



International Journal of Managerial and Financial Accounting

ISSN online: 1753-6723 - ISSN print: 1753-6715
<https://www.inderscience.com/ijmfa>

Relevance and faithful representation (reliability) of annual and semi-annual financial statements; a trade-off?

Alexios Kythreotis, Milad Soltani

DOI: [10.1504/IJMFA.2023.10054184](https://doi.org/10.1504/IJMFA.2023.10054184)

Article History:

Received:	08 October 2021
Last revised:	12 January 2023
Accepted:	12 January 2023
Published online:	30 June 2023

Relevance and faithful representation (reliability) of annual and semi-annual financial statements; a trade-off?

Alexios Kythreotis* and Milad Soltani

Department of Accounting, Economics and Finance,
European University Cyprus,
Room 9, 1st Floor, Tower Building Block C,
No. 6, Diogenous Str., 2404 Engomi,
Nicosia, P.O. Box 22006,
1516 Nicosia, Cyprus
Email: a.kythreotis@euc.ac.cy
Email: soltani.milad@gmail.com
*Corresponding author

Abstract: This study aims to shed light on the inconclusiveness of attaining attributes of relevance and reliability of reported accounting information in financial statements. For this reason, the degree of relevance and reliability of annual and semi-annual financial statements is examined. The sample consists of 321 manufacturing companies in the form of panel data from 2012 to 2019. The study shows a trade-off between relevance and reliability between annual and semi-annual financial statements. It is the first effort to detect any trade-off in relevance and reliability between semi-annual and annual financial statements. Additionally, this study measures the quality dimensions as presented in the conceptual framework of IFRS and highlights the conflict between existing methods measuring reliability with the IFRS conceptual framework's rationality.

Keywords: relevance; faithful representation; reliability; conceptual framework; annual and semi-annual financial statements.

Reference to this paper should be made as follows: Kythreotis, A. and Soltani, M. (2023) 'Relevance and faithful representation (reliability) of annual and semi-annual financial statements; a trade-off?', *Int. J. Managerial and Financial Accounting*, Vol. 15, No. 3, pp.393–412.

Biographical notes: Alexios Kythreotis is an Assistant Professor in Accounting at the European University Cyprus. He holds a PhD in Financial Accounting from the Athens University of Economics and Business and an MBA from the Cardiff University. His thesis was published in 2012 with the title *Qualitative Characteristics in Accounting Disclosures*. Additionally, he holds the European Certificate in E-learning Courses Design and Teaching from the UOC, Universitat Oberta de Catalunya. Before his academic career, He worked as an accountant in EFG Eurobank in Athens. His research generally lies on financial accounting, fraud, market-based accounting research and the quality of financial statements.

Milad Soltani is a PhD candidate in Business Administration at the European University Cyprus. His thesis is entitled *Financial Fraud Assessment Model in Developing Countries*. His research interests revolve around the areas of financial fraud, financial accounting, and management accounting.

1 Introduction

The International Accounting Standards Board categorises the quality characteristics of financial statements into fundamental and enhancing, as outlined in the conceptual framework. The former category consists of the relevance and faithful representation (i.e., an alternative definition of reliability), while the latter includes timeliness, understandability, comparability, and verifiability. The higher the level of those characteristics, the higher the quality of the financial statements. What becomes evident from the above is that examining the quality characteristics and, more specifically, the extent to which financial statements reflect these features (especially the characteristics of relevance and reliability) is essential.

This article attempts to examine the quality of the semi-annual and annual financial statements using the fundamental qualitative characteristics. The different characteristics governing the drafting process, control, and publication of annual versus semi-annual statements are an important indication that the degree of relevance and reliability of the annual and interim financial statements is also different.

This study is one of the few, that examines the relationship between relevance and reliability based on financial statements' frequency. In addition, based on the existing literature, quality is measured using different methods that are not always in line with the conceptual framework's rationality, such as by discretionary accruals, the degree of conservatism, predictability of earnings, etc. A typical example that highlights the conflict between the existing methods used for measuring the quality and the degree of quality represented by the conceptual framework is the measure of reliability. Going through the literature, one may realise that the degree of reliability is measured by the current earnings' capacity to predict the next period's earnings.¹ The problem which arises is that predictability as a measure of reliability not only fails to be consistent but also comes into conflict with the definition of reliability as defined by the conceptual framework, which characterises financial statements as reliable when they are free from any error and bias and reliably reflects whatever is needed to be illustrated. This conflict can be readily understood by examining the impact of fair value on financial statements. Specifically, the fair value approach leads to a decrease in predictive ability and consequently variability in results. Since fair value represents the economic reality faithfully, the results have high reliability according to the definition provided in the conceptual framework, while based on the measure of predictive ability, reliability is very low (Riedl, 2010). Another example that highlights this contradiction is the conservatism measure. While conservatism has been introduced in the research literature as an approach to quality enhancement², this approach is contrary to the conceptual framework's principles because it is not neutral and therefore is not included.

In order to overcome the above paradoxes, this article uses the ability of accruals to be translated into future cash flows as the proxy of reliability. The quality of financial statements is greater if the accruals are indeed translated to future cash flows, this means that the assumptions and estimations made by the management in the first place are neutral and free from error and bias.

The findings concerning the two fundamental qualitative characteristics of the semi-annual and annual statements, form a useful tool for users of financial statements. Investors will pay more attention to situations characterised by a greater degree of relevance, while lenders will emphasise situations characterised by a higher degree of reliable portrayal.

2 Theoretical framework and hypothesis development

2.1 Trade-off between relevance and reliability of annual and semi-annual financial statements

The various features that govern preparing, checking, and publishing annual versus semi-annual financial statements indicate that the degree of relevance and reliability level is dissimilar. To identify exactly how situations differ concerning these two qualitative characteristics, one must detect the differences in the reporting, auditing, and publication processes of annual and semi-annual financial statements (PKF International Ltd., 2015).

The first distinct feature is that the publication of semi-annual financial statements is an essential source of information for users, helping them to make timely decisions. The higher frequency of publication of the semi-annual financial statements has resulted in more timely information to users who do not have to wait for the annual publication of financial statements. Therefore, users receive information through the semi-annual financial statements more timely, as the latter is published with a shorter delay than the annual financial statements. The almost immediate publication of the semi-annual financial statements is due to the lower form of – or in some cases zero – control exercised by audit firms. In summary, the higher frequency and the more timely publication of the semi-annual financial statements lead to the assumption (hypothesis) that the degree of relevance for semi-annual statements is greater than the degree of relevance reflected in the annual financial statements.

