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The Effect of Firm Characteristics on Earnings Quality: The Moderating Role of Firm Size

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ABSTRACT

This study sought to examine the effect of firm characteristics on earnings quality. Specifically, the objectives of the study were two-fold: first, to investigate the relationship between firm characteristics and earnings quality using a sample of 45 industrial firms listed on the Egyptian stock exchange for the period 2014 to 2017; and secondly, empirically investigate the moderating role of firm size in the relationship between firm characteristics and earnings quality. The discretionary accrual is used as a proxy for earnings quality. The study employs Ordinary least squares regression analysis. The results indicate that profitability and financial leverage have a significant negative impact on earnings quality, but the firm size was not a moderating factor. Notably, liquidity significantly affects earnings quality and the strength of the relationship between them changes as firm size change. Furthermore, firm age reveals no impact on earnings quality. This study contributes to the literature attempting to understand the relationship between firm characteristics and earnings quality, especially the moderating role of firm size in emerging economies. This paper presents managerial implications for managers, academicians, policy makers, and investors.

Keywords earnings quality, profitability, leverage, liquidity, moderation

Paper type Research paper

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1. Introduction

There is a growing interest by financial accounting researchers by the earnings quality and their usefulness due to the collapse in the worldwide financial markets in the early 2000s such as Informix, McKesson HBO, Waste Management Inc., Enron, and WorldCom. It is attributed to the poor earnings quality, lack of transparency, and the dishonest accounting practices. Earnings manipulations are one of such dishonest accounting practices that come under the umbrella of earnings management and affect earnings quality. It is a tool used by managers to maximize firm’s profit and reduce risks. Some managers tend to manipulate earnings for several reasons which may range from meeting shareholders financial expectations, increase the market value of shares, receive commission linked to financial performance, and satisfy the insiders’ needs (Hassan & Farouk, 2014). Previous research has used several models to detect earnings management to be able to evaluate earnings quality (Gaynor, Kelton, Mercer, & Yohn, 2016). Consequently, earnings quality is considered an important topic of debate not only among practitioners, standard setters, and academics but also among professionals and investors. Earnings are affecting investors’ decisions and used extensively in different situations.

Firm characteristics play an important role in explaining the quality of earning as they affect firm’s internal and external decisions (Shehu, 2004) and restrain managers from manipulating the accounting information (Mutende, Mwangi, Njihia, & Ochieng, 2017). Firm characteristics are defined as a firm internal environment that is comprised of demographic and managerial variables which in turn comprise part of the firm’s internal environment (Mutende et al., 2017).

Most previous research examined the association between individual firm characteristics and earnings quality in developed countries (Parte–Esteban & García, 2014). For instance, Wang (2006)
focus on founding family ownership to identify earnings quality in the Standard and Poor's firms. Using a sample of private versus public U.S. firms, Hope, Thomas, and Vyas (2013) investigate the effect of ownership concentration on earnings quality. Esho, Kofman, and Sharpe (2005) report a moderating effect of firm size between diversification and firm performance. Other characteristics include Stock Returns (Lipe, 1990); tax compliance (Burgstahler, Hail, & Leuz, 2006); corporate governance (Ahmad, Anjum, & Azeem, 2014; Swastika, 2013); firm size(Swastika, 2013); cost of capital(Strobl, 2013); audit function(X. Chen, Kong, & Wang, 2014), and financial leverage(Bassiouny, 2016).

Nonetheless, the effect of moderating variables on firm characteristics–earnings quality relationships is advanced in other fields but remain insufficient for accounting. Moreover, limited research to date has focused on predicting earnings quality using a set of firm characteristics in emerging economies like Egypt. Therefore, identifying additional determinants of earnings quality is a fundamental research problem with managerial and practical implications for policy makers, academicians, and managers as it directs them to focus on firm characteristics that significantly affect earnings quality(Umar & Hassan, 2018).

