DECISION USEFULNESS OF FINANCIAL INFORMATION: THE ROLE OF AUDIT AND IFRS

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Abstract

We examine the usefulness of financial information given different circumstances, pre and post-International Financial Reporting Standards (IFRS) adoption and audit quality. The usefulness of information is deduced from the association between information quality and investment efficiency. IFRS is said to promote more informative financial information and hence should increase the decision usefulness of the reported information. In practice, auditors are the center of reference in the preparation of financial report and empirical evidence shows that quality audit enhances the credibility of reported information. This study aims to examine and compare the roles of IFRS and audit quality in the association between financial information quality and investment efficiency. The results from a sample of 558 firms provide support that financial information quality is significantly related to investment efficiency indicating decision usefulness of reported information. However, despite the contention that IFRS leads to a more informative financial report, the results show that IFRS does not strengthen the relationship between information quality and investment efficiency. The result for audit quality, on the other hand, is significant indicating that reported information is more useful to decision-makers when it is audited by the quality audit firm.

Keywords: financial information quality, investment efficiency, quality audit, IFRS

INTRODUCTION

The importance of financial information in decision-making especially regarding investment is acknowledged. Higher information quality is found to increase investment efficiency either through lowering adverse selection problem (Horton et al. 2013) or by alleviating information asymmetries (Verrecchia 2001). High-quality information should contain relevant and reliable information, which will facilitate users in making a decision. One of the attributes of relevant information is the ability or capability to influence decision making. Relevant information facilitates decision-makers assess present, future and past events, confirm and correct potential past errors (Zuca 2009). Credibility is another important characteristic of quality financial information. Information that is deemed to be credible is free from error and subjectivism, and a faithful representation of the event reported. These two features are essential for it to be useful for decision making. A decision regarding investment, be in for the public or private sector is very important. Good investment decision may bring a long-term benefit and determine the survival and growth of the organization. A bad investment decision, on the other hand, may jeopardize the organization's future.

Financial information constitutes one of the most important sources of reference for investment decision-making. Empirical evidence shows that higher information quality is associated with lower information asymmetry (Gassen and Selhorn 2006), and hence lead to better investment decision (Biddle et al. 2009). The association between financial information quality and investment efficiency indicates the usefulness of the reported information. The financial information is made public through published financial statements. The reporting of financial statements is subjected to accounting standards adopted by the country.

Past studies show that financial information quality is very much influenced by financial reporting standards (Ahmed et al. 2013; Levitt 1998). Given varieties of standards used in the preparation of financial statements make the comparison even more difficult. This led to harmonization effort and hence the introduction of IFRS. The IFRS have been developed to harmonize corporate financial information and to answer the need for a high-quality financial reporting standard set. IFRS is documented to be more comprehensive, capital market oriented and hence more relevant to investors (Bae et al. 2008; Ding et al. 2007). Since the introduction of IFRS in 2005, the effect of its adoption on information quality has been studied. Majority of the findings show that information quality improves after the adoption of IFRS (Barth et al. 2008; Iatridis 2010; Chua et al. 2012; Landsman et al. 2012). Despite the convincing findings on the improvement of information quality after the adoption of IFRS, there are also studies that fail to find this evidence. Jeanjean and Stolowy (2008), for example, found that the pervasiveness of earnings management (measurement of earnings quality) increased in France and remained stable in the UK and Australia after the adoption of IFRS. This finding is supported by Kabir et al. (2010) and Ahmed et al. (2013). This indicates that the benefit of IFRS in terms of improving financial information quality is still not conclusive.

The conceptual framework of IFRS gives special focus to the characteristics of quality information, with emphasis on the characteristics of relevance and faithful representation. The production of high-quality information is, however, not the end in itself. If the information is of high quality but not useful to decision-makers, it still cannot be considered as beneficial, hence the objective of standards or IFRS in specific is not fulfilled. Most studies on IFRS adoption look at the effect on financial information quality itself without considering the usefulness of the information. The decision-usefulness can be deduced from the relationship between information quality and investment efficiency. IFRS is claimed to be more relevant to investors because it is more market oriented and promote higher disclosure. The use of fair value also increases the relevance of financial information reported. If IFRS produced more relevant financial information, then the decision-usefulness of reported financial information should increase after the adoption of IFRS. In other words, the relationship between information quality and investment efficiency should be stronger after the adoption of IFRS. This, however, has yet to be investigated. On the other hand, being relevant alone may not be sufficient for the information to be useful. For financial information to be useful, it is also important for it to be credible (Shroff 2017). Users need to be ascertained that the reported financial information is credible and faithfully represents the actual event. In practice, this assurance is offered by an external audit. Past studies show that financial report that has been audited by the higher quality audit is perceived as more credible (Aobdia et al. 2015). Given that IFRS is a principles-based standard, auditors play an important role in the interpretation and application of the standards. DeFond and Zhang (2014) state that audit quality enhances financial reporting quality by increasing the credibility of the financial reports. The role of the auditor in the decision-usefulness of financial information, specifically whether it enhances the relationship between information quality and investment efficiency has yet to be

investigated. This paper extends current knowledge on IFRS and audit quality by investigating their roles in enhancing the decision-usefulness of reported financial information.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Financial Information Quality and Investment Efficiency

