cash flow (FCF), and market-to-book ratio (M/B).