This study complements the literature by investigating the effect of a set of attributes, namely: profitability, financial leverage, liquidity, and firm age on earnings quality. In addition, it examines the moderating role of firm size in an emerging economy, Egypt, using a sample of 45 industrial firms in the period from 2014 to 2017. The firm characteristics used in this study are the most commonly used in literature and have a significant influence on earnings quality(Mutende et al., 2017). This study focuses on the industrial sector because it plays an important role in the Egyptian economy. It contributes around 32.8 percent to the GDP of Egypt in 2018(Economics, 2018).
The findings of this study show that profitability and leverage significantly affect earnings quality, but the firm size was not a moderating factor. Moreover, liquidity significantly affects earnings quality and the strength of the relationship between them changes as the firm size change. In addition, age and firm size have an insignificant impact on earnings quality. This study contributes to the literature seeking to investigate the determinants of earnings quality in several ways. First, previous research focused on developed countries while this research contributes to the current literature by focusing on emerging economies. Second, previous research focused on the association between earnings quality and individual firm characteristic and to the best of the researcher’s knowledge, no studies were conducted that empirically investigates the moderate effect of firm size on the relationship between firm characteristics and earnings quality of listed industrial firms in Egypt. This study aims to fill this gap by adding more characteristics to the analysis and shows how the relationship may differ as a function of firm size as shown in the proposed model in figure 1.

The subsequent sections of this study are organized as follows. The next section presents the literature review and the major research hypothesis. Section 3 proceeds to describe the sample, the measurement of the dependent and independent variables and, finally, the research methodology, followed in Section 4 by analyzing the empirical results. Section 5 presents the main study conclusions.
Figure 1: The relation between firm characteristics and earnings quality: the moderating role of firm size.

2. Literature review and hypothesis development

Stakeholders are seeking high earnings quality as it enhances both transparency and contracting, reduces information asymmetries and considered as a construct and a measure used by investors to make rational decisions (Parte–Esteban & Garcia, 2014). There is no agreed upon definition of earnings quality in the literature (Gaynor, Kelton, Mercer, & Yohn, 2016). However, the conceptual framework for financial reporting tries to define the characteristics that identify high earnings quality. According to the Conceptual Framework, “higher quality financial reports are those that are more complete, neutral, and free from error and provide more useful predictive or confirmatory information about the company’s underlying economic position and performance” (Board, 2010). Previous academic literature has used various theories to support the relationship...
between various firm characteristics and earnings quality. For instance, the stakeholder's theory which indicate that managers might manage earnings for their own benefits on the expense of stakeholders (Prior, Surroca, & Tribó, 2008) and the agency theory which originates from the problems of risk sharing between management and the principal shareholders (Jensen & Meckling, 1976). This study employs the mentioned theories to support the results of this study as they are linked with the relationship between firm characteristics and earning quality.

Prior research tries to investigate the association between firm characteristics and earnings quality. For instance, Hassan and Farouk (2014) find that the larger the firm size, the higher the agency problem that firms may encounter. According to Kim, Liu, and Rhee (2003), large firms tend to have more sophisticated operations and activities than small firms. As a result, it is difficult for analysts and other stakeholders to understand the nature of these complex operations, allowing more rooms for managers to manipulate earnings. Consistent with the agency theory, Jensen (1986) find that large firms exhibit higher agency costs and thus more unethical practices. Additionally, analysts exert more pressure on large firms and thus managers seek to meet their expectation (Barton & Simko, 2002). Interestingly, Bassiouny (2016) find an insignificant relationship between firm size and earnings quality. While Esho, Kofman, and Sharpe (2005) report a moderating effect of firm size between diversification and firm performance. The resource-based theory explains that firm unique resources protect the competitive positions of firms and affect its performance and thus earnings quality (Peteraf, 1993). It is worth mentioning that research on the moderating effect that firm size has on firm characteristics is advanced in other fields but remain insufficient for accounting. Large firms exhibit more resources which might affect the earnings quality and thus, the study posits the hypothesis that the
relationship between firm characteristics and earnings quality is moderated by firm size.