Besides the public sector, the private sector is another significant component in the development of the economy. Private sector or firms invest either directly in projects or the form of investment in other firms. Financial information is heavily referred to in any investment decision. Firms should invest in profitable projects or investments. A commonly used indicator of a profitable project is Net Present Value (NPV) (Biddle et al. 2009). NPV is the difference between the present value of cash inflows and the present value of cash outflows. Positive NPV means cash inflows are greater than outflows, hence indicates profitable investment. Firms normally undertake multiple investments at one time. Sometimes, total investments may be more than available free cash flow and managers may invest in negative NPV together with positive NPV investments. This means that firms are over-investing. On the other hand, firms may make fewer investments than available free cash flow, or under-investing. The existence of over or under-investment indicates that the firm is not investing efficiently.

Past studies show that information quality is positively related to investment efficiency. In other words, better information quality results in higher investment efficiency. Biddle and Hilary (2006) and Biddle et al. (2009) provide strong evidence that financial information quality plays a crucial role in enhancing investment efficiency. Biddle et al. (2009) test the hypothesis that financial information quality can be associated with either over or under-investment. They argue that high-quality financial information reduces adverse

selection and moral hazard, and hence leads to higher investment efficiency. A sample of 34,791 firm-year of the US firms from 1993 to 2005 provides evidence that financial information quality is negatively associated with both under-investment and over-investment, indicating that higher financial information quality tends to lead to a better investment decision. This finding confirms earlier findings by Verdi (2006).

Another interesting study is by McNichols and Stubben (2008). The study investigates whether earnings management affects resource allocation by examining the capital expenditure decisions of three groups of firms alleged to have manipulated earnings. The three groups are firms investigated by the SEC for accounting irregularities, firms sued by their shareholders for improper accounting, and firms with the financial restatement. Their findings indicate that firms manipulating earnings do over-invest in the misreporting period, suggesting that an important consequence of financial information quality (earnings management) is its effect on firms' investment decisions. The same relationship is also found in private firms. Chen et al. (2011) examine the association of financial information quality and investment efficiency of private firms. Expected investment level is used to measure the deviation from the optimal level of investment, and earnings management and discretionary revenues are proxies of financial information quality. Using a sample from 21 countries from 2002 to 2005, they find evidence that financial information quality is positively associated with investment efficiency.

The above findings provide strong evidence that information quality is positively associated with investment efficiency. This association indicates that financial information is useful in the decision regarding investment.

The most common measurement used to measure information quality is earnings quality and earnings management. The existence of earnings management indicates that financial information is of lower quality. Earnings management is, therefore, used by

this study to proxy for information quality. Our focus is however not on the earnings quality per se but rather on the quality of financial information which is measured by earnings management. Hence, before examining whether the usefulness of financial information is different given different conditions, we first hypothesize that there is a positive relationship between information quality and investment efficiency as follows:

H₁: There is positive association between financial information quality and investment efficiency.

The Role of IFRS

In his paper, Levitt (1998) noted that accounting standards play an important role in determining the quality of financial information reported by firms. On the same note, note accounting standards authorities such as International Accounting Standard Board (IASB), Federation of Accounting Standard Board (FASB) as well as International Accounting Standards Committee (IASC) strive to generate high-quality standards. This brings to the harmonization effort of accounting standards resulting in IFRS introduction in 2005. Since then, studies have been conducted to determine whether financial information produced under IFRS is better. Barth et al. (2008) are among the earliest studies on the impact of IFRS adoption on financial information quality. Using data from 21 developed countries, they compare the financial information quality of firms applying domestic standards and those adopting IFRS. The results indicate that firms adopting IFRS generally show less earnings management, more timely loss recognition, and more value relevance of accounting numbers indicating higher information quality than firms using domestic standards. Iatridis (2010) and Chua et al. (2012) come to the same conclusion using a sample in the UK and Australia respectively.

The increase in information quality is attributed to the feature of IFRS which is said to be more market oriented, encouraging production of more relevant information as well as higher disclosure (Bae et al. 2008;

Daske and Gebhardt 2006; Ding et al. 2007). The main target user of financial information as evidenced in IFRS is investors. Hence when the conceptual framework stressed on the characteristic of relevance, the main focus is investors (Cascino et al. 2014). Iatridis (2010) besides examining the quality of financial information proxied by the level of earnings management has also examined the value relevance of the information. The results indicate that the value relevance of the information increases after the adoption of IFRS. Chua et al. (2012) provided similar evidence using a sample in Australia. He found that the value relevance of earnings numbers improves after the adoption of IFRS. This indicates that the attempt to improve financial information is not an end in itself. The ultimate aim should be to improve the decision usefulness of the information. The increase value relevance indicates that the information is more useful to investors in making investment decisions.