Finally, the auditors and the authors of financial statements can influence the relevance reflected in the financial statements. Specifically, the authors can directly incorporate the management's expectations regarding future cash flows, thereby increasing the accounting statements' relevance, introducing at the same time however, more uncertainty. Based on the above, the first hypothesis is formed:

H1 The degree of relevance in semi-annual financial statements is higher than in annual financial statements.

On the other hand, the information provided through the semi-annual financial statements is under the complete control of the administration in many cases, as the inspection conducted by audit firms is very limited (as opposed to the comprehensive audit exercised over the annual). Specifically, the audit review is limited to a simple overview for the preparation of mid-term financial statements and, in several cases, particularly the quarterly, is not exercised at all. This, of course, does not necessarily lead to the conclusion that everything that involves the semi-annual statements incorporates forged elements or contains computational errors. But, the odds of publishing falsified (manipulated) data and computational errors increase because of insufficient control, with the corresponding consequences on the reliability of the financial statements.

Moreover, the effort allocated to the preparation of the semi-annual financial statements is less. Typically, accounting treatments such as valuation of assets, valuation of stocks, estimation of bad debts, etc. become more detailed, more accurate, and, therefore, more reliable for annual financial statements. Another factor that justifies the low effort given to preparing the interim financial statements and, specifically, for the quarterly, is that these financial statements are prepared immediately after the strenuous – for accountants – period of auditing the annual statements.

Also, the limited control exercised over the semi-annual financial statements from audit firms, the ability of a company to publish summarised and not detailed accounting statements, as well as the lower effort allocated to the preparation of the semi-annual financial statements, lead to the hypothesis that the degree of reliability of early reporting (i.e., semi-annual financial statement) is smaller than the degree of reliability reflected in the annual statements.

Finally, the actions of auditors and authors affect the degree of reliability of the financial statement since authors tend to emphasise the reliability of annual financial statements so that the auditors approve the reported financial information. Similarly, auditors underline the reliability of annual financial statements so that it does not suffer the consequences of legal sanctions due to negligence in checking the quality of companies' financial statements and the loss of auditors' reputations. Based on the above the second hypothesis is as follows:

H2 The degree of reliability in annual financial statements is higher than in semi-annual financial statements.

2.2 Previous studies: the trade-off between relevance and reliability

The research's main objective is related to the body of literature that has measured the trade-off between relevance and reliability. Most studies have indirectly measured the relationship between relevance and reliability. For example, they have examined the relationship between fair value accounting and historical cost accounting (e.g., Wu and Lin, 2020) or the conflict between relevance and reliability by examining revenue recognition (e.g., Lee and Kwon, 2020). Some studies have explicitly focused on the trade-off between relevance and reliability. For instance, in the research conducted by Jana and Schmidt (2017) through questionnaires, relevance and reliability were examined from the perspective of users of financial statements and their decision usefulness. In this study, five techniques for determining the risk premium in estimating a corporate bonds model-based value with different combinations of reliability and relevance were provided to 202 finance students to rank them based on decision usefulness. The results of the research showed that students identified practices with a higher level of relevance as superior for decision usefulness. Their results also showed that uncertainty avoidance and familiarity with fair values did not affect the participants' ranking.

Lee and Kwon's (2020) study show a conflict between the reliability and usefulness of accounting information through revenue recognition. To this end, they examined the correlation between unbilled receivables with earnings management and unbilled receivables with firm value for companies listed on the Korean Stock Exchange from 2010 to 2016. The results of this study showed that companies were engaged in earnings management via unbilled receivables.

Kraft et al. (2020) examine the effect of mandatory acceptance of IFRS on credit default swaps forecasting models. The statistical sample of this research includes 292 companies from 16 European countries. In this study, the forecasting model for financial and non-financial companies in the period before and after IFRS acceptance has been investigated. This study shows that mean and median absolute percentage prediction errors are higher for financial and non-financial firms after mandatory IFRS adoption. According to the researchers, this result indicates that although mandatory adoption of IFRS could have increased accounting quality and provided capital market benefits to equity investors, there is no clear evidence of similar benefits for debt investors. Also, a

one-size-fits-all set of financial rules for countries with different political and economic systems can lead to the loss of information that creditors need for financial decisions.

Sherlita (2019) examines the impact of relevance and reliability on investment-related decisions for companies listed on the Indonesian Stock Exchange. In this study, 82 companies from 2008 to 2012 are used as the sample. Using multiple regression analysis, the relationship of investment decision (i.e., dependent variable) with information value relevance, accuracy presentation, and corporate action was investigated. This study shows that the increase of relevance in accounting information will increase investment-related decisions but, because of insufficient transparency in developing countries, no significant relationship has been found between reliability and investment-related decisions.

Prichegger and Schondube (2017) investigate the relationship between relevance and reliability by using game theory. For this purpose, they considered two systems. The former emphasised the timeliness of information (i.e., high relevance in timely financial reports). The latter emphasised the accuracy of the information but with a delay period (i.e., high reliability in late financial statements). Then, they examined the relationship between these two systems through optimal compensation contracts in a full and a limited commitment setting.

Ewert and Wagenhofer's (2016) research challenges the standard setter's view that the quality of accounting standards leads to improved information in the capital market. This study shows that in futuristic view situations, accounting standards lead to reduced report quality. The researchers believe that the decline in information quality observed is because the forward-looking accounting standard affects negatively the smoothness of reported earnings.

Christensen et al. (2015) investigate the effect of IFRS acceptance on accounting. In this study, the statistical sample is divided into two groups of companies: companies that have voluntarily accepted the IFRS and companies that have accepted the IFRS mandatorily. For this purpose, the statistical sample of this research is companies operating in Germany, where companies since 1998 accepted the IFRS voluntarily until 2005 when the acceptance of the IFRS standard became mandatory for companies. The results of this study show that there is a relationship between decreasing earning management and relevance after increasing IFRS as an accounting system. Their results also show that countries that did not adopt the accounting system by 2005 did not significantly improve accounting quality.

Ji and Lu (2014) investigate the relationship between relevance and reliability of intangible assets for companies listed on the Australian Stock Exchange. Based on this study, there was a positive relationship between value relevance and reliability. This result indicates that accounting standard setters not only focus on standards that are more relevant, but should also focus on standards that increase the reliability of intangible assets information.

3 Methods and variable definition

3.1 Data collection method

This research is a correlational study that uses regression analysis to obtain model coefficients. In terms of purpose, it is applied research. Based on research results, various

users can gain more knowledge about the relevance and reliability of annual and semi-annual financial statements, ultimately contributing to the optimal allocation of resources. The method of document mining is used for data collection. For collecting the data related to the companies' financial statements, the Refinitiv Eikon has been used. The data used in this study has been obtained from the companies listed on the stock exchanges of 13 countries, including the UK, Spain, Portugal, Netherlands, Italy, Ireland, Greece, Germany, France, Finland, Belgium, and Austria, all of which use the IFRS accounting system and are characterised as developed based on the classification published by the FTSE Group.