The relationship between firm age and earnings quality is still debatable. Firstly, the greater the firm age, the more experience it gains, which minimize costs and enhance quality. As a result, they would be less engaged in behavior that affects earnings quality and hence their reputation in the market. (Ericson & Pakes, 1995). Jackson, Rountree, and Weston (2013) find a significant positive relationship between firm age and earnings quality. Moreover, the research of Khanh and Nguyen (2018) reveals a positive association between firm age and earnings quality. On the contrary, other studies found a negative or insignificant relationship between firm age and earnings quality. For instance, Gul, Fung, and Jaggi (2009) find that firm age affects negatively earnings quality. Other studies didn’t find any significant relationship between earnings quality and age (Olowokure, Tanko, & Nyor, 2015). Based on the above argument, the following hypothesis is constructed:

H1: Firm age has a significant effect on the earnings quality of listed industrial firms in Egypt.

A subsidiary hypothesis to H1 is formulated as follows:

H1a: Firm size moderates the relationship between firm age and earnings quality of listed industrial firms in Egypt.

Managers have incentives to use accruals to report more informative earnings to reduce the firms’ cost of borrowing (Ghosh & Moon, 2010). Most previous research finds a negative relation between leverage and earnings quality, consistent with the financial distress theory (Fung & Goodwin, 2013). They claim that managers tend to manipulate earnings to convince their creditors that they could recover from any financial distress. Moreover, DeFond and Jiambalvo (1994) find that there is a negative association between financial leverage and earnings quality. They claim that managers have incentives to manipulate earnings to avoid debt
Using a large sample of US nonfinancial firms, Ghosh and Moon (2010) find that high leverage is negatively associated with earnings quality. This is due to managers’ preference to pay higher borrowing costs from lower earnings quality rather than debt covenant violation. Using a sample of 23 listed Iranian firms, Kobbi–Fakhfakh, Shabou, and Pigé (2018) find that financial leverage negatively affects earnings quality. The higher debt may encourage managers to manipulate earnings to enhance their financial statements and hence affect creditors’ perception.

Another stream of research shows that creditors of short-term debt play a monitoring role over management and are concerned about firms’ earnings quality to evaluate capital utilization (Anagnostopoulou & Tsekrekos, 2017). This is consistent with the agency theory in the sense that highly leveraged firms tend to provide detailed disclosure to meet the creditors’ information needs and reduce the costs of debt (Mitchell, Chia, & Loh, 1995). Leverage is positively associated with earnings quality due to the high pressure and monitoring exposed by creditor and bankers (Bassiouny, 2016; Khanh & Nguyen, 2018). Moreover, Debt holders require extensive information, especially earnings, to evaluate the worthiness of the borrowers (Jensen, 1986). Additionally, Jensen and Meckling (1976) added that leverage reduces cash available to managers due to debt repayment and thus reduces irrational spending. However, DeAngelo et al. (1994) find that firms facing troubles exhibit large negative accruals related to contractual renegotiations that encourage managers to decrease earnings. Other studies find an insignificant relationship between leverage and earnings quality (Leung & Verriest, 2015; McKinnon & Dalimunthe, 1993). Based on the above argument, the following hypothesis is constructed:

H2: Firm financial leverage has a significant effect on the earnings quality of listed industrial firms in Egypt.
A subsidiary hypothesis to H2 is formulated as follows:

H2a: Firm size moderates the relationship between financial leverage and earnings quality of listed industrial firms in Egypt.

Profitability plays an important role in affecting earnings. Managers are reluctant to report bad performance to avoid shareholder scrutiny (Berger & Hann, 2007). Moreover, Hassan and Ahmed (2012) find a significant positive relationship between profitability and earnings management. Other studies have similar results (Davidson et al., 2005; Klein, 2002). On the contrary, other studies find no statistically significant association between profitability and earnings quality (Al-Jafari & Al Samman, 2015; Haniffa & Cooke, 2002; Waweru & Riro, 2013). Moreover, others find that managers of profitable firms prefer to have a detailed disclosure to increase their firms’ market value (Singhvi & Desai, 1971), reduce the risk of adversely selected by the market (Prencipe, 2004) and reduce the cost of capital (Blanco, Garcia Lara, & Tribo, 2015). Based on the above plausible and mixed arguments, the following hypothesis is constructed:

H3: Profitability has a significant effect on the earnings quality of listed industrial firms in Egypt.

A subsidiary hypothesis to H3 is formulated as follows:

H3a: Firm size moderates the relationship between Profitability and earnings quality of listed industrial firms in Egypt.