Financial information is shaped by adopted accounting standards. The quality of financial information, mostly measured through items included in the financial statements, has been documented to improve as already discussed above. Brochet et al. (2013) examine the impact of IFRS adoption on one of the qualitative characteristics of financial information quality, comparability. Using two proxies of information asymmetry, insider purchases and analyst recommendation upgrades, they examine the level of abnormal returns of firms in the UK. Their empirical results show that abnormal returns to two proxies of information asymmetry decrease following IFRS adoption. This brings them to conclude that mandatory IFRS adoption improves comparability and thus reduce insiders' ability to exploit private information. This finding corroborates Barth et al. (2012) conclusion that efforts to converge accounting standards and, the increasing mandatory use of IFRS throughout the world have increased comparability of accounting numbers.

Previous studies provide evidence that implementation of IFRS generally reinforces information quality, and this benefits not only

participants in capital market but also firms, such as lower cost of capital (Embong et al. 2012). Despite these findings, some studies fail to find strong evidence that IFRS improves financial information quality. Jeanjean and Stolowy (2008), for example, using earnings management as a measure of financial information quality fails to find evidence that information quality improves in Australia and the UK. They found earnings management to increase indicating lower information quality in France after the adoption of IFRS. Ahmed et al. (2013) found a similar result when they documented an increase in income smoothing indicating lower information quality in countries that adopted IFRS compared to those that do not. In short, although there is strong evidence of improvement in financial information quality after the adoption of IFRS, the findings are not conclusive. Besides, the improvement in information quality should not be the end in itself. Instead, the more important is the decision usefulness of the information.

Value relevance studies generally examine decision usefulness of accounting numbers to investors or other market participants. Iatridis (2010) and Chua et al. (2012) compare value relevance of accounting numbers pre and post IFRS adoption in the UK and Australia respectively. They found that value relevance increases after the adoption of IFRS in both countries. In other words, the adoption of IFRS increases decision usefulness of financial information. This could be due to increase comparability between firms as suggested by Barth et al. (2012) or reduction of information asymmetry as suggested by Embong et al. (2012). Studies using Malaysian data such as those by Kwong (2010), Othman et al. (2011) and Wan Ismail et al. (2013) also lead to the same conclusion that is the adoption of IFRS increases the value relevance of financial information. This may not come as a surprise since the conceptual framework of IFRS made special mention of investors as the main users of financial information. Hence it can be deduced that the relevant information is meant to cater to the need of investors. Despite this evidence, a more recent study by

Ji and Lu (2014) find that the value-relevance of information on intangible assets does not differ after the adoption of IFRS.

Capital market participants are not the only users of financial information albeit important one. Firms also use financial information in making decisions on investments. Firms' investment decision may be more important as a good investment decision can ensure the growth of the firm. Hence, it is also important to examine whether decision usefulness of financial information also increases in such a way that it enables firms to make better investment decision after the introduction of IFRS. The use of fair value propagated by IFRS is claimed to increase the relevance of financial report produced by firms making the information more useful for an investment decision. The use of fair value promotes comparability of financial statements, by giving equivalent and the current value of assets and because it is based on discounted future financial flows, it provides information which integrates market trends (Casta and Ramond 2016). If IFRS promotes the production of more relevant information and encourages more disclosure that reduces information asymmetry, then the decision usefulness of financial information should be higher after the adoption of IFRS. The second hypothesis is thus stated as follows:

H2: The association between financial information quality and investment efficiency is stronger after the adoption of IFRS.

The Role of Audit

In its report titled "Understanding a Financial Statement Audit" published in 2013, PricewaterhouseCoopers (PwC) claims that an audit provides users with assurance that management has faithfully presented a company's financial performance and position. In other words, the audit adds credibility to the information reported in the financial report. Research in the area of auditing that focuses on the credibility aspect is rather scarce. Several studies have documented that quality audit can increase the credibility of financial information and hence

relied on more by decision makers. Hussainey (2009), for example, provided evidence that earnings predictability is higher for a better quality audit. Olagunju (2011) concluded from his study that audit quality could be associated with the perception of financial statement credibility in Nigeria. In his study, audit independence is used as a measure of audit quality and 100 respondents participated in the survey. The results show that auditor's independence is crucial to users' perceptions of whether or not the reported financial statement is credible. On a more micro level, Aobdia et al. (2015) investigate association between audit qualities with the initial public offering. They conclude that audit quality, measured by the quality of audit partners does influence the perception of capital market players. Auditor partners with higher quality are seen as more credible and result in lower underpricing of the firm's initial public offering. This indicates that auditor does play a role in providing assurance as to the credibility of reported financial information.

In an experimental design study, Shroff (2017) reports that improvements in reporting quality have no measurable effect on a company's financing and investment behavior. In contrast, improvement in reporting credibility manage to increase the company's ability to raise external financing as well as investment. The result of this study corroborates our earlier contention that being relevant alone is not sufficient to make financial information useful for decision-making, credibility is also important. Hence, the role of the auditor in ensuring the usefulness of financial information in decision-making must be investigated. The third hypothesis is therefore as follows:

H3: The association between financial information quality and investment efficiency is stronger for firms audited by higher quality audit.