3.2 Sample selection procedure

The manufacturing companies are especially relevant in our setting. The use of manufacturing companies is useful for several reasons. First, since multiple variables and relationships are involved in this study, focusing on one sector decreases noise in our measures (Messner, 2016). Second, the manufacturing sector is often one of the most vulnerable industries exposed to the risk of low financial report quality due to separability features, including theft or misuse of inventory and product substitution (Deloitte, 2014). A further benefit is that manufacturing companies are more likely to experience fewer growth fluctuations than service companies, which helps achieve a homogenous statistical sample (Trisanti, 2017). This industry has already been considered in the sample of articles such as Trisanti (2017) and Mensah (2020). Therefore, we believe that our sample constitutes the appropriate setting to test the proposed hypotheses.

In this study, systematic sampling (i.e., non-probability) has been used in which the sample has been defined as the whole statistical population. Then, it was adjusted to the following conditions:

- Observations for companies with fiscal year other than 1 January–31 December are excluded.
- Financial companies are excluded because their accounting including the accrual generating process, differs significantly (Ahmed et al., 1999).
- Given the existence of a variable with a lag in this research, companies whose data is not available for two consecutive years are excluded.
- Observations with negative book values are excluded. According to the studies conducted by Collins et al. (1997) and Brown et al. (1999), to measure financial data's relevance, only positive observations of the book value of equity should be considered.

Finally, 5,136 year-company observations were collected from 2012 to 2019. Table 1 and Table 2 show the sampling process and the percentage of final observations for each selected country. Also, in Table 3, the companies in the research sample are shown by industry.

Table 1 Sample selection

<i>Original sample</i>	49,028
<i>Minus:</i>	
Companies with different fiscal years 1 January–31 December	1,232
Observation for companies in financial sectors/service industry	34,857
Data not available, and outliers	7,803
<i>Final sample</i>	5,136

Table 2 Final sample

<i>Country</i>	<i>%</i>
Italy	3.2
Austria	22.5
Spain	4.3
Portugal	0.4
Ireland	0.9
Netherlands	2.4
Greece	0.4
France	9.9
Belgium	1.6
Finland	1.5
Germany	2.1
UK	50.8

Table 3 Description of sample based on the industry

<i>Industry</i>	<i>%</i>
Basic materials	7
Consumer cyclical	11
Consumer non-cyclical	3
Industrials	62
Real estate	5
Technology	6
Utilities	6

3.3 Measurement of relevance and reliability

3.3.1 Measuring relevance – the first method

The first method measures relevance through the relationship between the market price and independent variables such as book value of equity and earnings per share (Francis and Schipper, 1999; Barth et al., 2008; Kythreotis and Constantinou, 2016).

$$P_{it+6} = a_0 + a_1dum + a_2Bvps_{it} + a_3Eps_{it} + a_4dum * Bvps_{it} + a_5dum * Eps_{it} + u_{it+6} \quad (1)$$

- P_{it+6} = market share price at time $t + 6$ month.
- $Bvps_{it}$ = book value of equity per share.
- Eps_{it} = earnings per share.
- dum = dummy variable equals to 1 for the semi-annual and 0 for annual report.
- u_{it+6} = residuals.

Through the first equation, the ability of accounting earnings and book value of equity to explain future stock prices – arising from both the annual and the semi-annual financial statements – is detected. The higher this ability is, the higher the degree of relevance will be. The variable ‘*dum*’ is included in the equation as a dummy variable to compare the degree of relevance in semi-annual and annual statements. The dummy variable takes the value of ‘1’ and ‘0’ for the semi-annual and the annual statements, respectively. Coefficients ‘ a_2 ’, ‘ a_3 ’, ‘ a_4 ’, and ‘ a_5 ’ are expected to be positive and statistically significant, indicating that annual and semi-annual statements are both relevant, but simultaneously, that the semi-annual statements are more relevant than the annual statements (Kythreotis, 2014).

3.3.2 *Measuring relevance – the second method*

This alternative method examines the relevance by regression of the stock price at time $t + 6$ months, in total assets and total liabilities at time t . As in the previous section, the dummy variable is inserted to identify differences between annual and semi-annual financial statements.

$$P_{it+6} = a_0 + a_1dum + a_2TA_{it} + a_3TL_{it} + a_4dum * TA_{it} + a_5dum * TL_{it} + u_{it+6} \quad (2)$$

- P_{it+6} = market share price at time $t + 6$ month.
- TA_{it} = total assets per share.
- TL_{it} = total liabilities per share.
- dum = dummy variable equals to 1 for the semi-annual and 0 for annual report.
- u_{it+6} = residuals.

In model (2), the better the ability of independent variables to predict future stock price changes, the higher the degree of relevance. Once again, the variable ‘*dum*’ is included in the equation to capture the difference between the degree of relevance in semi-annual and annual statements. The dummy variable takes the value of ‘1’ and ‘0’ for the semi-annual and the annual statements, respectively. Coefficients ‘ a_2 ’, ‘ a_4 ’ is expected to be positive, and ‘ a_3 ’, ‘ a_5 ’ are expected to be negative and statistically significant, indicating that annual and semi-annual statements are both relevant. At the same time, the semi-annual statements are more relevant than the annual (Kythreotis, 2014).

3.3.3 *Measuring reliability/faithful representation – the first model*

The first model used in this study to measure reliability was developed by Kim and Kross in 2005. Specifically, this model introduces cash flow from operating activities and accruals at time t , as independent variables and the cash flow from operating activities at

time $t + 1$, as depended variable. As mentioned in the introduction, this research examines the quality of the financial statements, as defined by the conceptual framework. To this end, reliability is measured by the accruals' ability to be converted to future cash flows (Kythreotis, 2014; Kim and Kross, 2005).

$$CFO_{i,t+1} = a_0 + a_1CFO_{i,t} + a_2Acc_{i,t} + u_{i,t+1} \quad (3)$$

- $CFO_{i,t+1}$ = cash flows from operating activities in $t + 1$ / total assets at t .
- $CFO_{i,t}$ = cash flows from operating activities in t / total assets at $t - 1$.
- $ACC_{i,t}$ = $DWC - DEP$.
- DEP = depreciation / total assets $t - 1$.
- DWC = change in net accounts receivables / total assets at $t - 1$, plus change in inventory / total assets at $t - 1$, plus change in other current assets / total assets at $t - 1$, minus change in accounts payable / total assets at $t - 1$, minus change in taxes payable / total assets at $t - 1$, minus change in other current liabilities / total assets at $t - 1$, minus change in deferred taxes / total assets at $t - 1$.
- $u_{i,t+1}$ = residuals.