Liquidity plays an important role in meeting day to day activities of business and financing future projects. Managers are willing to disclose liquidity in the financial statement to attract investors, creditors, and customers (Hassan & Farouk, 2014). Ng (2011) finds that earnings quality is positively associated with liquidity. The detailed disclosure by managers is associated with a reduction in information asymmetry and enables greater liquidity (Diamond & Verrecchia, 1991). Moreover, Ascioglu, Hegde, Krishnan, and McDermott (2012) reveal that firms which exhibit higher
earnings management suffer from lower liquidity. On the contrary, LaFond, Lang, and Skaife (2007) find that innate smoothing is positively correlated with liquidity. Based on the above plausible and mixed argument, the following hypothesis is constructed:

H4: Firm liquidity has a significant effect on the earnings quality of listed industrial firms in Egypt.

A subsidiary hypothesis to H4 is formulated as follows:

H4a: Firm size moderates the relationship between firm liquidity and earnings quality of listed industrial firms in Egypt.

Based on the above argument, it is clear that previous literature provides inconclusive and divergent findings, in addition, the moderating effect of firm size in the relationship between firm characteristics and earnings quality has not received attention among researchers. As a result, our study seeks to fill this gap.

3. Data and Methodology

3.1 The sample

A sample of 45 firms listed on the Egyptian stock exchange over 2014–2017 is used in this study. Table 1 displays the industry breakdown. As shown in table 1, the sample focuses on the industrial economic sector, which plays a vital role in the Egyptian economy. The data were obtained from Thomson Reuters Eikon database. Ordinary least squares regression (OLS) was employed for the analysis. This statistical technique has the ability to test the statistical relationship between two or more predictors and allows for the prediction of the dependent variable (Umar & Hassan, 2018). The measures for each variable in the study are developed in this section.
Table 1 Industry breakdown

<table>
<thead>
<tr>
<th>Industry</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction &amp; Engineering</td>
<td>36</td>
<td>26.5</td>
<td>26.5</td>
<td>26.5</td>
</tr>
<tr>
<td>Fishing &amp; Farming</td>
<td>18</td>
<td>13.2</td>
<td>13.2</td>
<td>39.7</td>
</tr>
<tr>
<td>Food Processing</td>
<td>70</td>
<td>51.5</td>
<td>51.5</td>
<td>91.2</td>
</tr>
<tr>
<td>Industrial Conglomerates</td>
<td>12</td>
<td>8.8</td>
<td>8.8</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>136</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

3.2 Measurement of earnings quality

Previous research indicates that earnings management negatively affect earnings quality (Dechow, Sloan, & Sweeney, 1995; Rezaee, Zhang, Dou, & Gao, 2018). There is no an agreed-upon approach to measuring earnings quality in the literature. It is difficult to measure due to its multidimensional nature (Parte-Esteban & Garcia, 2014). Previous literature measures earnings quality using different earnings attributes such as accruals quality (Farinha, Mateus, & Soares, 2018; Kobbi-Fakhfakh et al., 2018); persistence and predictability (Parte-Esteban & Garcia, 2014) and other attributes (K. Y. Chen et al., 2007; Khanh & Nguyen, 2018; Lenard & Yu, 2012). In this study, earnings quality is measured using discretionary accruals, which is considered a proxy for earnings management. It is estimated using the Modified Jones Model (1991). This model is considered one of the most powerful, widely used and accepted model in detecting the earnings management (Adibah Wan Ismail, Anuar Kamarudin, van Zijl, & Dunstan, 2013; Dechow et al., 1995). The residuals from the model were used to proxy earnings quality. It was estimated in this study for each industry and year apart.

To compute the discretionary accrual, several steps were followed. First, all industries with less than 15 firm–year observations were excluded, to end up with 4 industries having sufficient data to compute total accruals
(described in table 1). Next, total accruals (TACC) was computed using the below model:

$$TACC_{it} = \Delta CA_{it} - \Delta Cash_{it} - \Delta CL_{it} + \Delta DCL_{it} - DEP_{it} \quad (Eq. 1)$$

Where TACC$_{it}$ is the total accruals for firm i in year $t$. The variable $\Delta CA_{it}$ is the change in current assets. The variable $\Delta Cash$ is the change in cash and cash equivalents. The variable $\Delta CL_{it}$ is the change in current liabilities. The variable $\Delta DCL_{it}$ is the change in short-term debt included in current liabilities. The variable $DEP_{it}$ is the depreciation and amortization expense.