RESEARCH METHOD

Sample

All firms listed on the Main Board of Bursa Malaysia from the year 2001 until 2011 are a potential sample. Firms in financial services, however, are excluded because they are subjected to different regulation. This is to ensure greater homogeneity of the firms in the sample. We also impose data restriction on the sample, such as the availability of required data. Most of the missing data are due to unavailability of capital expenditures and research and development expenditures data, which are required to calculate investment efficiency. These selection criteria produce a sample of 558 firms which generate an unbalanced panel of 5,384 firm-year observations.

Table 1 provides distribution of the sample by industry based on the DataStream-industry classification. The sample is represented by 20 industries, with the greatest number of observations coming from construction and food producers. These two industries make up 30 per cent of the total sample.

The studied periods are from 2001 to 2011 and divided into pre and post IFRS. The IFRS was introduced in 2005, but Malaysia started the convergence exercise only in 2006 (MASB). The pre-IFRS period is therefore set to be between the year 2001 and 2005 while the year 2006 to 2011 represents post-IFRS. The number of observations for pre and post-IFRS is as shown in Table 2. From this total sample, 45% are audited by big4 while the remaining 55% are audited by non-big4.

Variables

The dependent variable is investment efficiency, and the independent variable is financial information quality. IFRS and audit quality are moderating variables. Several control variables are also included and discussed accordingly.

Table1
Sample Distribution by Industry

Industry	n	Percentage
Automobiles & Parts	17	3.05
Chemicals	20	3.58
Construction & Materials	91	16.31
Electronic & Electrical Equipment	26	4.66
Food Producers	72	12.90
Forestry & Paper	13	2.33
General Industrials	29	5.20
General Retailers	20	3.58
Health care Equipment	14	2.51
Household Goods	32	5.73
Industrial Engineering	36	6.45
Industrial Metals & Mining	25	4.48
Industrial Transportation	25	4.48
Leisure Goods	31	5.56
Oil Equipment & Services	14	2.51
Personal Goods	27	4.84
Software & computer Services	15	2.69
Support Services	20	3.58
Technology Hardware	11	1.97
Telecommunication	20	3.58
Total	**558**	**100**

Table 2
Number of Observations

	Pre-IFRS	Post-IFRS
Number of observations	2,085	3,299
Percentage	40%	60%

Investment Efficiency

Investment efficiency is the dependent variable of this study. We define a firm as investing efficiently if it undertakes investments with positive Net Present Value (NPV). Similar with past studies (e.g. Biddle et al. 2009; Chen et al. 2011), investment efficiency is measured as deviations from expected investment using a model that predicts investment as a function of growth opportunities. Therefore, both overinvestment (positive deviations from expected investment) and underinvestment (negative deviations from expected investment) are considered inefficient investments. Specifically, we estimate a model for expected investment as a function of revenue growth. The model is described as follow:

$$\text{Invest}_{i,t} = \alpha_{i,t} + \beta_1 \text{RevGrowth}_{i,t-1} + \varepsilon_{i,t} \quad \text{...... (1)}$$

where:

Invest : total investment and defined as the sum of capital expenditure, research and development expenditure, and acquisition expenditure less cash receipts from the sale of property, plant, and equipment and scaled by lagged total assets

RevGrowth : revenue growth and defined as the percentage change in revenue from year t-1 to t

Equation (1) is estimated for each industry-year based on the DataStream-industry classification for all industries with at least ten observations in a given year. To mitigate the influence of outliers, all variables are winsorized at the 1 per cent and 99 per cent levels. The negative residuals from the regression model (1) indicate under investment and positive residuals indicate over investment. In our analyses, we use the absolute value of residuals as a proxy for investment efficiency. We multiply the absolute values by -1. Thus, higher values of residuals represent higher investment

efficiency (Verdi 2006; Biddle et al. 2009; Chen et al. 2011).

Financial Information Quality

There is no universally accepted measure of financial information quality (Dechow et al. 2010; Chen et al. 2011). The frequently used measures are Ball and Shivakumar (2006) discretionary accruals measure, McNichols and Stubben (2008) revenue based discretionary measure and Kothari et al. (2005) measure as applied by Boone et al. (2012) and Mohammadrezaei (2014). For our main analysis, we choose the Ball and Shivakumar (2006) discretionary accruals measure. This model is based on the original Jones (1991) model but contains a quite substantial improvement compared to other variation of Jones model such as Dechow et al. (1995) and Dechow and Dichev (2002). In their model, Ball and Shivakumar (2006) incorporate conditional conservatism, the asymmetric timeliness with which accruals recognize economic losses. Hence, Ball and Shivakumar (2006) model is deemed to contain "less noise" compared to earlier models. To confirm our findings, we regress the variables again using alternative models as additional analysis. Besides discretionary accruals as a measurement of information quality, there are other measurements that have been applied by past studies, such as bid-ask spread (Ebrahimi and Embong 2014). This measurement, however, is more market-based. For our study, it is more appropriate to use firm-level measurements because the objective of this study is to investigate the usefulness of financial information to firms and its association with firm-level investment efficiency.