For each firm, we run a time-series regression and we detect the adjusted R^2 of equation (3). We then re-run equation (3) by including only cash flow from operations (CFO) as the independent variable and we detect again the adjusted R^2 .

$$CFO_{it+1} = a_0 + a_1CFO_{it} + u_{it+1} \quad (4)$$

Additionally, we define FCFO as the difference between the adjusted R^2 of equation (3) and the adjusted R^2 of equation (4). FCFO represents the incremental contribution of current accrual in explaining future cash flow. Therefore, we use FCFO as our primary measure of reliability.

Finally, to evaluate the significant difference of the FCFO between the annual and semi-annual financial statements, the paired comparison test method is used. In this method, if the level of significance of the ANOVA F-test is lower than 0.05, the reported reliability differences in the annual and semi-annual financial statements are significantly different from each other.

3.3.4 Measuring reliability – the second method

The second method is based on earnings prediction and has been used in studies such as Bandyopadhyay et al. (2010) and Nallareddy et al. (2018) to measure reliability. This method measures the ability of current earnings (E_t) to predict future earnings (E_{t+1}). The predictability of earnings was used through the literature as a measurement of reliability. However, as mentioned in the introduction, the predictability of earnings should not be an indicator of reliability. In any case, we apply this model to discover if the findings are in line (or not) with the findings derived from the previous model. In this way, we will contribute to the controversial discussion about the inconsistency between earnings predictability – as a measure of reliability – and the conceptual framework's rationale. We estimate the following earning forecast models:

$$E_{t+1} = a_0 + a_1CFO_t + a_2E_t + u_t \quad (5)$$

$$E_{t+1} = a_0 + a_1CFO_t + u_t \quad (6)$$

- E_{it+1} = earnings in $t + 1$.
- $CFO_{i,t}$ = cash flows from operating activities in t / total assets at $t - 1$.
- $E_{i,t}$ = earnings in t .
- $u_{i,t}$ = residuals in t .

The adjusted R^2 of equations (5) and (6) is detected. Additionally, we define FE as the difference between the adjusted R^2 of equations (5) and (6). Therefore, FE indicates the incremental contribution of current earnings to future earnings. Higher FE in annual or semi-annual financial statements is indicative of higher reliability in the related financial statements. This method has been used in previous studies such as Bandyopadhyay et al. (2010).

As in the previous model, the paired comparison test method is used to evaluate the statistical significance of the FE difference for the annual and semi-annual financial statements.

Table 4 Descriptive analysis

	<i>Variable</i>	<i>Mean</i>	<i>Median</i>	<i>Std. dev.</i>	<i>Skewness</i>	<i>Kurtosis</i>
Annually	<i>P</i>	14.34	3.61	30.89	4.93	36.63
	<i>BVPS</i>	6.62	1.71	14.08	4.417	28.38
	<i>EPS</i>	0.86	0.24	1.67	3.50	18.30
	<i>TA</i>	23.20	4.46	58.20	4.88	30.10
	<i>TL</i>	167	2.52	46.52	5.18	33.01
	<i>CFO</i>	0.121	0.090	0.656	2.784	107.23
	<i>ACC</i>	0.218	0.157	0.260	1.535	12.335
	<i>E</i>	0.695	0.023	2.237	3.800	16.398
Semi-annually	<i>P</i>	15.18	3.40	34.14	4.63	30.82
	<i>BVPS</i>	6.41	1.60	13.39	4.07	23.94
	<i>EPS</i>	0.91	0.24	1.87	3.76	20.42
	<i>TA</i>	22.92	4.19	60.23	5.44	38.37
	<i>TL</i>	16.66	2.29	49.15	6.02	47.57
	<i>CFO</i>	0.11	0.091	0.809	-1.153	95.56
	<i>ACC</i>	0.43	0.15	5.31	25.93	675.56
	<i>E</i>	0.008	0.000	0.121	-5.623	10.60

Notes: Variable definition: *P*, market share price; *BVPS*, book value of equity per share; *EPS*, earnings per share; *TA*, total asset per share; *TL*, total liability per share; *CFO*, cash flow from operation; *ACC*, $DWC - DEP$; $DEP = \text{depreciation} / \text{total assets at } t - 1$; $DWC = \text{change in net accounts receivables} / \text{total assets at } t - 1, \text{ plus change in inventory} / \text{total assets at } t - 1, \text{ plus change in other current assets} / \text{total assets at } t - 1, \text{ minus change in accounts payable} / \text{total assets at } t - 1, \text{ minus change in taxes payable} / \text{total assets at } t - 1, \text{ minus change in other current liabilities} / \text{total assets at } t - 1, \text{ minus change in deferred taxes} / \text{total assets at } t - 1$; *E*, earnings.

4 Hypothesis testing and discussion

4.1 Descriptive analysis of the data

To examine the research question of this paper, there is a need to extract variables whose descriptive statistics are shown in Table 4.

According to the results of Table 4, the average of all variables except (*P*), (*EPS*) and (*Acc*) in the selected statistical sample for the annual statements is more than the semi-annual. Moreover, all of the above variables, except from (*CFO*) in the semi-annual, have skewness to the right, indicating that the frequency of large values is higher than the normal state. Additionally, the coefficient of kurtosis is positive for all values. (*CFO*) in annual values and (*Acc*) in semi-annual values have the highest kurtosis coefficient, suggesting that the concentration of data in these variables is higher around the mean.

4.2 Regression model estimation and hypothesis testing

To estimate the panel data model, it is necessary to examine the homogeneity among cross-sections (i.e., manufacturing companies) based on the F-limer test. The null hypothesis of the F-limer test implies the homogeneity of cross-sections. If the cross-sections are homogeneous, then the pooling method should be used. If the F-Limer test's null hypothesis is rejected, it should be determined whether cross-sections are affected by fixed effects or random effects. The Hausman test is used to determine the type of effects. In the Hausman test, the null hypothesis is the existence of random effects between non-homogeneous cross-sections. The F-limer and Hausman test results are presented in Table 5 for the relevance and reliability methods.

Based on the table results, since the value of F-limer is less than 0.05, then the null hypothesis of pooled regression (regression without fixed or random effects) is rejected. Also, the p-value for the Hausman test is less than 0.05 for all of the methods' therefore, the model with fixed effects is used.