Finally, estimate the discretionary accrual for each year and each industry using the Modified Jones Model, which is defined below:

$$\frac{TACC_{it}}{A_{it-1}} = \alpha_1 \frac{1}{A_{it-1}} + \alpha_2 \frac{(\Delta REV_{it} - \Delta REC_{it})}{A_{it-1}} + \alpha_3 \frac{PPE_{it}}{A_{it-1}} + \varepsilon_{it} \quad (Eq. 2)$$

Where $A_{it-1}$ is the total assets for firm i in year $t-1$. The variable $\Delta REV_{it}$ is the revenues in year $t$ less revenues in year $t-1$. The variable $\Delta REC_{it}$ is the delta revenues in year $t$ less delta net receivables in year $t-1$. The variable $PPE_{it}$ is the gross property plant and equipment in year $t$. $\alpha_1$, $\alpha_2$, and $\alpha_3$ are the fixed slopes. The random variable $\varepsilon_{it}$ is the residual for firm i in year $t$. The residuals from the annual cross-sectional industry regression model in Eq. 3 were used as the modified Jones model discretionary accruals which are a proxy for earnings management. The greater the absolute value of the discretionary accruals, the higher the earnings management and the lower the earnings quality.

3.3 Methodology

A moderated Ordinary Least Squares regression (OLS) was employed for the analysis. The model that is used to examine the hypotheses of the study is presented as follows:
\[ DA_{it} = \alpha_1 + \alpha_2 Profit_{it} + \alpha_3 Lev_{it} + \alpha_4 Liquid_{it} + \alpha_5 Age_{it} \]
\[ + \alpha_6 Profit_{it} \times size_{it} + \alpha_7 Lev_{it} \times size_{it} \]
\[ + \alpha_8 Liquid_{it} \times size_{it} + \alpha_9 Age_{it} \times size_{it} + \varepsilon_{it} \] (Eq. 3)

Where \( \alpha_1 \) is the fixed intercept; \( \alpha_2, \alpha_3, \alpha_4, \) and \( \alpha_5 \) are the fixed slopes which represent the average effect of the independent variables on earnings quality across the sample of firms. \( \alpha_6, \alpha_7, \alpha_8, \) and \( \alpha_9 \) are the fixed slopes which quantify the effect of moderation. The variable \( DA_{it} \) is the discretionary accrual and used as a proxy for earnings management which affects earnings quality. The variable \( Profit_{it} \) is the firm profitability and measured by ROA, which is calculated as net income divided by lagged total assets at year-end. The variable \( Lev \) is a proxy for financial leverage, which is calculated by the ratio of the total debt to total assets at year-end. The variable \( Liquid_{it} \) is a proxy for liquidity, which is calculated by receivables plus inventory minus accounts payable divided by total assets. The variable \( Age_{it} \) is a proxy for firm age, which is calculated by the difference between the observation year and the firm’s incorporation date. The variable \( size_{it} \) is calculated as the natural logarithm of total assets. \( Profit_{it} \times size_{it}, Lev_{it} \times size_{it}, Liquid_{it} \times size_{it}, \) and \( Age_{it} \times size_{it} \) represent the interaction between firm size and profitability, financial leverage, liquidity, and firm size respectively. The variable \( \varepsilon_{it} \) represents the residual variance not explained by the independent variables captured by the model. The moderating effect of firm size is detected when the fixed slopes \( \alpha_6, \alpha_7, \alpha_8, \) and \( \alpha_9 \) are significant.

4. Empirical Results and Analysis

The results of the descriptive statistics of all the study variables, the correlation matrix, the moderated multiple regression analysis, and the implication of the findings are presented in this section.
4.1 Descriptive statistics

Table 2 presents the descriptive statistics for the main study variables. It reports that discretionary accruals of the Egyptian firms have a mean of zero and a standard deviation of 0.186. In addition, they have minimum and maximum values of −0.41 and .904 respectively. This means that the average earnings manipulation range from zero to 0.904. The minimum and maximum values of DA show that both the lowest and highest earnings management by managers is serious and may affect the quality of earnings. Firm Leverage, liquidity, and profitability were having an average value of 1.028, 6.754 and 0.0523 respectively.