The measurement of discretionary accruals as developed by Ball and Shivakumar (2006) is specified in equation (2). Specifically, we estimate model (2) for each industry that has at least 10 observations:

$$\mathbf{TA}_{i,t} = \alpha_{i,t} + \beta_1(\Delta\mathbf{Rev}_{i,t} - \Delta\mathbf{Rec}_{i,t}) + \beta_2\mathbf{PPE}_{i,t} + \beta_3\mathbf{CF}_{i,t} + \beta_4\mathbf{DCF}_{i,t} + \beta_5\mathbf{CF}_{i,t}*\mathbf{DCF}_{i,t} + \varepsilon_{i,t} \;\dots\dots (2)$$

where:

TA : total accruals equal to earnings before extraordinary items minus cash flow from operation scaled by lagged total assets

ΔRev : change in revenues from year t to t-1 scaled by lagged total assets

ΔRec : change in account receivable from year t to t-1 scaled by lagged total assets

PPE : net property, plant and equipment scaled by lagged total assets

CF : cash flow from operations scaled by lagged total assets

DCF : dummy variable equal to 1 if cash flow from operations is negative and 0 otherwise

The residuals from the regression model (2) are discretionary accruals. In our analyses, first, we calculate the absolute values of discretionary accruals, and then, multiply the absolute values of discretionary accruals by -1 as a proxy for financial information quality (hereafter INFQ). Therefore, higher values of INFQ represent higher financial information quality.

Moderating Variables

The most common proxy for audit quality used by previous studies is the size of audit firm following the work of DeAngelo (1981). Since then, empirical studies provide evidence that the size of audit firms do represent quality. Based on this, our study uses Big4 audit firm as an indication of audit quality. This is a categorical variable. Firms that are audited by one of the Big4 audit firm is coded as 1 and those that are not coded as 0. Our second moderating variable is IFRS. IFRS is also a categorical variable with a period prior to IFRS adoption coded as 0 and period post-IFRS coded as 1.

Control Variables

Consistent with past studies such as Verdi (2006), Biddle and Hilary (2006), Biddle et al. (2009) and Chen et al. (2011), we include firm size, age, leverage and return on asset as control variables. We also include firm fixed effects in all models, which is a

common approach for controlling for firm-specific effects. Size is the firm size and measured by the natural logarithm of total assets. Age is a firm age proxied by the natural logarithm of the firm in years. Leverage is financial leverage measured as total debt divided by total equity. Return on asset is measured by net income to total assets.

Model Specification

In our model, the effect of financial information on investment efficiency is lagged by one year to take into account that decision-making is a process that is not done impromptu. Hence, to test our hypothesis on whether financial information quality in year t affects investment efficiency in year t+1, we estimate the OLS regression as shown in equation (3).

$$InvEff_{i,t+1} = \alpha_{i,t} + \beta_1 INFQ_{i,t} + \beta_n Control\ Variables_{i,t} + \varepsilon_{i,t} \ldots\ldots (3)$$

where:

InvEff : over or under-investment which is the absolute residual of regression Model (1) above, multiplied by -1. The absolute residual of Model (1) is an inverse measure of investment efficiency, meaning the lower absolute residual shows the higher investment efficiency. To avoid confusion, we multiple the absolute residual of Model (1) by -1, so that the higher value indicates higher investment efficiency

INFQ : financial information quality measured by Ball and Shivakumar (2006) discretionary accruals measure as shown in equation (2)

Model (3) is to test hypothesis one of the direct relationships between information quality and investment efficiency. The significant result of this regression will indicate the decision usefulness of financial information. According to H_1, the relationship is expected to be positive and significant.

For hypothesis two, the interaction effect of IFRS and INFQ on the usefulness of

financial information will be tested, and the following model is used:

$$InvEff_{i,t+1} = \alpha_{i,t} + \beta_1 INFQ_{i,t} + \beta_2 IFRS + \beta_3 INFQ_{i,t}*IFRS + \beta_n Control\ Variables_{i,t} + \varepsilon_{i,t} \ldots\ldots (4)$$

where:

InvEff : over or under-investment which is the absolute residual of regression Model (1) above, multiplied by -1. The absolute residual of Model (1) is an inverse measure of investment efficiency, meaning the lower absolute residual shows higher investment efficiency. To avoid confusion, we multiply the absolute residual of Model (1) by -1, so that the higher value indicates higher investment efficiency

INFQ : financial information quality measured by Ball and Shivakumar (2006) discretionary accruals measure as shown in equation (2)

IFRS : dummy variable with 1 to indicate post-IFRS and 0 for pre-IFRS

The role of audit quality (H_3) is tested using the interaction effect of audit quality and information quality on the usefulness of financial information, and the following model is employed:

$$InvEff_{i,t+1} = \alpha_{i,t} + \beta_1 INFQ_{i,t} + \beta_2 Audit + \beta_3 INFQ_{i,t}*Audit + \beta_n Control\ Variables_{i,t} + \varepsilon_{i,t} \ldots\ldots (5)$$

where:

InvEff : over or under-investment which is the absolute residual of regression Model (1) above, multiplied by -1. The absolute residual of Model (1) is an inverse measure of investment efficiency, meaning the lower absolute residual shows the higher investment efficiency. To avoid confusion, we multiple the absolute residual of Model (1) by -1, so that the higher value indicates higher investment efficiency

INFQ : financial information quality measured by Ball and Shivakumar

(2006) discretionary accruals measure as shown in equation (2)

Audit : categorical variable with 1 given to firms audited by Big4 indicating higher quality audit and 0 those not audited by Big4

RESULTS AND DISCUSSION

Descriptive Statistics

Table 3 presents descriptive statistics for our variables of interest, investment efficiency, financial information quality as well as control variables. The value of skewness and kurtosis indicates whether the data has a normal distribution. When the values for skewness (kurtosis) are zero (three), the distribution of data is normal (Gujarati and Porter 2010). The results show that the normality issue is not the main concern. The observation on continuous variables, investment efficiency (InvEff), information quality (INFQ), size of firms (Size), the age of firms (Age), leverage (Lev) and return on assets (ROA) all indicate that the data is almost normal with skewness around 0 and kurtosis around 3. The moderating variables, IFRS and audit quality (AUDIT) are categorical variables.

The correlation test is performed to gauge whether there is a binary correlation between our variables. The test results can also indicate whether there is a multicollinearity problem. The results are presented in Table 4.

Table 3
Descriptive Statistics

Variables	Mean	Minimum	Median	Maximum	Std. Dev.	Skewness	Kurtosis
InvEff	-0.431	-1.358	-0.488	-0.776	0.492	0.455	2.989
INFQ	-0.043	-0.158	-0.031	-0.0003	0.038	-0.319	3.241
Size	5.501	4.650	5.393	6.934	0.566	0.753	2.985
Age	1.197	0.301	1.230	1.724	0.349	-0.579	2.879
Lev	0.582	0.000	0.331	3.119	0.731	0.985	3.769
ROA	0.029	-0.175	0.034	0.178	0.072	-0.672	3.071

Table 4
Correlation Matrix

	InvEff	INFQ	Size	Age	Lev	ROA
INFQ	0.017**					
Size	0.058***	0.119***				
Age	0.016*	0.054***	0.292***			
Lev	0.061***	-0.021	0.232***	0.050***		
ROA	-0.013*	0.073***	0.187***	-0.028**	0.272***	

*, **, *** significant at the 10, 5, and 1 percent levels, respectively, using two-tailed tests. *InvEff* is investment efficiency proxied by absolute value of residuals model (1), multiplied by -1. *INFQ is* discretionary accruals, measured based on Ball and Shivakumar (2006) as specified in model (2). *Size* is firm size which is the natural logarithm of total assets. *Age* is firm age which is the natural logarithm of the firm in years. *Lev* is financial leverage measured as total debt divided by total equity. *ROA* is firm ROA which is net income over total assets.

As expected, financial information quality (INFQ) is positive and significantly correlated with the proxy of investment efficiency (InvEff). The table also indicates that the correlations between variables used in the model do not exceed the value of 0.77. As a result, we conclude that there is no multicollinearity issue between variables (Gujarati 2003).

Hypothesis Testing

The association between the dependent variable (InvEff) and the independent variable (INFQ) is estimated using panel regression with a fixed effect model. This method is chosen after the result of the likelihood test (Pooled vs Fixed) indicates that a fixed effect is more appropriate and Hausman test (Fixed vs Random) result favors a fixed effect model.

To make sure that the regression results are reliable, we conduct several diagnostic tests on the estimated regressions. First, autocorrelation is tested using Durbin Watson statistics. The result of the test shows a value of 2 for INFQ which confirms that there is no autocorrelation in the residuals (Gujarati 2003; Agung 2009). Second, multicollinearity among variables is evaluated based on the Pearson correlations results. As shown in Table 3, correlations between variables used in the model are relatively small and do not exceed 0.8 (Gujarati 2003). These results lead us to conclude that there is no multicollinearity issue among variables. Other fundamental assumptions of regression are also evaluated such as zero mean residuals and linearity of the relationship between dependent and independent variables. The

only problem that is observed is the Jarque-Bera test. Although the skewness and kurtosis values shown in Table 2 are close to optimal values for normal distribution, the outcomes of the Jarque-Bera test show that the data is not normally distributed. We determine the cause for non-normality using the histogram and employ appropriate remedial actions based on Box Cox transformation techniques. However, the non-normal distribution persists after applying these actions. This problem, however, is not a major concern when involving financial data where non-normal distribution has been accepted as a stylized fact (Abdul-Rahim 2011). Moreover, Cont (2001) states that according to the Central Limit Theorem, in financial studies with relatively big sample size, non-normality would not be a serious issue.