Table 5 F-Limer and Hausman test

Test	Null hypothesis	1st method	2nd method	1st method		2nd method	
		relevance	relevance	reliability		reliability	
		Dependent variable: P		Dependent variable: CFO		Dependent variable: E	
		Annual	Semi-annual	Annual	Semi-annual	Annual	Semi-annual
F-limer (prob.)	Existence of homogeneous cross sections	28.46 (0.00)	81.13 (0.00)	3.36 (0.00)	1.814 (0.00)	3.36 (0.00)	1.81 (0.00)
Hausman (prob.)	Existence of random effects	804.96 (0.00)	37.97 (0.00)	770.24 (0.00)	406.78 (0.00)	770.24 (0.00)	406.75 (0.00)
	Result	Fix effect	Fix effect	Fix effect	Fix effect	Fix effect	Fix effect

Notes: Variable definition: *P*, market share price; *CFO*, cash flow from operation; *E*, earnings.

4.3 Testing the first hypothesis: measuring the relevance

According to the H1 hypothesis, the degree of relevance for semi-annual financial statements is expected to be higher than the annual statements. For the first method of relevance, the higher the explanatory capability of the independent variables in predicting the stock prices in the next six months reflects the financial report's higher relevance. Considering positive coefficients (a_2) and (a_3) are expected to increase in stock prices; the semi-annual report has a higher (lower) relevance when the value of the dummy variable coefficients (a_4 and a_5) strengthen (weaken) the coefficients of a_2 and a_3 , respectively.

For the second relevance method, the coefficient a_2 is expected to be positive for total asset per share (TA) and the coefficient a_3 negative for total liability per share [i.e., an increase in total asset per share (TA) and decrease in total liability per share (TL) lead to the rise in stock prices]. Therefore, the semi-annual reports have higher (or lower) relevance when the value of the dummy coefficients of total asset per share (a_4) is positive (negative), and the value of the dummy coefficients of total liability per share (a_5) is negative (positive). In the following section, estimations of the first and second methods are presented to measure the annual and semi-annual financial statements relevance.

4.4 Empirical findings measuring relevance – the first method and the second method

Table 6 shows the result of measuring the degree of relevance for the first and second methods. Therefore, to compare the degree of relevance in annual and semi-annual financial statements, dummy variables are used in both methods (i.e., 1 for semi-annual reports and 0 for annual reports).

Table 6 for the first method shows that the book value of equity per share ($BVPS$) and earnings per share (EPS) variables' regression coefficients are 0.04 and -1.04 , respectively. Also, the significance levels of variables are 0.04 and 0.00, indicating a significant relationship with the market price. The negative relationship between earnings per share (EPS) and market price shows that the market price rate is not proportional to earnings per share (EPS) changes. Numerous studies have reported a negative relationship between earnings per share (EPS) and market price, including a study by Islam et al. (2014), who examined the reasons for the inverse relationship between earnings per share (EPS) and market price. Their findings suggest that four other factors, including macroeconomic factors, microeconomic factors, the directors' role, and company factors, also affect the relationship between earnings per share (EPS) and market price. The regression coefficients for the dummy variables, including ($Dum * BVPS$) and ($Dum * EPS$), are 0.04 and 0.46. The significance level for those variables is 0.002 and 0.00, respectively, indicating a significant relationship with the market price. The positive sign for coefficients of ($Dum * BVPS$) and ($Dum * EPS$) is in line with the H1 hypothesis that expects ($Dum * BVPS$) and ($Dum * EPS$) to be positive in semi-annual financial statements.

In relation to the second method of relevance, multi-collinearity was detected in the total liability per share (TL) variable and total asset per share (TA). To reduce the collinearity, the logarithm of total asset ($LnTA$) and the logarithm of total liability ($LnTL$) are used.

Table 6 Relevance measurement using the first and second methods

<i>Model</i>		<i>First method</i>		<i>Second method</i>	
<i>Estimating method</i>		<i>Panel fixed effects</i>		<i>Panel fixed effects</i>	
<i>Variables</i>	<i>Coefficient</i>	<i>T-statistic</i>	<i>Variables</i>	<i>T-statistic coefficient (prob.)</i>	
<i>Dum</i>	-0.004	-0.38 (0.70)	<i>Dum</i>	-1.21	-4.97 (0.00)
<i>BVPS</i>	0.04	1.97 (0.04)	<i>LnTA</i>	0.03	0.99 (0.32)
<i>EPS</i>	-1.04	-8.93 (0.00)	<i>LnTL</i>	-0.001	-0.04 (0.96)
<i>Dum * BVPS</i>	0.04	3.001 (0.002)	<i>Dum * LnTA</i>	0.06	1.96 (0.04)
<i>Dum * EPS</i>	0.046	2.45 (0.0140)	<i>Dum * LnTL</i>	-0.13	-3.19 (0.00)
<i>C</i>	14.24	94.61 (0.00)	<i>C</i>	15.28	27.62 (0.00)
Adjusted R^2	0.92			0.92	
F-statistic (prob.)	190.75 (0.000)			189.15 (0.000)	

Notes: Variable definition: *BVPS*, book value of equity per share; *EPS*, earnings per share; *TA*, total asset per share; *TL*, total liability per share; *Dum* variable takes the value of '1' and '0' for the semi-annual and the annual statements, respectively.

Table 6 for the second method shows that the regression coefficients for the variables logarithm total asset (*LnTA*) and logarithm total liability (*LnTL*) are 0.03 and -0.001, respectively. Also, the significance levels for the variables are 0.32 and 0.96, indicating a lack of a significant relationship with the market price. The regression coefficients for the dummy variables (*Dum * LnTA*) and (*Dum * LnTL*) are 0.06 and -0.13, respectively. The variables' significance levels are equal to 0.04 and 0.00, indicating a significant relationship with the market price. Positive a_2 and a_4 coefficients for the logarithm total asset (*LnTA*) variable and the simultaneous negative values of a_3 and a_5 for the logarithm total liability (*LnTL*) variable, confirm the H1 hypothesis and indicate a higher degree of relevance in semi-annual statements compared to the annual ones. This result is consistent with Prichegger and Schondube's (2017) findings concluding that early reporting has a higher degree of relevance than late reporting.

4.5 Testing the second hypothesis: measuring reliability using the first and second method

Based on the H2 hypothesis, the degree of reliability for annual statements is expected to be higher than semi-annual reports. Higher adjusted R^2 in annual or semi-annual financial statements indicates that the model's independent variables are more reliable in predicting dependent variables (e.g., cash flow in the next year).

For the first method, the difference of the adjusted R^2 for the third and fourth equations are used to calculate the FCFO, which represents the reliability for the annual and semi-annual financial statements.

$$FCFO = \text{time-series mean of (the adjusted } R^2 \text{ of equation (3))} \\ - \text{the adjusted } R^2 \text{ of equation (4)}$$

Similarly, for the second method, the following equation is used to calculate FE.

$$FE = \text{time-series mean of (the adjusted } R^2 \text{ of equation (5))} \\ - \text{the adjusted } R^2 \text{ of equation (6)}$$

The paired comparison test method is also used to evaluate the significance of the difference between FE and FCFO for annual and semi-annual financial statements. The results are summarised in Tables 7 and 8.