Table 2 Variables Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>Leverage</th>
<th>Liquidity</th>
<th>Profitability</th>
<th>Age</th>
<th>Liquidity*Size</th>
<th>DA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>135</td>
<td>135</td>
<td>135</td>
<td>135</td>
<td>135</td>
<td>135</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Mean</td>
<td>1.028</td>
<td>6.754</td>
<td>.0523</td>
<td>33.6</td>
<td>−4.1671</td>
<td>.000</td>
</tr>
<tr>
<td>Minimum</td>
<td>−15.37</td>
<td>−44.83</td>
<td>−.404</td>
<td>6.677</td>
<td>−44.74</td>
<td>−.41</td>
</tr>
<tr>
<td>Maximum</td>
<td>17.28</td>
<td>58.34</td>
<td>.400</td>
<td>73.893</td>
<td>37.17</td>
<td>.904</td>
</tr>
<tr>
<td>Skewness</td>
<td>.105</td>
<td>.000</td>
<td>−.572</td>
<td>−.001</td>
<td>−.119</td>
<td>1.312</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>−.298</td>
<td>−.277</td>
<td>4.159</td>
<td>−.277</td>
<td>1.740</td>
<td>4.369</td>
</tr>
</tbody>
</table>

Table 3 shows the Pearson correlation (2-tailed) matrices between all pairs of variables used in the study. There is no high (>0.90) correlation between variables and this indicate that there is no multicollinearity problem(Gujarati & Porter, 2003). DA is positively correlated with firm leverage, liquidity, and firm profitability at the 0.1, 0.05 and 0.01 level respectively. The correlation between DA and both leverage and liquidity is weak, which is evident by the correlation coefficient of .163 and .197 respectively. Interestingly, firms with higher profitability exhibit the highest
significant correlation with earnings quality and are consistent with the results of previous research which found that firms with high profitability exhibit lower earnings quality (Davidson et al., 2005; Hassan & Ahmed, 2012). All these correlations are statistically significant except for age and the interaction variable. This implies that earnings quality is negatively associated with profitability, financial leverage, and liquidity. The correlation between the interaction variable Liquid*size and liquidity is moderate. To reach to this moderate correlation, both liquidity and size variables were mean centered and the interaction variable is computed using the product of the two mean centered variables. This solved the problem of possible high multicollinearity. The dependent variable (discretionary accruals) and the moderator variable (firm size) have insignificant correlation with the interaction term (Liquid*size). This means that complete moderation takes place (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002).

Table 3 Correlation matrix

<table>
<thead>
<tr>
<th></th>
<th>DA</th>
<th>Age</th>
<th>Leverage</th>
<th>Liquid</th>
<th>ROA</th>
<th>Liquid*size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unstandardized</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.050</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leverage</td>
<td>.163*</td>
<td>-.188**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquid</td>
<td>.197**</td>
<td>-.161*</td>
<td>-.297***</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>.422***</td>
<td>.048</td>
<td>.091</td>
<td>.191**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Liquid*size</td>
<td>.053</td>
<td>.190**</td>
<td>.173**</td>
<td>-.507***</td>
<td>.000</td>
<td>1</td>
</tr>
</tbody>
</table>

The symbols *, **, *** indicates a significant correlation at the 0.1, 0.05 and 0.01 level respectively

4.2 Regression Result

Table 4 presents the regression result of the dependent variable discretionary accrual and the independent variables firm profitability, leverage, liquidity and the interaction variable, liquid*size. The results reveal that the model is statistically significant. It shows that $R^2$ and
adjusted $R^2$ values of 0.237 and 0.213 respectively. This indicates that 23.7% of the variation in earnings quality of listed industrial firms in Egypt is explained by the independent variables of firm profitability, financial leverage, liquidity and the interaction variables. This indicates that the model best fits the data and the study variables are properly selected.