Table 5
Regression Results on Investment Efficiency and Information Quality

Variables	Prediction	InvEff
INFQ	$+ (H_1)$	0.353** (1.95)
Size		-0.091* (-2.06)
Age		0.370*** (6.03)
Lev		-0.036** (-2.42)
ROA		-0.330** (-2.65)
Intercept		-0.671** (-2.98)
Firm fixed effects		Yes
Adj R^2		0.236***
N		5384

*, **, *** significant at the 10, 5, and 1 percent levels, respectively, using two-tailed tests.
INFQ stands for financial information quality which is measured by discretionary accruals, measured based on Ball and Shivakumar (2006) as specified in model (2). *Size* is firm size which is the natural logarithm of total assets. *Age* is firm age which is the natural logarithm of the firm in years. *Lev* is financial leverage measured as total debt divided by total equity. *ROA* is firm ROA which is net income over total assets.

Table 5 shows the results from an ordinary least square regression testing H_1. The results provide evidence that higher financial information quality is related to investment efficiency. The coefficient of INFQ shows positive and significant value at 5 per cent level. These results are consistent with the correlation coefficients analyses

performed earlier, and the significant level does not change when control variables are included in the regression. The outcomes support prior studies in advanced countries (e.g. Verdi 2006; McNichols and Stubben 2008; Biddle et al. 2009) that higher financial information quality relates to over and/or

under-investment. Control variables show expected results.

The results presented in Table 5 support H_1 and also illustrate the decision-usefulness of financial information. The main objective of this study is to investigate whether IFRS enhance the usefulness of financial information in the decision regarding investment. This is tested in hypothesis 2, and the results are presented in Table 6.

Table 6
Regression Result on the Role of IFRS in the Association of
Financial Information Quality and Investment Efficiency

Variables	Prediction	InvEff
INFQ	+	0.377*
		(1.83)
IFRS	+	0.080***
		(4.52)
*INFQ*IFRS*	+ (H_2)	0.0254
		(1.07)
Size		-0.114**
		(-2.28)
Age		0.335***
		(4.81)
Lev		-0.030*
		(-1.76)
ROA		-0.496***
		(-3.52)
Constant		-0.395
		(-1.54)
Firm fixed effects		Yes
Adj R^2		0.172
N		5384

*, **, *** significant at the 10, 5, and 1 percent levels, respectively, using two-tailed tests.
INFQ stands for financial information quality which is measured by discretionary accruals, measured based on Ball and Shivakumar (2006) as specified in model (2). *IFRS* is IFRS adoption as dummy variable given the value of 1 if the financial statements are prepared under IFRS and 0 otherwise. *Size* is firm size which is the natural logarithm of total assets. *Age* is firm age which is the natural logarithm of the firm in years. *Lev* is financial leverage measured as total debt divided by total equity. *ROA* is firm ROA which is net income over total assets. t-statistics are presented in parenthesis below the coefficients and White robust standard errors are used to control for heteroscedasticity.

The results in Table 6 show that the association between INFQ and InvEff is significant with a positive sign. This confirms our conclusion from H_1 that financial information is useful in decision-making regarding investment. The interaction term of INFQ*IFRS is, however, not significantly related to investment efficiency (InvEff). H_2, therefore, cannot be accepted. This shows that there is no difference in terms of the usefulness of financial information before and after the adoption of IFRS. This can be illustrated better using the diagram as presented in Figure 1.
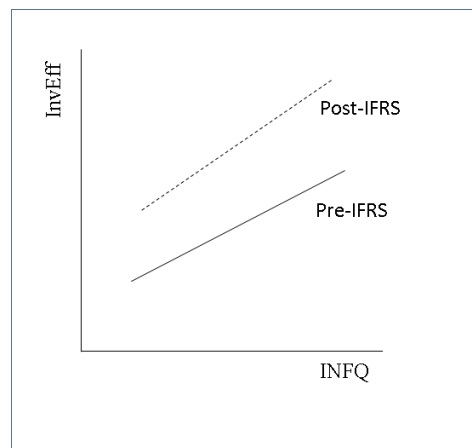
Figure 1
Illustration of Interaction Term between INFQ and IFRS

From the results and the illustration in Figure 1, we can conclude that investment efficiency is positively associated with information quality and IFRS, but the increase in investment efficiency given different financial information quality is not statistically different pre and post IFRS adoption. In other words, the outcomes show that IFRS adoption does not enhance the decision usefulness of financial information. These findings are consistent with prior studies (e.g. Goodwin et al. 2008, Jeanjean and Stolowy 2008, Ahmed et al. 2013). For instance, Goodwin et al. (2008) find that earnings and equity prepared under IFRS are less useful (value relevant) than Australian GAAP earnings and equity. They propose that differences in the background of the countries affect the IFRS adoption consequences, and accounting practices of countries can be function of its financial environment. Also, Jeanjean and Stolowy (2008) reveal that the pervasiveness of financial information quality has not improved after the introduction of IFRS, and in fact decreases in France. Their results confirm that sharing rules is not a sufficient condition to create a common business language, and that management

incentives and national institutional factors play an important role in framing financial reporting characteristics and its usefulness.