The results of Table 7 show that the average reliability in the annual financial statements is higher than the semi-annual statements. The significance of the ANOVA F-test also suggests that this difference can be generalised to the statistical population. Similarly, Table 8 shows that the annual statements' average reliability has been higher than the semi-annual statements in the statistical sample. However, the lack of significance in the ANOVA F-test suggests that this difference is not significant and cannot be generalised to the statistical population, i.e., manufacturing companies.

The contradiction between these two results is consistent with the results of Riedl (2010). As mentioned in the introduction, the use of the prediction method, that is, the capacity of the current profits to predict the profits of the following year, contradicts the concept of reliability.

Table 7 Measuring reliability for the first method

<i>First method</i>	<i>FCFO</i>	<i>ANOVA F-test</i>	<i>Prob.</i>	<i>Second hypothesis</i>
Annual	0.219	60.526	0.000	Accepted
Semi-annual	0.086			

Notes: *FCFO* = time-series mean of (adjusted R^2 of equation (3)) – adjusted R^2 of equation (4)).

Table 8 Measuring reliability for the second method

<i>Second method</i>	<i>FE</i>	<i>ANOVA F-test</i>	<i>Prob.</i>	<i>Second hypothesis</i>
Annual	0.183	1.209	0.271	Rejected
Semi-annual	-1.343			

Notes: *FE* = time-series mean of (the adjusted R^2 of equation (5)) – the adjusted R^2 of equation (6)).

5 Robustness analysis

5.1 Investigating the stationarity of research variables

Stationarity is one of the assumptions of estimating a regression model. In this study, due to using balanced panel data and individual effects between cross-sections, the

ADF-Fisher test examines the stationarity of the manufacturing companies' variables, whose results can be seen in Table 9.

Table 9 ADF-Fisher stationarity test

<i>Variable</i>	<i>Statistic</i>	<i>Root</i>	<i>P-value</i>
<i>BVPS</i>	2,525.15	Level	0.000
<i>EPS</i>	3,170.26	Level	0.000
<i>TA</i>	4,814.46	Level	0.000
<i>TL</i>	2,798.43	Level	0.000
<i>CFO</i>	2,714.06	Level	0.000
<i>ACC</i>	3,050.10	Level	0.000
<i>E</i>	1,164.06	Level	0.000

Notes: Variable definition: *BVPS*, book value of equity per share; *EPS*, earnings per share; *TA*, total asset per share; *TL*, total liability per share; *CFO*, cash flow from operation; *ACC*, $DWC - DEP$; $DEP = \text{depreciation} / \text{total assets at } t - 1$; DWC , $\text{change in net accounts receivables} / \text{total assets at } t - 1$, plus $\text{change in inventory} / \text{total assets at } t - 1$, plus $\text{change in other current assets} / \text{total assets at } t - 1$, minus $\text{change in accounts payable} / \text{total assets at } t - 1$, minus $\text{change in taxes payable} / \text{total assets at } t - 1$, minus $\text{change in other current liabilities} / \text{total assets at } t - 1$, minus $\text{change in deferred taxes} / \text{total assets at } t - 1$; *E*, earnings.

Considering that the probability values of unit root tests in all of the above cases are less than 0.001, it is concluded that the statistical assumption of having a unit root is rejected for all of the above variables. Therefore, we can be sure of the estimated regression models without bias.

5.2 Investigating the cointegration of research variables

The Kao test is used to investigate cointegration, the results of which are shown in Table 10.

Table 10 Cointegration test

	<i>Research model</i>	<i>t-statistic</i>	<i>P-value</i>	<i>Test result</i>
Relevance	First method	6.70	0.000	Existence of cointegration relationship
	Second method	6.70	0.000	Existence of cointegration relationship
Reliability	First method	-9.70	0.000	Existence of cointegration relationship
	Second method	-9.12	0.000	Existence of cointegration relationship

The result of Table 10 shows that the p-value of the Kao statistic is less than 0.05. As a result, the existence of a cointegration relationship is confirmed, indicating a long-term relationship between the research variables.

5.3 Investigating the collinearity of independent variables

Another assumption of linear regression is the non-collinearity of the independent variables. The methods of correlation coefficient and variance inflation factor (VIF) are used to investigate the noncollinearity of the independent variables. When the VIF

coefficient is less than 10, there is no collinearity between the explanatory variables (Gujarati and Porter, 2008). The results of which are shown in Table 11.

The results show that except for the independent variables of total liability per share (*TL*) and total asset per share (*TA*) in the second relevance method, all other variables correlate less than 10. As mentioned in the previous part, to reduce the collinearity, the logarithm of total asset (*LnTA*) and the logarithm of total liability (*LnTL*) are used.

Table 11 Variance inflation factor (VIF) test

	<i>Model</i>	<i>Variable</i>	<i>VIF</i>
Relevance	1st model	<i>BVPS</i>	5.81
		<i>EPS</i>	4.89
		<i>Dum</i>	1.25
		<i>Dum * BVPS</i>	6.12
		<i>Dum * EPS</i>	5.17
	2nd model	<i>TA</i>	103.51
		<i>TL</i>	101.61
		<i>Dum</i>	1.21
		<i>Dum * TA</i>	100.04
		<i>Dum * TL</i>	100.70
Reliability	1st model	<i>CFO</i>	1.0008
		<i>ACC</i>	1.0008
	2nd model	<i>E</i>	1.05
		<i>CFO</i>	1.05

Notes: Variable definition: *BVPS*, book value of equity per share; *EPS*, earnings per share; *TA*, total asset per share; *TL*, total liability per share; *CFO*, cash flow from operation; *ACC*, $DWC - DEP$; $DEP = \text{depreciation} / \text{total assets at } t - 1$; DWC , change in net accounts receivables / total assets at $t - 1$, plus change in inventory / total assets at $t - 1$, plus change in other current assets / total assets at $t - 1$, minus change in accounts payable / total assets at $t - 1$, minus change in taxes payable / total assets at $t - 1$, minus change in other current liabilities / total assets at $t - 1$, minus change in deferred taxes / total assets at $t - 1$.; *E*, earnings; *Dum* variable takes the value of '1' and '0' for the semi-annual and the annual statements, respectively.

5.4 The overall goodness of fit

5.4.1 Detecting the serial correlation

Due to dependent variable lags cash flow from operation and future earnings [equations (3) and (5)], the Durbin h test should be used. If the obtained value is in the confidence interval -1.96 and 1.96 then this means that there is no serial correlation. The results show that all the methods are within an accepted range (1.5 to 2.5), which indicates the absence of serial correlation.