Moreover, the results reveal that the cumulative correlation between discretionary accruals and all firms characteristics used in the study is 0.487 indicating that the correlation is positive, moderate and statistically significant. This implies that the earnings quality will be affected by any changes in firm characteristics of listed industrial firms in Egypt.

Regression analysis revealed that there is an insignificant relationship between firm age and earnings quality, failing to support H1. Moreover, there was no interaction effect of firm size on earnings quality, which shows that firm size did not influence the relationship between firm age and earnings quality, failing to support H1a. This finding offers new empirical support for Olowokure et al. (2015) findings. However, this finding is not consistent with Gul et al. (2009) and Jackson et al. (2013) who find a significant positive relationship between firm age and earnings quality.

The results revealed that there is a significant positive relationship between financial leverage and discretionary accruals ($p < .005$). This result provides support for hypothesis H2 in the sense that firm financial leverage negatively affects earnings quality. This implies that for every one unit increase in debt, the DA will increase by 0.005 which decrease earnings quality. However, firm size has no interaction effect on earnings quality, which shows that firm size did not influence the relationship between financial leverage and earnings quality, failing to support H2a. This result is in line with the results of many studies such as Ghosh and Moon (2010) who find that earnings quality decreases across increasing levels of debt. Bassioumy (2016) finds that the financial leverage has a
significant positive effect on earnings management. Similarly, Kobbi–Fakhfakh et al. (2018) find that leverage negatively affect earnings quality. This result supports the argument that managers have incentives to manipulate earnings to avoid debt covenant violation (DeFond & Jiambalvo, 1994) which is consistent with both the agency theory and stakeholder's theory. At the same time, this result is inconsistent with the findings of the study of Hassan and Farouk (2014) who find that as leverage increases, shareholders increase the level of monitoring and require managers to disclose more information which increases earnings quality.

The results revealed that there is a significant positive relationship between profitability and discretionary accruals \((p < .001)\). This result provides support for hypothesis H3 in the sense that firm profitability negatively affects earnings quality. This implies that for every one unit increase in profit, the DA will increase by 0.63 which decrease earnings quality. However, firm size has no interaction effect on earnings quality, which shows that firm size did not influence the relationship between profitability and earnings quality, failing to support H3a. This result is in line with the results of many studies such as Davidson et al. (2005), Hassan and Ahmed (2012) and Hassan and Farouk (2014). They suggest that managers tend to manipulate earnings to meet shareholders financial expectations and receive commissions linked to financial profitability. At the same time, this study result is inconsistent with the findings of the study of Al–Jafari and Al Samman (2015), Waweru and Riro (2013) and Haniffa and Cooke (2002) who find an insignificant relationship between profitability and earnings quality. This result is consistent with the agency theory in the sense that manager will manage earnings to prevent disclosure with low profit to avoid shareholders scrutiny.

Finally, the results revealed that there is a significant positive relationship between liquidity and discretionary accruals \((p < .001)\). This result provides support for hypothesis H4 in the sense that firm liquidity
negatively affects earnings quality. This implies that for every one unit increase in liquidity, the DA will increase by 0.002 which decrease earnings quality. Interestingly, firm size has a significant interaction effect \( (p < .05) \) on earnings quality, which shows that firm size influence the relationship between liquidity and earnings quality, supporting H4a. This result is in line with the results of LaFond et al. (2007) who find that innate smoothing is positively correlated with liquidity. At the same time, this study result is inconsistent with the findings of the study of Ng (2011) and Ascioğlu et al. (2012).