The role of audit quality is tested using model (5) where the interaction term of audit and information quality (INFQ*Audit) is included in the regression. The results are presented in Table 7.

Hypothesis 3 tests the moderating effect of audit quality on the relationship between financial information quality and investment efficiency. The results in Table 5 clearly show that the interaction term of INFQ*Audit is significant financial information quality. This indicates that the usefulness of financial information in investment decision making is different for firms audited by Big4 compared to those not audited by Big4. H3 is therefore supported, and the result is consistent with the findings of Shroff (2017).

We repeat the regression for H1, H2 and H3 using two other models of earnings quality. The models are McNichols and Stubben (2008) revenue based discretionary measure and Kothari et al. (2005) models. Results from the regression (not presented here) still support the original results, indicating that our findings are robust.

Table 7
Regression Result on the Role of Audit in the Association of Financial Information Quality and Investment Efficiency

Variables	Prediction	InvEff
INFQ	+	0.353**
		(1.95)
Audit	+	0.037*
		(1.66)
*INFQ*Audit*	+ (H₃)	0.770***
		(3.84)
Size		-0.091*
		(-2.06)
Age		0.370***
		(6.03)
Lev		-0.036**
		(-2.42)
ROA		-0.330**
		(-2.65)
Intercept		-0.671**
		(-2.98)
Firm fixed effects		Yes
Adj R²		0.236
N		5384

*, **, *** significant at the 10, 5, and 1 percent levels, respectively, using two-tailed tests.
INFQ stands for financial information quality which is measured by discretionary accruals, measured based on Ball and Shivakumar (2006) as specified in the model (2). *Audit* is a binary variable that takes 1 if the firm is audited by Big 4 audit firms, and 0 otherwise. *Size* is the firm size which is natural logarithm of total assets. *Age* is the firm age which is the natural logarithm of the firm in years. *Lev* is financial leverage measured as total debt divided by total equity. *ROA* is the firm ROA which is net income over total assets. t-statistics are presented in parenthesis below the coefficients and White robust standard errors are used to control for heteroscedasticity.

CONCLUSION

The results show convincing evidence that financial information quality is associated with investment efficiency. This indicates that financial information is useful in decision making regarding investment. Being promoted as a high-quality standard, the adoption of IFRS is expected to increase the usefulness of financial information in decision making. However, opposite to expectation, the IFRS adoption does not improve the decision usefulness of financial information (H₂). Audit quality is however significantly strengthened the relationship between financial information quality and investment efficiency. One deduction that can be made is that the users of financial information trust the information that is being audited by the higher quality auditor and see the information as more credible.

In the introduction section, we discuss the issue of relevance and credibility as two important characteristics of good financial information. IFRS is promoted as a better standard that promotes greater disclosure and more market oriented especially with the use of fair value. In other words, the financial report that is prepared based on IFRS standards should produce more relevant information and should be more useful in decision making especially on investment. The results, however, do not support this contention. On the characteristic of credibility, previous studies provide evidence that financial report audited by the quality audit is perceived to more credible by the users. The significant result of H₃ indicates that for our sample, the audit quality does enhance the usefulness of financial information. In summary, it seems that the credibility of financial information is valued

more by users compared to the relevance of the information.

Findings of this study enhance current knowledge on the role of standards in ensuring financial information quality. The findings also shed some light on the debate on whether relevance or credibility is a more important characteristic of quality financial information. The two characteristics are often seen as at two different extremes and increasing one would mean sacrificing on the other characteristic. In our study, the evidence suggests that in the investment decision, the users value credibility more than the relevance of financial information. This study contributes to the knowledge by examining the role of IFRS and audit in decision usefulness of financial information which has not yet been studied before. The standards setters can also use the findings in their effort to finalize the Conceptual Framework for Financial Reporting which is still in draft form as in October 2017.

Since this study provides early evidence in the role of IFRS adoption on the association of financial information quality and investment efficiency, the findings should be of interest to policymakers in countries that have not adopted IFRS and contemplating whether and when to do so. Relevant authorities especially those related to the capital market should play a more active role in the interpretation and implementation of the standards in order to ensure that the intended outcomes are achieved. In the case of IFRS adoption, the adopting countries need to ensure that its implementation is done effectively with proper monitoring. Another thing to note is that IFRS is a principles-based standard, hence the standards need to be read together with the interpretation provided by the International Financial Reporting Interpretations Committee (IFRIC). The adoption of IFRS should lead to the production of higher quality financial information that could be translated into efficient investment and help improve the business environment.

This study is, however, not without limitation. This study only looks into financial information quality which is measured by earnings quality, using earnings management as a proxy. There are many other proxies of earnings quality such as persistence, predictability, smoothness, abnormal accruals, accruals quality, value relevance, timeliness, conservatism, and earnings variability (Ewert and Wagenhofer 2011). Future studies can use other measures of earnings quality to reconfirm these findings. Further investigations can also be done on reporting quality as a whole, taking into account financial as well as non-financial information. Different proxies of audit quality can also be used.

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