5.4.2 Detecting heteroscedasticity

Another important assumption in linear regression is that the variance of errors must be constant. If this is not the case, then, there is heteroscedasticity. The White (1980) test is used to detect heteroscedasticity.

Table 12 White test

		<i>F-statistic</i>	<i>Significance level</i>
Relevance	First method	168.432	0.000
	Second method	105.669	0.000
Reliability	First method	153.71	0.000
	Second method	19.015	0.000

The fact that the significance level of all the models is less than 0.05 indicates that the residuals is not constant, which in turn show heteroscedasticity. In order to solve the heterogeneity problem, we have used the generalised least square (GLS) method (Gujarati and Porter, 2008).

6 Conclusions

This article examines the relationship between the characteristics of relevance and reliability, as reflected in the semi-annual and annual financial statements, to answer the main research question which seeks to find whether there is a trade-off between qualitative characteristics of relevance and reliability in semi-annual and annual financial statements.

Two sub-hypotheses have been proposed to answer this question. Our findings confirm the first hypothesis, according to which the degree of relevance in semi-annual statements is higher than in annual reports. This finding is consistent with Prichegger and Schondube's (2017) study, which concludes that early reporting has a higher degree of relevance than late reporting. For the second hypothesis (reliability), the two alternative methods show conflicting results. However, this conflict was not expected since the earnings predictability method as a measure of reliability, is not in line with the Conceptual Framework's rationale. This discrepancy is pointed out in Riedl's (2010) research as well. Specifically, the first method indicates that the annual financial statements have higher reliability compared to the semi-annual ones to predict future cash flow, and this difference is significant. By contrast, in the second method, the results show that although the annual financial statements have higher reliability than the semi-annual ones in predicting future earnings, this difference is not significant and cannot be generalised to the statistical population, that is, manufacturing companies in developed countries.

The results in this study are subject to some limitations in measuring reliability to comparing a model's explanatory power in two independent samples (i.e., annual and semi-annual reports). In econometrics literature, the crammer test and the bootstrap in residuals have been considered for comparison in two independent samples (Van der Meulen et al., 2007). However, in this study, due to the dependent variable's appearance on the right side of the equations, the results will not be reliable due to the endogenous problem (Gujarati and Porter, 2008). Therefore, we have used the mean

comparison test to compare the degree of reliability in the annual and semi-annual reports. We have considered the large statistical sample of 5,136 year-company to mitigate the potential problems arising from the mean comparison test to the normal distribution of data and outliers. While this increases our evidence's credibility, we cannot completely rule out alternative explanations due to the inherent limitations of the study. However, these limitations provide opportunities for future research. Our results also suggest avenues for further research to investigate the trade-off between relevance and reliability for annual and semi-annual financial statements for service industries.

Decision effectiveness based on the financial statement requires both qualitative features (i.e., relevance and reliability). Nevertheless, the results of this research show that the differences caused by preparing, checking, and publishing annual versus semi-annual financial statements cause a trade-off between features. The application of these results is that when financial statement users (such as lenders) aim to make long-term decisions, being free from any error and bias will be more critical. Therefore, the use of annual financial statements is appropriate. However, timeliness is essential when financial statement users (such as investors) aim to make short-term decisions. Therefore, using semi-annual financial statements is appropriate.

References

- Ahmed, A.S., Takeda, C. and Thomas, S. (1999) 'Bank loan loss provisions: a re-examination of capital management, earnings management, and signalling effects', *Journal of Accounting and Economics*, Vol. 28, No. 1, pp.1–25 [online] [https://doi.org/10.1016/S0165-4101\(99\)00017-8](https://doi.org/10.1016/S0165-4101(99)00017-8) (accessed 10 September 2021).
- Anwer, S.A., Neel, M. and Wang, D. (2010) 'Does mandatory adoption of IFRS improve accounting quality? Preliminary evidence', *Contemporary Accounting Research*, Vol. 30, No. 4, pp.1344–1372 [online] <https://doi.org/10.1111/j.1911-3846.2012.01193.x> (accessed 10 September 2021).
- Ball, R. and Shivakumar, L. (2005) 'Earnings quality in UK private firms: comparative loss recognition timeliness', *Journal of Accounting & Economics*, Vol. 39, No. 1, pp.83–128 [online] <https://doi.org/10.1016/j.jacceco.2004.04.001> (accessed 10 September 2021).
- Bandyopadhyay, S., Chen, C., Huang, A. and Jha, R. (2010) 'Accounting conservatism and the temporal trends in cultural earnings' ability to predict future cash flows versus future earning: evidence on the trade-off between relevance and reliability', *Contemporary Accounting Research*, Vol. 27, No. 2, pp.413–460 [online] <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.894.1435&rep=rep1&type=pdf> (accessed 10 September 2021).
- Barth, M., Landsman, W. and Lang, M. (2008) 'International accounting standards and accounting quality', *Journal of Accounting Research*, Vol. 46, No. 3, pp.467–498 [online] <https://www.jstor.org/stable/40058143> (accessed 10 September 2021).
- Brown, S., Lo, K. and Lys T. (1999) 'Use of R^2 in accounting research: measuring changes in value relevance over the last four decades', *Journal of Accounting and Economics*, Vol. 28, No. 2, pp.83–115 [online] [https://doi.org/10.1016/S0165-4101\(99\)00023-3](https://doi.org/10.1016/S0165-4101(99)00023-3) (accessed 10 September 2021).
- Chen, H., Tang, Q., Qingliang, Y. Jiang and Lin, Z. (2010) 'The role of international financial reporting standards in accounting quality: evidence from the European Union', *Financial Journal of International Management Accounting*, Vol. 21, No. 3, pp.220–278 [online] <https://doi.org/10.1111/j.1467-646X.2010.01041.x> (accessed 10 September 2021).
- Christensen, H.B., Lee, E., Walker, M. and Zeng, C. (2015) 'Incentives or standards: what determines accounting quality changes around IFRS adoption?', *European Accounting Review*, Vol. 24, No. 1, pp.31–61, DOI: 10.1080/09638180.2015.1009144 (accessed 10 September 2021).