Table 4 Summary of Regression Result

<table>
<thead>
<tr>
<th>Model</th>
<th>Discretionary accruals</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>-.046</td>
<td>.017</td>
<td>-2.642</td>
<td>.009</td>
</tr>
<tr>
<td>Age</td>
<td>.001</td>
<td>.001</td>
<td>.078</td>
<td>.892</td>
</tr>
<tr>
<td>LEV</td>
<td>.005</td>
<td>.002</td>
<td>.185</td>
<td>2.240</td>
</tr>
<tr>
<td>Profitability</td>
<td>.630</td>
<td>.143</td>
<td>.355</td>
<td>4.404</td>
</tr>
<tr>
<td>Liquid</td>
<td>.002</td>
<td>.001</td>
<td>.263</td>
<td>2.729</td>
</tr>
<tr>
<td>Liquid*Size</td>
<td>.002</td>
<td>.001</td>
<td>.187</td>
<td>2.013</td>
</tr>
<tr>
<td>ROA*Size</td>
<td>-.367</td>
<td>.316</td>
<td>-.102</td>
<td>-1.163</td>
</tr>
<tr>
<td>Leverage*Size</td>
<td>.001</td>
<td>.005</td>
<td>.027</td>
<td>.275</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model Summary</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>.487</td>
<td>.237</td>
<td>.213</td>
<td>.16614753</td>
</tr>
</tbody>
</table>

The most influential variable is the profitability, with standardized beta .355, followed by liquidity, with standardized beta .263 and finally leverage, with standardized beta .185(Table 4). However, it is difficult to interpret the nature of the interaction variable from the standardized beta coefficient. There are several methods used to interpret the interaction
variable effect. One method is proposed by Aiken, West, and Reno (1991) who use a regression equation to sort the interaction variable from low to high. In this study, a categorical variable was created to categorize the firm size to three levels, large, medium and small–sized firms as shown in table 5.

<table>
<thead>
<tr>
<th>Firms size</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small–sized firms</td>
<td>41</td>
<td>30.1</td>
<td>30.1</td>
<td>30.1</td>
</tr>
<tr>
<td>medium–sized firms</td>
<td>65</td>
<td>47.8</td>
<td>47.8</td>
<td>77.9</td>
</tr>
<tr>
<td>Large–sized firms</td>
<td>30</td>
<td>22.1</td>
<td>22.1</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>136</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Figure 2 shows that large and medium–sized firms have strong regression effect, with $R^2$ equal 0.157 and 0.141 respectively. This means that correlation between discretionary accruals and leverage for large and medium–sized firms is medium, which is evident by the correlation coefficient of 0.4 and 0.38 respectively. Interestingly, the correlation coefficient decreases for small–sized firms to be 0.158, which is a weak correlation, and the strength of the regression effect decrease from 0.141 to 0.025. In other word, the strength of the relationship between liquidity and earnings quality changes when firm size changes. This strength increase when moving from small–sized firms to large–sized firms. This may be as a result of the fact that large firms exhibit higher agency problem and sophisticated operations than small firms, allowing more rooms for managers to manipulate earnings through liquid assets (Kim et al., 2003). This result supports the agency theory.
Figure 2 The moderating effect

5. Conclusions

This study extends the literature that focuses on earnings quality by investigating the relationship between firm characteristics and earnings quality using a sample of 45 industrial firms listed on the Egyptian stock exchange for the period 2014 to 2017. Previous research results have been criticized by conflicting results, focusing on developed countries and ignoring the moderating role between firm characteristics and earnings quality. This study contributes to the literature by filling these gaps by empirically investigating the moderating role of firm size in the relationship between firm characteristics and earnings quality in an emerging economy.

The findings of this study showed that profitability, leverage, and liquidity are negatively associated with earnings quality. The most
influential independent variable is the firm profitability. In addition, firm size played a moderating role on how liquidity influence earnings quality. The relationship between liquidity and earnings quality is much stronger for the large and medium-sized firms while this strength starts to decrease for small-sized firms. In other words, the strength of the relationship between liquidity and earnings quality change as the firm size changes. However, firm size has no moderating role with other independent variables. Based on these findings, this study recommends that analysts and standard setters focus attention on the importance of firm size which affects the relationship between liquidity and earnings quality. The results of this study support the agency theory and the shareholder’s theory. This study provides a first step towards understanding the moderating role between firm characteristics and earnings quality.

Several limitations of this study must be pointed. First, only the industrial sector in Egypt is studied, future studies may investigate other economic sectors. Second, one moderator only is investigated which is the firm size, integrating more moderators such as governance and audit quality may yield different results and can be included in future research. Finally, the study used only four measures of firm characteristics (financial leverage, firm age, liquidity, profitability) which explains 23% in the variation of earnings quality. Future studies can investigate other measures as corporate governance, audit quality, and country variables.
6. References