- Collins, D., Maydew, E. and Weiss, I. (1997) 'Changes in the value relevance of earnings and book values over the past forty years', *Journal of Accounting and Economics*, Vol. 24, No. 1, pp.39–67 [online] [https://doi.org/10.1016/S0165-4101\(97\)00015-3](https://doi.org/10.1016/S0165-4101(97)00015-3) (accessed 10 September 2021).
- Deloitte (2014) *Decoding Frauds in the Manufacturing Sector* [online] <http://www.deloitte.com/in> (accessed 10 September 2021).
- Ewert, R. and Wagenhofer, A. (2016) 'Why more forward-looking accounting standards can reduce financial reporting quality', *European Accounting Review*, Vol. 25, No. 3, pp.487–513 [online] <https://doi.org/10.1080/09638180.2015.1043927> (accessed 10 September 2021).
- Francis, J. and Schipper, K. (1999) 'Have financial statements lost their relevance?', *Journal of Accounting Research*, Vol. 37, No. 2, pp.319–352 [online] <https://doi.org/10.2307/2491412> (accessed 10 September 2021).
- Gujarati, D.N. and Porter, D.C. (2008) *Basic Econometrics*, 5th ed., McGraw-Hill Education, New York.
- Islam, R., Khan, T.R., Choudhury, T. and Adnan, A.M. (2014) 'How earning per share (EPS) affects on share price and firm value', *European Journal of Business and Management*, Vol. 15, No. 17, pp.97–108 [online] <https://www.researchgate.net/publication/283257246> HowEarningPerShareEPSAffectsonSharePriceandFirmValue (accessed 10 September 2021).
- Jana, S. and Schmidt, M. (2017) 'Model-based fair values for financial instruments: relevance or reliability? Evidence from a conjoint analysis' [online] <https://dx.doi.org/10.2139/ssrn.3018638> (accessed 10 September 2021).
- Ji, X.D. and Lu, W. (2014) 'The value relevance and reliability of intangible assets: evidence from Australia before and after adopting IFRS', *Asian Review of Accounting*, Vol. 22, No. 3, pp.182–216 [online] <https://doi.org/10.1108/ARA-10-2013-0064> (accessed 10 September 2021).
- Kim, M. and Kross, W. (2005) 'The ability of earnings to predict future operating cash flows has been increasing – not decreasing', *Journal of Accounting Research*, Vol. 43, No. 5, pp.753–780 [online] <https://doi.org/10.1111/j.1475-679X.2005.00189.x> (accessed 10 September 2021).
- Kraft, P., Landsman, W.R. and Shan, Z. (2020) 'Effect of mandatory IFRS adoption on accounting-based prediction models for CDS spreads', *European Accounting Review*, Vol. 30, No. 2, pp.223–250 [online] <https://doi.org/10.1080/09638180.2020.1760116> (accessed 10 September 2021).
- Kythreotis, A. (2014) 'Measurement of financial reporting quality based on IFRS conceptual framework's fundamental qualitative characteristics', *European Journal of Accounting Finance and Business*, Vol. 2, No. 3, ISSN: 2344-102X.
- Kythreotis, A. and Constantinou, C. (2016) 'The interrelation among accounting quality, timeliness, and relevance', *Global Business and Economics Review*, Vol. 18, No. 5, pp.587–603 [online] <http://dx.doi.org/10.1504/GBER.2016.10000165> (accessed 10 September 2021).
- Lee, N. and Kwon, K-H. (2020) 'Revenue recognition on the percentage of completion basis and firm value', *International Journal of Business and Society*, Vol. 21, No. 1, pp.25–41.
- Mensah, E. (2020) 'The effect of IFRS adoption on financial reporting quality: evidence from listed manufacturing firms in Ghana', *Economic Research* [online] <https://doi.org/10.1080/1331677X.2020.1860109> (accessed 10 September 2021).
- Messner, M. (2016) 'Does industry matter? How industry context shapes management', *Management Accounting Research*, Vol. 31, pp.103–111 [online] <https://doi.org/10.1016/j.mar.2015.09.001> (accessed 10 September 2021).
- Nallareddy, S., Sethuraman, M. and Venkatachalam, M. (2018) 'Earnings or cash flows: which is a better predictor of future cash flows', *Harvard Business Review, Conference Paper*.
- PKF International Ltd. (2015) *Interpretation and Application of International*, 12th ed., Wiley, New Jersey.

- Prichegger, B and Schondube, J.R. (2017) 'Relevance versus reliability of accounting information with unlimited and limited commitment'. *Business Research*, Vol. 10, No. 2, pp.189–213 [online] <http://dx.doi.org/10.1007/s40685-017-0050-2> (accessed 10 September 2021).
- Richardson, S., Sloan, R., Soliman, M. and Tuna, I. (2005) 'Accrual reliability, earnings persistence, and stock prices', *Journal of Accounting and Economics*, Vol. 39, No. 3, pp.437–485 [online] <https://doi.org/10.1016/j.jacceco.2005.04.005> (accessed 10 September 2021).
- Riedl, E. (2010) 'Discussion of accounting conservatism and the temporal trends in current earnings' ability to predict future cash flows versus future earnings: evidence on the trade-off between relevance and reliability', *Contemporary Accounting Research*, Vol. 27, No. 2, pp.461–467 [online] <http://dx.doi.org/10.1016/j.jacc.2010.01.014> (accessed 10 September 2021).
- Sherlita, E. (2019) 'Value relevance of accounting information and faithful representation against investment decision', *Global Business and Management Research: An International Journal*, Vol. 11, No. 1, pp.120–129 [online] <https://www.proquest.com/openview/1c5b73a3e9545bb9849250403495ed6f/Hpq-origsite=gscholar&cbl=696409> (accessed 10 September 2021).
- Trisanti, T. (2017) 'Do the financial report qualities have affect on timeliness of financial reporting? The case of Indonesian listed firms', *Journal of Computational and Theoretical Nanoscience*, Vol. 23, No. 9, pp.9001–9004 [online] <http://dx.doi.org/10.1166/asl.2017.10011> (accessed 10 September 2021).
- Van der Meulen, S., Gaeremynck, A. and Willekens, M. (2007) 'Attribute differences between U.S. GAAP and IFRS earnings: an exploratory study', *The International Journal of Accounting*, Vol. 42, No. 2, pp.123–142 [online] <https://doi.org/10.1016Zj.intacc.2007.04.001> (accessed 10 September 2021).
- White, H. (1980) 'A heteroscedasticity-consistent covariance matrix estimator and a direct test for heteroscedasticity', *Econometrica*, Vol. 48, No. 4, pp.817–838 [online] <https://doi.org/10.2307/1912934> (accessed 10 September 2021).
- Wu, S.H. and Lin, S. (2020) 'Predicting future using fair value versus historical cost: evidence from investment property', *NTU Management Review*, Vol. 30, No. 2.

Notes

- 1 Bandyopadhyay et al. (2010) and Richardson et al. (2005).
- 2 Anwer et al. (2010), Ball and Shivakumar (2005), Barth et al. (2008) and Chen et al. (2010).